

THE BOTANICAL SOCIETY
AND EXCHANGE CLUB
OF THE BRITISH ISLES.

REPORT FOR 1925

(WITH BALANCE-SHEET FOR 1924).

BY THE

SECRETARY,

G. C. DRUCE, M.A., D.Sc., LL.D.,

HON. FELLOW, BOTANICAL SOCIETY, EDINBURGH.

VICE-PRES. BRITISH ASSOCIATION.

CORR. MEMB. SOC. BOT. GENEVE ET CZECHO-SLOVAKIA.

VOL. VII. PART V.

PUBLISHED BY

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June 1926.

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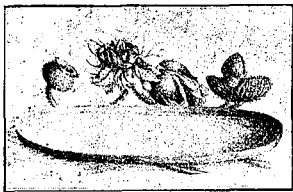
OXFORD UNIVERSITY PRESS

AMEN HOUSE, LONDON, E.C.4.

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OF THE BRITISH ISLES.

(VOL. VII. PART V).

Victoria Regina.



Floreat flora.

REPORT FOR 1925

BY THE
SECRETARY,

G. CLARIDGE DRUCE,

to whom, at YARDLEY LODGE, 9 CRICK ROAD, OXFORD, the Subscription,
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JUNE 1926.

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THE REPORT OF THE SECRETARY & TREASURER,
G. CLARIDGE DRUCE, YARDLEY LODGE, OXFORD,
FOR 1925.

BALANCE-SHEET FOR 1924.

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Audited and found correct, January 20, 1926.—F. TWINING.

The subscriptions—Ordinary Members, 10/-; Exchange Members, 12/6—are due, and should be paid on the first of January each year to G. C. Druce at the above address, or to the Botanical Exchange Club Account, Westminster Bank, Oxford Branch. Payment in advance for two or more years saves trouble and Expense. Entrance fee for New Members, 5/-.

The Exchange Club plants were distributed by Mr W. O. Howarth, M.Sc., of Manchester University, and the members are very grateful to him for so excellently carrying out the onerous task of sending out 4240 specimens and for his valued critical notes and good editing of the *Report*.

The year 1925 was not marked with any very remarkable discovery. The glorious weather of July enabled some of the Scottish alpinists, *i.e.* *Gnaphalium norvegicum* and the *Hieracia* to flower freely.

In Britain the magnificent display of *Chaerophyllum sylvestre* was a sight to remember, the country roads in Herts, Beds, Oxford, Berks, etc., being a passage through sea-foam, and the line of blossom could be seen for miles ahead. In north England *Myrrhis Odorata* also offered a splendid sight.

We have lost many valued members by death. These include the veteran botanist and Fellow of the Royal Society, Mr W. P. Hiern, of Barnstaple, a great educationalist, a strong upholder of the principle of priority in nomenclature, and one of the first British botanists to describe the forms of the Water Buttercups, and the earliest recorder of *R. sphaerospermos*, which for a time suffered oblivion, but has now been restored to our List; Lord Leverhulme, who helped us in our Benevolent Fund; Mr Gamble, the very able Indian botanist, whose *Flora of Madras* is an excellent example of clear thinking, critical knowledge, and painstaking industry; Mr Cheesman, J.P., Selby, an acknowledged authority on the Mycetozoa, and my fellow traveller in South Australia; Mr James Farrer, of Ingleborough, the father of Reginald Farrer; Mr Brock, the able gardener to the Duke of Richmond at Goodwood, who carefully looked after the interest of *Orchis hircina*, and Mr W. G. Clarke, of Norwich, who was so enthusiastically interested in the natural science of Norfolk, and who was preparing to publish a book on which he had spent much labour. We have also lost two Honorary Members, Mr J. H. Maiden, the well-known authority on *Eucalyptus*, who died very soon after his retirement, and honest Jean Massart of Brussels, who was untiring in his efforts to save the natural beauty and the rare plants of Belgium against the encroachment of a busy commercial progress and his own country in less happy days against the defilement of invasion. They have left not only Australia and Belgium but the whole botanical world the poorer for their loss. It becomes increasingly difficult to fill the places—widespread and expensive as is our national education—yet the competing attractions of football, cinemas, golf, revues and dances appear to be too powerful rivals, and one has to acknowledge that the in-

terest in our and other branches of natural science seems to lack the presence of devotees, such as the last half of the nineteenth century afforded excellent examples in all grades of life.

The output of Botanical literature in 1925 has not been large, yet it witnesses the production of the eleventh edition of "The London Catalogue" by Mr F. J. Hanbury and Mr C. E. Salmon. This enumerates 2362 species as against 2075 in the previous edition. The Hieracia have risen in numbers from 132 to 247, chiefly by raising varieties or sub-species to full specific grade, but the Rubi are only eight more, and the Rosae twelve. Three more Euphrasias are given, but *atroviolacea*, *Lumbii* and *minima* are omitted. The Capsellas and Taraxaca are "intentionally omitted" to prevent the Catalogue being "too unwieldy." Mr Hanbury is to be congratulated upon producing such a useful Catalogue in so neat and well-printed a form. Mr C. B. Tahourdin has issued a small brochure on the Native Orchids of Britain, and Mr St John Marriott has given an excellent ecological account of a Kentish woodland. We are pleased to see the *Irish Naturalists' Journal* has been started and we wish it all success. One hopes that in its pages will be found shortly a detailed comital list of Irish plants bringing Topographical Botany up to date.

The Wild Flower Society pursues its way with its accustomed enthusiasm, and we congratulate Mrs Dent and her excellent lieutenants on their stimulating zeal in so good a cause.

We are again deeply indebted to Dr S. H. Vines, F.R.S., the Rev. F. Bennett, M.A., Mr T. Gambier-Parry, M.A., and Mr R. H. Corstorphine, B.Sc., for their kind literary assistance.

We have pleasure in warmly thanking our plant experts for their most valuable help. These include Dr Albert Thellung, whom we congratulate very warmly on his splendid work on the Umbelliferae which is appearing in Hegi's "Illustrierte Flora;" Dr E. Almquist; Prof. C. H. Ostenfeld; Prof. J. Holmboe; Mr H. Dahlstedt; Mr B. Danser, who we trust will thoroughly enjoy his visit and studies in Java; Dr Karl Ronniger; Dr C. Lindman, who we are rejoiced to see has recovered from his serious indisposition; Dr J. Murr, who is to be commended for his industry in producing the Flora of Voralberg and Liechtenstein; Mr J. Fraser for his excellent

researches in Menthae; Mr Arthur Bennett; Mr W. H. Pearsall; Mr D. Lumb; the authorities of the Royal Botanic Gardens at Kew and Edinburgh, of the British Museum Natural History and other helpers.

It is pleasing to see that the Albert Medal of the Royal Society of Arts has been awarded to Lt.-Col. Sir David Prain, C.M.G., and that a Knighthood has been conferred upon R. H. Biffin of Cambridge, a fitting reward for his assistance to Agricultural Botany; and on Professor J. B. Farmer, F.R.S., of the Royal College of Science. Emeritus-Professor F. O. Bower has had the Hon. LL.D. conferred upon him by Glasgow University, a prophet honoured in his own country.

It is only fitting that the years of labour given by Dr Daydon Jackson to Botanical Science and as Librarian to the Linnean Society for 45 years. is to be recognised by a presentation portrait. Another pleasing incident was the presentation, in recognition of his great services to Horticulture, Arboriculture, Zoology, Archaeology and Authorship, of a cheque for £500 and several handsome pieces of plate to Sir Herbert Maxwell, Bart., which took place at Newton Stewart under the chairmanship of the Hon. Hew Dalrymple, when Sir Arthur Agnew made the presentation. We are glad to see that Sir John A. Gladstone of Fasque has become President of the Royal Scottish Arboricultural Society. The warmest congratulations are offered to our veteran botanist, Sir W. Thiselton Dyer, F.R.S., on the completion of the "Flora Capensis." This work was actually begun by Dr Harvey, Professor of Dublin University, and Dr Sonder of Hamburg, at the suggestion of Sir Wm. Hooker, the first volume appearing in 1865. Since then under Dyer's guidance the remaining eight volumes have been published—the whole enumerating 11,705 species, a close approximation to the 10,000 species Sir Wm. Hooker estimated the whole work would contain. It may be said that 2016 new species are described. "The Flora of Tropical Africa" was also, for some years, under his control. Now Sir David Prain is its editor. When completed it will occupy twelve volumes. (See *Kew Bulletin* 289-293, 1925.)

The completion of the "Flora Capensis" recalls the stinging criticisms on the preparation of this and the "Flora of Tropical Africa," which too frequently appeared in the *Journal of Botany*

from the pen of Mr Britten, notably on pp. 47 and 48, 1901, in which he states that the latter was entrusted to Sir W. T. Dyer in 1872. On p. 80 of the same Journal, on the threat of an action for libel, appeared an apology "with reference to the editorial notes contained in the *Journal of Botany* for January 1901, p. 47 and 48, reflecting on you and your work in connection with the preparation of the *Flora of Tropical Africa*, I desire to offer to you an expression of my sincere regret for the same. The preparation was not committed to you until the year 1891, and my statement that it has been in your hands since 1872 is incorrect. I sincerely apologise to you for having imputed to you unnecessary delay in its preparation, and I desire to withdraw all reflections and imputations affecting you of every kind whatever contained in the editorial notes referred to." This apology was also sent to *Nature*, *The Gardeners' Chronicle*, etc., and a monetary payment which Sir William, I believe, sent to a hospital, settled the matter.

We note that Major K. W. Braid has been appointed Professor of Botany to the West of Scotland Agricultural College, and that Professor Dr Edwin John Butler, C.I.E., succeeds Prof. W. Somerville in the School of Rural Economy at Oxford. We trust that freedom from official duties may restore our member to health.

It is gratifying to see that the Royal Horticultural Society has awarded the Grenfell Medal to Miss C. G. Trower for her beautiful and accurate paintings of British Rubi. Congratulations are offered to Mr and Mrs Walter Hills on their golden wedding. Mr Hills was President and Treasurer of the Pharmaceutical Society.

The new members include the Marquis of Aberdeen and Temair, Fr. Louis Arsène, Mrs E. Armitage, Mrs Beatty, Mrs H. H. Bloomer, Mrs Bruce, Dr J. Burt-Davy, the Hon. Mrs Chapman, Dr W. Craik, Miss Edgar, Mr J. Edward (1926), Mrs M. Evershed, Mr Seton Gordon, Mr J. S. L. Gilmour, Colonel H. Haig, Mr T. R. Hayes, Mr J. W. Hartley, Lady Holford, Prof. J. Holmboe, Captain A. Lascelles, Mr A. Lofthouse, Captain O. H. Batten-Pool (1926), Miss D. Powell, M.Sc., Mr A. R. S. Proctor, Mr Granville Proby (1926), M. Paul de Riencourt, Dr Herbert Smith, Miss Nancy H. Smith (1926), Miss Soper, Dr James Taylor, Mr H. J. Wheldon, Mr J. A. Williams, and Mrs Whitbread.

With the Hon. Mrs Baring we enjoyed the hospitality of Lady Kathleen Stanley at Penrhos in Anglesey in the middle of May. *Scilla verna* was in splendid flower on the coast with *Cochlearia danica* and *officinalis*. Lady Stanley of Alderley, years ago, had brought many roots of Cyclamen from Sorrento. They have spread very much in the woodlands of the ornamental grounds and there the wild masses of them, in flower with *Scilla hispanica* and *Myosotis sylvatica* make a beautiful sight. We saw the seedlings of *Helianthemum Breweri* in its classic station, and also *Senecio spathulifolius* not yet in blossom. *Mibora* was poor, and *Ranunculus cambricus* not in good evidence. This, I think, must be a form of *fluitans* rather than *peltatus*. There was little out on Snowdon, but we were able to see *Cotoncaster* on the Orme. Then I went to Orton to note the plants in the Marchioness of Huntly's herbarium and began my work at the Hunts flora. The following week, with the Misses Trower, Wood Walton was visited, and we saw *Viola stagnina* and *V. montana* (the latter distributed this year) in good flower.

TEESDALE.

In early June, with some of our members, Teesdale was visited. We had a week of perfect weather. The wonderful foamy flowering of *Myrrhis* was delightful to see. *Viola arenaria* was nearly over flower, but *rupestris* hybrids were in blossom, as was *Arenaria uliginosa*. *Gentiana verna* has sadly suffered from the toll taken of it. Miss Todd was at Langdon, Mr Foggitt came over from Thirsk, and Lady Mexborough, Lady J. Legge, Mrs Baring and others were at High Force. *Silene nemorum* was in beautiful flower at Barnard Castle. A second visit was made to Huntingdonshire, and then another meeting of the clans took place.

NORFOLK AND SUFFOLK.

We stayed first at Bury where a great variation in *Papaver Rhoeas* was seen, and then, with some members, I was the guest at Blo Norton with Prince Frederic Duleep Singh. We saw *Liparis* in flower with pure white *Orchis incarnata*, *Chara aculeolata*, an interesting form of *Equisetum palustre*, *Orchis praetermissa* and its hybrid with *Fuchsii*. We got *Galium anglicum* at Harting. It seems to have gone from Thetford. *Bromus tectorum* is still, after

30 years, plentiful near Thetford. We also saw *Veronica spicata* in flower.

SUSSEX.

We had another meeting at the kind invitation of Lord and Lady Buxton at Newtimber. Shoreham was visited but *Trifolium stellatum* was almost gone. At Newhaven *Crepis foetida* still flourishes and on the Lewes levels there was a splendid growth of *Potamogeton panormitanus*, var. *minor* Biv. in full flower. On the downs above Newtimber *Aceras* was still in flower. Early July was spent at Elton with Colonel and Lady Margaret Proby and several hard days' work at the Hunts flora were made, *Rumex Weberi* being found near Earith, and the true *Viola montana* at Wood Walton.

SCOTLAND.

I left Peterborough by the night train and met Mr and Mrs Williamson who kindly took me in their car to Bridge of Allan where *Cynosurus echinatus* grew by the roadside. The next day we went to Kenmore by way of Dunblane, Callander, the Trossachs, and Killin. *Chaerophyllum aureum* is still very abundant by the Teith, and the hybrid, *Carex vesicaria* × *inflata* persists there. *Lysimachia thyrsoflora* is abundant, but barren. *Hieracium pulmonarioides* was in good flower at Kenmore in the locality in which Mr Pugsley found it. We then went by way of Aberfeldy, Blair Athol, and Kingussie to Grantown where an evening's walk with Mr Kerr showed us *Linnaea* in good flower. The next day was devoted to Culbin Sands where we saw quantities of *Goodyera* and *Centaureium vulgare*, and added *Carex extensa* and some other plants to its list. Then we went by Inverness to Strathpeffer but could see no sign of *Pinguicula alpina*. In the pond near the golf course there was a great quantity of an apetalous Batrachian and we also saw *Taraxacum naevosum*. On the lovely journey by Strath Carron and Loch Maree to Gairloch, we were enabled to add *Hypericum humifusum* to Ross-shire. Unfortunately the next day was wet, but several plants were added to the list. Next we motored to Poolewe where the foreshore was a mass of *Cochlearia groenlandica*, then on to Greenard where *Callitriche polymorpha* was found, and by Dundonnell and Braemore to Ullapool. Then we visited

the rocks of Cnochan and obtained *Rumex arifolius* in both Ross and Sutherland, and *Galium pumilum*, new to the former county. *Carex rupestris* grew by the roadside. The quantities of *Trollius* near Leadbeg were extraordinary and contrasted charmingly with *Orchis praetermissa* and the var. *pulchella* with which it grew. The hill slopes were adorned with very large flowered *Rosa spinosissima*, brilliant *Polygala vulgaris* and acres of *Dryas*. Then on to Inchnadamph where *Arenaria norvegica* was in flower, and *Habenaria albida* was in good show.

From Inchnadamph we made an unsuccessful attempt to get over Scourie Ferry, but after about eight miles of atrocious roads we found so strong a wind was blowing that the very disagreeable Charon would not venture, so we had to come back with only the very grand view of Quinag to repay us. We, therefore, went across to Lairg by Oykeill bridge to see the Hieracia and along Strath Naver to Bettyhill. There all the characteristic plants were seen but *Oxytropis* was over its best. I got *Hieracium pseudo-zetlandicum* in its classic spot. We wasted a day in visiting an island which was practically barren save for *Euphrasia foulaensis*. Then we went on to Melvich in order to see *Hieracium maritimum*, and across Scotland to Helmsdale and Golspie. There we saw plants of *Moneses* in good flower and on to Dingwall, Inverness, and Grantown, a pretty good day. The next day to Blair Athol, Perth, Glen Farg, where *Lychnis Viscaria* was over its best, and on to Kinross where *Ranunculus reptans* was in good flower; lastly, on to Edinburgh where a visit to Leith docks was not very productive. The end of the month was spent with Sir R. Curtis at Lichfield, where we saw *Elisma natans* in splendid condition, and we also explored Aqualate with rather negative results. *Impatiens glandulifera* is quite naturalised in this county.

A short visit to Biddesden resulted in the Hon. Mrs Baring and the writer finding *Mentha alopecuroides* in N. Hants near to Biddesden, and another visit to Colchester resulted in finding a *Chenopodium* new to science, alien of course. It has been independently found there by Mr G. C. Brown.

One cannot close these notes without offering my warmest thanks for the great kindness of the members in giving me such an artistic Book-plate. Curiously I had just decided to have one when on

Lochnagar the subject was broached to me by some kind friends. Nothing could have delighted me more, and I do offer my profound gratitude to the members who subscribed, to the kind friends who organised it, to Lord Grey for presenting it, and to Sir George and Lady Holford for allowing the presentation to be made at Dorchester House.

I have also to offer my sincere thanks to the Council of the National Museum of Wales for making me a corresponding member, and to the Société Botanique de Genève for making me a corresponding member at their recent jubilee.

PLANT NOTES, ETC., FOR 1925.

(Mostly New Plants to the British Isles or Notes on British Species
inserted here for Convenience of Reference.)

ABBREVIATIONS.—† before a name signifies the plant is not native;
× = a hybrid; ± more or less; ! after a locality, that the
Secretary has seen the plant there; [] that the plant is not British
or the record is doubtful; *Ann. Bot.* = *Annals of Botany*; *Bot.*
Abstr. = *Botanical Abstracts*; *Gard. Chron.* = *Gardeners' Chronicle*;
Ir. Nat. = *Irish Naturalist*; *Journ. Bot.* = *Journal of Botany*; *Nat.*
= *The Naturalist*.

8. ANEMONE PULSATILLA L. See paper by W. E. Ingwerson in
Gard. Chron. 74, 1925, with a view (29) of the Hertfordshire locality
near Tring, and another capital illustration of the plants growing
in the turf (30), where it is called "Dane's Blood" or "Crocus"
by the country people. He considers the English plant to be varietally
distinct from the continental plant, being dwarfer and com-
pacter in habit, the character being maintained in cultivation. As
I pointed out in *Fl. Berks* 5, 1897, some of our plants are *tenuifolia*
(Schleich.) = *angustisecta* Reichb. G. C. DRUCE.

22. RANUNCULUS BULBOSUS L., FLORE PLENO. See *Gard. Chron.*
402 and 420. = *R. speciosus* Vilmorin Flore Plein Terre 722. Near
Wisley, Surrey. Removed to garden, it grew to two feet high and
to about two feet in diameter. W. H. DIVERS.

30. R. SCELERATUS L., lusus FASCIATUS. Moist ground by the
River Itchen, Bitterne, S. Hants. See Prof. S. Mangan in *Gard.*
Chron. 408, 1925, fig. 184. "The stem was ten inches wide. The
ridge at top is formed by the common development of about one
hundred flowers and consists of a continuous waved receptacle com-
pletely covered with carpels and bearing the stamens, petals, and
sepals in long rows underneath."

47. *R. FICARIA* L., FLORE PLENO. Near Cuckfield, Sussex, with the type, 1925. H. BARNES.

51. *HELLEBORUS VIRIDIS* L., var. *occidentalis* (Reut.), forma *GUTTATUS* mihi. This differs from the type in the sepals, as pointed out by its finder, Mr A. Beadell, having a purplish-brown blotch at their base. It has been seen by him in its habitat, Crab Wood, near Warlingham, Surrey, for some years, growing with normally coloured plants. It must not be confounded with the cultivated *H. purpurascens* W. K.

55 (2). *NIGELLA GALLICA* Jord. Alien, France. Bristol, W. Gloster, C. & N. SANDWITH.

68. *ACONITUM ANGLICUM* Stapf in Bot. Mag. t. 9088, 1926. Under this name Dr Stapf describes our English Aconite which was quite recently determined as *A. Napellus*, var. *laciniatum* Seringe. See Barton in *Rep. B.E.C.* 485, 1918. This name is used in the last edition of the *London Catalogue*. It flowers earlier and is of a paler colour than the Continental *Napellus* (*compactum*), with leaves of a thinner texture.

72. *BERBERIS VULGARIS* L. (U.S.A. Dept. Circ. 356, July 1925), by F. E. Kempton and N. F. Thompson. Suggests the use of common salt in order to eradicate this agricultural pest, about 10 pounds being sufficient to kill an ordinary bush. In 1916 it is estimated that 180,000,000 bushels of spring wheat alone were destroyed by the Barberry rust. The average loss in the U.S.A. for eight years, 1916-1923, was about 50,000,000 bushels. The salt should be applied in the solid about the base of the shoots. Kerosene is also recommended, large plants requiring about a gallon.

80. *PAPAVER RHOEAS* L., nov. var. *TROWERIAE* Druce. Plant 12-18 in.; leaves glaucescent, pinnatifid, the lower leaves with broadly decurrent lobes which are short and abruptly acuminate and angularly cut, the upper leaves with smaller and more deeply toothed lobes; hairs on stem patent, yellowish-brown; petals paler red than type; stamens black; pollen normal; capsule with dark crimson stigmatic discs. The plant has the aspect of *Lamottei*, but there is no evidence of hybridity. Bury St Edmunds, Suffolk, June 1925.

Growing with many other varieties of micro-species in great profusion, this plant could be easily picked out from its congeners. I have named it after Miss Charlotte Trower, whose beautiful paintings of British plants have won the medal of the Royal Horticultural Society. She was with me when it was gathered. G. C. DRUCE.

92 (2). CHELIDONIUM LACINIATUM Mill. Prof. R. Ruggles Gates (*Nature* 499, 1925) in a lecture at King's College in March 1925, says the earliest known record is 1599 by Sprenger, an apothecary at Heidelberg, who found it in his garden among typical plants. It bred true from seed and has done so ever since. Many thousands appeared in Sprenger's garden without a throw-back, assuming that it is a mutant. We have two other instances which may be paralleled—*Lychnis Preslii* and *Bromus interruptus*. But we lack scientific evidence that *Chelidonium laciniatum* was not in existence before its appearing at Heidelberg. The remarkable thing about the *Chelidonium* and the *Bromus interruptus* is the rigid transmission of the characters—the laciniate petals and leaves in the *Chelidonium*, the split-glume and the interrupted inflorescence in the *Bromus*—from one generation to another. One recommends both these plants to cytologists in order to see the number and the character of the chromosomes. G. C. DRUCE. Experiments of crossing *majus* and *laciniatum*. See K. V. Ossian Dahlgren in *Svensk Bot. Tids.* 103, 1925. Hybrids of both the single and double-flowered forms were obtained.

122. RADICULA NASTURTIUM Druce. This plant has a medicinal as well as a botanical interest, and Dr S. Moncton Copeman (*Pharm. Journ.* September 26, 1925), has a paper in which he alludes to its curative powers in healing bleeding cracks on the hands of an old nurse. She pounded the herb in a mortar and drank the filthy looking expressed juice. The plant was recommended for such a purpose in Parkinson's *Theatrum Botanicum* of 1640 who owed his information to Dodsen of 1616. Haller, the great Swiss botanist, also held it in high esteem. He says "we have seen patients in deep declines cured by almost living on this plant." Dr Copeman's experiments show that it is of high value in body-metabolism and there is a Devon tradition of its curative properties in cancer cases. Dr

Bashford, at Dr Copeman's suggestion, inoculated 60 mice. The results showed that its use led to a very considerable immunity.

217. *BRASSICA ALBA* Boiss. and *B. ARVENSIS* are difficult to grow in water culture, owing, say F. Boas and F. Merckenschlazer (*Bot. Centr.* xlv., 40-53, 1925), to the ready penetrability of the plant tissues by anions as evinced by their experiments with 0.5 solution of ferrous sulphate. This, says *Nature* 886, "seems to be the phenomenon underlying the practice of destroying charlock by spraying or dusting." It is equally useful to destroy *Hypnum purum* in turf.

222. *BURSA GROSSA* (At.). This striking plant was gathered in the valley of the Teith at Callander, West Perth, in July 1925, and at Greenhithe, Kent, G. C. DRUCE.

222. *B. ROBUSTA* (At.). This coarse form grew at Gareloch, West Ross, July 1925, G. C. DRUCE.

222. *B. HIATULA* (At.) [BB106]. In cultivated fields near Basildon, Berkshire, June 1925 (distributed this year), and at Bury St Edmunds, Suffolk, June 1925, with Miss Trower. G. C. DRUCE.

222. *B. INTEGRILLA* (At.). A plant near this from Newport, Salop, July 1925, G. C. DRUCE.

248 (2). *BISCUTELLA AURICULATA* L. Alien, S. Europe. Airdrie rubbish coup, Lanark, R. GRIERSON. Det. KEW.

78 (7). *GYNANDROPSIS* DC. Prod i., 237, 1824.

280 (7). *G. PENTAPHYLLA* DC. Alien, tropical areas. Bristol, N. SANDWITH.

359. *LYCHNIS ALBA* Mill, sub-var. *ROSEA*. Mr J. E. Little finds this at Nine Springs, Hitchin, Herts, in the absence of *L. dioica*, which only occurs in one spot within a radius of 5 miles of Hitchin.

449 (5). *LAVATERA CASUMIRIANA* Camb. Alien, Himalayas. Christchurch, S. Hants, Miss S. A. ROOKE.

[477. *GERANIUM DEPREHENSUM* (Er. Ahnquist) Lindm., nov. comb. Only a few years ago this plant was observed amongst *Gera-*

nium bohemicum by Professor Ernst Almqvist (=the *Draba*-Almqvist), in the woods of the roadsides near Taltsjobaden. His nephew, Erik A., *Mag. Sc.*, described it as "*Geranium bohemicum* **deprehensum*." I had the opportunity of seeing the two forms together in great numbers there during two summers, and I am convinced that they are quite different, and *deprehensum* a species, distinct by many marks.

BOHEMICUM.

Leaves very soft, velutinous or velvet, bright green; in a younger plant they form a verticillus at the base of the specimen; *lobes* acute, with acute and numerous teeth.

Corolla 16-17 mm. in diam.; colour bluish-violet, with darker lines.

Seeds brown, smooth, with large greyish spots.

DEPREHENSUM.

Leaves not soft, sparingly hairy, darker green; the basal ones irregularly disposed; *lobes* more blunt, at the apex broader and entire.

Corolla 13-14 mm. in diam.; colour brighter violet, with a white central and purplish lines.

Seeds yellowish brown, one-coloured without darker spots, but not smooth, the surface all over being minutely and regularly dotted by very fine pits in rows.

E. ALMQUIST.]

478. *G. PRATENSE* L., var. *SEMIPLENUM*. On the banks of a stream near Calne, Wilts. There is no habitation near. It is a fine plant with a mass of bloom and is different from the ordinary double-flowered garden form, July 1925, M. COLVILLE. As Mr Fraser says, this is a highly interesting form, hitherto unrecorded. Although double-flowered it produces good seed.

486. *G. PUSILLUM* Burm. f., forma (vel var.) *ALBUM*. Sent by E. W. SHANN from Oundle School, having been found near Kings Cliff in Northamptonshire. It flowered from about the middle of May to June 9.

488. *G. ROBERTIANUM* L. The var. *maritimum* and *G. purpureum* Vill. are discussed by P. Senay in Bull. Mens. Soc. Linn. Seine Maritime 88, 1924.

499 (5). *ERODIUM STEPHANIANUM* Willd. Sp. Pl. iii., 625. Alien, Himalayas, N. Asia. Bristol, W. Gloster, 1924, N. SANDWICH.

524. *ACER PSEUDO-PLATANUS* L. At Loton Park, Salop, Mr Wardle (*Gard. Chron.* ii., 136, 1925) says there is a tree with a

girth at 6 feet from the ground of 26 feet. At 9 feet high it branches into eighteen separate trunks, each of which is as large as a big tree. The whole tree covers an area of 11,500 square feet, and it is calculated to contain over a thousand cubic feet of good timber.

574 (2). *MEDICAGO MUREX* Willd., var. *BREVISPIA* Rouy Fl. Fr. v., 33. Pod rather small (4-6 mm.); spines very short or almost absent. Leith Dockyards, Midlothian, 1925, G. C. DRUCE. Det. M. P. DE RIENCOURT.

597 c. *MELILOTUS INDICA* All., var. *TOMMASINI* (Jord.) Rouy Fl. Fr. v., 55. Differs from the type (inter alia) in the truncate apex of the terminal leaflet and in the shorter spikes. Found by Miss A. B. COBBE at La Grève d'Azette, Jersey, 1925. Det. M. P. DE RIENCOURT.

647. *LOTUS CORNICULATUS* L., var. *ARVENSIS* Seringe. = *L. ARVENSIS* Schkuhr Handb. 2259. Caulibus glabriusculis procumbentibus, foliolis obovatis. Our common form. Winnington, Hants, G. C. DRUCE.

648. *L. TENUIFOLIUS* L., var. *LONGICAULIS* (Martr.-Don. Fl. Tarn. 168, 1864, sub *corniculato*) nobis. Specimens gathered by Mr H. K. Airy Shaw at Dernford Fen, Suffolk, in 1893 [Ref. Nos. AA.502 & 503] have been referred to this variety by M. P. de Rien-court. Two forms occurred there, the smaller one of more caespitose growth and with shorter fruits. Should *Lotus tenuis* Kit. be the adopted name it will be *L. tenuis*, var. *longicaulis* (Martr.-Don.). G. C. DRUCE.

697. *VICIA SATIVA* L. U.S. Dept. Agr. 1289, January 1925, by Roland M'Kee and H. A. Schoth. De Candolle says its culture was first mentioned by Cato about 60 B.C. It was introduced in the States in the eighteenth century. Walter lists it in his *Flora Carolina* 1788. Attempts to cross *V. sativa* varieties have always resulted in failure. The few recorded cases of natural crossing have been based on very limited evidence. All the variations noted in the varieties of *V. sativa* breed true to form and suggest mutative origin.

DESCRIBED BOTANICAL VARIETIES OR SUBSPECIES OF *V. SATIVA*.

- Var. *alba* Beck (*V. alba* Moench): Leaflets obovate to obcordate; flowers white.
- Var. *amphicarpa* Coss. and Krol.: Plants bearing cleistogamous flowers; underground stems; normal stems with purple flowers.
- Var. *carnea* Beck: Leaflets obovate to obcordate; flowers light pink or rose colour.
- Var. *cordifolia* Beck: Leaflets strongly obcordate, the apex deeply bilobed; flowers purple.
- Var. *cosentini* Arcang. (*V. cosentini* Guss.): Leaves cuneate to linear-obovate, 2 centimeters long and 6 millimeters wide; flowers purple; pods small, 6 millimeters in diameter, without pubescence, rough; seed mottled brownish and green.
- Var. *erythrosperma* Reich.: Leaflets obovate to obcordate; flowers purple; seed reddish brown.
- Var. *glabra* Ser. (*V. glabra* Schleich.): Plant glabrous; flowers purple.
- Var. *grandiflora* Willk.: Leaflets obovate to obcordate; flowers about 3 centimeters long, purple.
- Var. *incisa* Boiss. (*V. incisa* M. Bieb.): Leaflets deeply serrate; flowers purple.
- Var. *leucosperma* Ser.: Leaflets obovate to obcordate; flowers purple; seed pale pink.
- Var. *linearis* Lange: Leaflets narrowly linear to linear cuneate, 2 to 2½ centimeters long; flowers purple; pods small, 4 millimeters in diameter; brown when ripe. This is similar to *V. angustifolia* except for the larger flowers and brown pod.
- Var. *macrocarpa* Moris (*V. macrocarpa* Bertol.): Leaflets obovate to obcordate; flowers purple; pods large, 10 to 11 millimeters wide, very prominently net veined, dark brown when ripe.
- Var. *maculata* Burnat (*V. maculata* Presl): Leaflets obovate to linear-obovate, obtuse to truncate; flowers medium size, 1.7 centimeters long; pods not pubescent, small, up to 5 centimeters long and 4 to 6 millimeters wide, brown or brownish black. This is similar to *V. angustifolia* but differs in that the seed is mottled brown and green and the flowers average larger. It differs from var. *cosentini* in having finer stems.
- Var. *melanosperma* Reich.: Leaflets obovate to obcordate; flowers purple; seed mottled brown and black.
- Var. *nemoralis* Rouy (*V. nemoralis* Pers.): Leaflets linear-obovate, obtuse to somewhat truncate; flowers purple; pods small, 4 to 5 millimeters in diameter, brown when ripe.
- Var. *obovata* Ser.: Leaflets obovate to somewhat obcordate; flowers purple; seed mostly brown or black. This includes most of the common commercial varieties of *V. sativa*.
- Var. *pygmaea* Ser.: Smaller in every way than *V. sativa obovata*; flowers purple. Probably a small form due to local conditions.
- Var. *remrevillensis* Huss.: Stipules entire; flowers purple.
- Var. *torulosa* Beck. (*V. torulosa* Jord.): Leaflets long, obovate to widely linear, truncate; flowers large, 2 centimeters or more long, purple; pods torulose, quite rough; seed yellowish, mottled with brown.
- Var. *triflora* Rouy: Leaflets obovate to obcordate; flowers purple, three or four, nearly sessile or rarely on a peduncle up to 8 centimeters long.

KEY TO VARIETIES.

- Plants with underground stems, bearing cleistogamous flowers, *Vicia sativa amphicarpa*.
- Plants without underground stems, no cleistogamous flowers.
- Stipules entire, *V. s. remrevillensis*.
- Stipules not entire.
- Pods 10 to 11 millimeters, reticulate, *V. s. macrocarpa*.
- Pods 5 to 10 millimeters, not reticulate.
- Plants glabrous, *V. s. glabra*.

Plants not glabrous.

- Leaflets incised, *V. s. incisa*.
 Leaflets entire.
 Flowers three to four, *V. s. triflora*.
 Flowers one to two.
 Corolla white, *V. s. alba*.
 Corolla coloured.
 Flowers 3 centimeters long, *V. s. grandiflora*.
 Flowers 2 to 2.5 centimeters long.
 Corolla pink, *V. s. carnea*.
 Corolla purple.
 Pods 7 to 10 millimeters wide.
 Leaflets obovate, apex deeply incised, *V. s. cordifolia*.
 Leaflets obovate, *V. s. obovata*.
 Leaflets obovate, seed red, *V. s. erythrosperma*.
 Leaflets obovate, seed pale pink, *V. s. leucosperma*.
 Leaflets obovate, seed dark, *V. s. melanosperma*.
 Pods 5 to 6 millimeters wide.
 Leaflets truncate, *V. s. torulosa*.
 Leaflets not truncate.
 Pods dark brown or brownish black, *V. s. maculata*.
 Pods pale brown, at least not dark brown.
 Seeds mottled brown and green, *V. s. cosentini*.
 Seeds not mottled brown and green.
 Leaflets linear-obovate, apex rounded, ... *V. s. nemoralis*.
 Leaflets narrowly linear to linear-cuneate. *V. s. linearis*.

697 c. *V. SATIVA* L., var. *NEMORALIS* (Persoon Syn. ii., 306).

Leaflets elliptical-lanceolate, rounded or subtruncate at apex, mucronate; pods, seeds, and stipules as in type. [Ref. No. AA. 231.] Frilford, Berks, 1923, G. C. DRUCE. Det. M. P. DE RIENCOURT.

729. *LATHYRUS MONTANUS* Bernh., var. *VARIIFOLIUS* (Martr.-Don. Fl. Tarn. 186, 1864, as *Orobis tuberosus*) nobis. The basal leaves are ovate, obtuse, the upper narrowly and longly lanceolate. Found by G. C. DRUCE in Ufton Wood, Warwickshire. Det. M. P. DE RIENCOURT.

741 (2). *PRUNUS SEROTINA* Ehrh. Alien, N. America. Naturalised and self-sown in woodland at Peper Harow, W. Surrey. See J. E. LITTLE in *Journ. Bot.* 371, 1925.

764. *RUBUS INCURVATUS* Bab., var. *SUBCARPINIFOLIUS* Rogers and Riddelsdell from v.-c.s 13, 16, 17, 22, 33, 36, 42, 43. See *Journ. Bot.* 13, 1925.

765. *R. LINDLEIANUS* Lees, var. *LATIFOLIUS* R. & R., *l.c.* 14. Armagh. Down.

770. *R. NEMORALIS* P. J. M., var. *CORNUBIENSIS* R. & R., *l.c.*
14. Cornwall, over a large area.

772. *R. DUMNONIENSIS* Bab., var. *CORDATIFOLIUS* R. & R., *l.c.*
14. Guernsey. Sark. S. Essex and Oban plants make a comparable approach to it.

784. *R. THYRSOIDEUS* Wimm., var. *VIRIDESCENS* R. & R., *l.c.*
14. V.-c.'s 1, 4, 45. Cf. *Rep. B.E.C.* 17, 1904.

799. *R. IRICUS* Rogers, var. *MINOR* R. & R. *l.c.* 14. V.-c.'s 1, 2, 3, 4, 34, 36, 40, 41, 42, 44, 46.

874. *R. CORYLIFOLIUS* Sm., sub-sp. *CALCAREUS* R. & R., *l.c.* 15.
East Gloster.

(These Rubi were mainly described by Rev. W. M. Rogers in MS. They are now published by Mr Riddelsdell under their joint names.)

887 (3). *FRAGARIA INDICA* Andrews Bot. Rep., t. 479. Alien, hortal, India, etc. Near Lymington, Lady DAVY. Doubtless a garden escape.

909. The following *Alchemillas* were described by Mr C. E. Salmon in *Journ. Bot.* 222, 1925. They are the minor species which have been elaborated by M. Buser of Geneva who, at his request in 1892, had many of my specimens for examination. I still await their return.

A. CURTILOBA Buser. Goathland, N.-E. Yorks, v.-c. 62, 1895, Miss M. MENNELL. Det. Dr JACQUET. A form closely allied to *pratensis*.

A. SUBCRENATA Buser in Magnier *Scrinia Fl. Select.*, fasc. xii., 285, 1893. Aviemore, Easternness, v.-c. 96, 1922, C. E. SALMON. Det. Dr JACQUET. It has affinity with *A. minor*.

A. TENUIS Buser in Bull. Soc. Bot. Suisse, iv., 76, 1894. Meall Greigh, v.-c. 88; Sow of Athol, Dalnaspidal, v.-c. 89; By the Spey, Aviemore, etc., v.-c. 96. Det. Dr JACQUET. Near *minor* Huds., var. *filiacaulis* Buser.

A. CONNIVENS Buser. By a stream near Dalnaspidal, v.-c. 89,

2500 feet, C. E. SALMON; Beinn a Chroin, Glen Falloch, v.-c. 88, 1914, E. S. MARSHALL. Det. Dr JACQUET.

A. FIRMA Buser. Ben Lawers, v.-c. 88. Recorded as *acutidens* in 1913 by C. E. SALMON. Det. Dr JACQUET.

1067 (2). OENOTHERA CATHARINENSIS Camb. Alien, temperate S. America. Avonmouth Dock, W. Gloster, 1923, N. SANDWITH.

TETRAGONIACEAE Link Handb. ii., 17, 1831.

(*Mesembryaceae* Lindl. Veg. Syst., 1836. *Ficoidaceae* Rohrb. in Mart. Fl. Bras. xiv., 2, 207, 1872; Gen. 315, 1789.)

Mr N. E. Brown's exhaustive study of the genus involves many name changes in plants which have been recorded as more or less established in Britain.

208. MESEMBRYANTHEMUM (Dill.) L.

(Fruit 5 celled. When wetted opens by 5 valves; there are corresponding differences in the number of stigmas and ovarian cells.)

1077. M. CANDENS HARV. S. Africa. Newquay, Cornwall.

1077 (2). M. FALCATUM L. S. Africa.

1077 (3). M. GLOMERATUM L. S. Africa.

208 (2). CARPOBROTUS N. E. B. in *Gard. Chron.*, 1925.

(Fruit indehiscent, 10-16 celled.)

1077 (4). C. EDULIS (L.) N. E. Br. Cape. Yellow flowers.

Var. RUBESCENS Druce. Red blossom.

1077 (5). C. AEQUILATERALIS (HARV.) N. E. Br. Australia.

(M. VIRESCENS HARV. M. AEQUILATERALE L., and probably British ACINACIFORME. True *acinaciforme* has much thicker leaves.)

208 (3). CRYOPHYTON N. E. Br.

1077 (6). C. CRYSTALLINUM (L.) N. E. Br.

1114. PIMPINELLA SAXIFRAGA L., under var. POTERIIFOLIA Wallr. A rather fleshy maritime form on the cliffs near Holyhead,

Anglesey, Hon. Mrs BARING and G. C. DRUCE. So much off type as to be named by a critical authority, *P. major*. G. C. DRUCE.

1166 b. CAUCALIS DAUCOIDES L., var. MURICATA (Bisch.) G. & G. In July 1922 my mother and I discovered a single specimen of this remarkably distinct-looking plant on railway sidings near Shirehampton, W. Gloster. Its occurrence in England even as a casual seems worthy of note, if only because of the position which *C. daucooides* itself has always maintained in our manuals by virtue of its once well-deserved claim to the status of colonist. *Muricata*, the origin of which was unknown to its author, Bischoff, is quite well known on the Continent as a plant of cornfields, often growing with *daucooides*, but evidently always much scarcer than that species. It occurs mainly in Central Europe in a rather clearly-defined area bounded on the north by Bohemia, on the east by Croatia and Slavonia, on the south by Gorizia and the province of Venice in N.E. Italy, and on the west by the Tyrol. Within this area it seems most at home in Lower Austria where it is recorded by Neilrich from a number of localities. The plant has, however, been found at a great distance to the east, being noted by Ledebour from Tauria and the provinces of the Caucasus. It is also known in France, but is there 'bien plus rare' than *daucooides*, nor had Thellung got it as an alien at Montpellier where he wrote his *Flore Adventice* in 1912, though Gautier seems familiar with it in the Eastern Pyrenees. No mention of the plant is made by Coste, Archangeli, Boreau, Gremlé, Halacsy, or Willkomm and Lange. There are four sheets at Kew, comprising specimens from the Tyrol, Lower Austria, Hungary and Gorizia; three at the British Museum, from Lower Austria and Hungary. The obvious distinction of *muricata* from *daucooides* lies in the fruit, in which the spines on the secondary ridges are uniformly so reduced in size as to give the appearance of whitish granules, totally unlike the well-known spines on the fruit of *daucooides*. On closer inspection these granules are found to be cylindrical stumps which turn up abruptly at right angles into a short straight point. Owing to the minute size of these processes, the whole surface of the fruit is exposed in a manner that is never visible in *C. daucooides*, in which the long spreading spines equal or exceed the diameter of the mericarp, and are subulate in shape,

tapering very gradually into a hook. For the same reason, *muricata* naturally stands a far poorer chance of spreading from its home to other countries. This character of the fruit was very well defined by Bischoff who, in 1839, described his plant as a species in the Heidelberg Seed Catalogue, the description being republished in 1840 in *Linnaea*, xiv. The subsequent treatment of the plant is quite interesting. In 1843 Koch gave an excellent description of it as a species in his *Synopsis*, ed. ii., and in the following year Ledebour gave it the same rank in the *Flora Rossica*, and emphasised the distinction in the shape as well as in the size of the spines on the fruit. Grenier and Godron were the first to reduce it to varietal rank under *C. daucooides* in their *Flore de France* in 1848, but in 1859 it reappeared as a species in the *Flora von Nieder-Oesterreich* and the author Neilrich commented as follows: "Completely similar to the preceding (*C. daucooides*) in habit, but easy to distinguish by the very short spines of the secondary ridges, which resemble more a row of tubercles. A very doubtful species, related to *C. daucooides*, as *Ranunculus tuberculatus* is to *R. arvensis*. Since, however, I have hitherto found no intermediates, and the same plant remained constant in cultivation for a succession of eight years, I have been unwilling to combine them." These remarks are quoted by the younger Reichenbach who, in 1867, placed *muricata* under *daucooides* in his *Icones*, and figured both the plant itself and a transverse section of the fruit. Two years later, however, the plant still appeared as a full species both in the *Flora Croatica*, and in De Visiani and Saccardo's *Catalogue of Venetian Plants*. After this all authors seem to have combined to follow Grenier and Godron's precedent, and *muricata* is reduced by such writers as Boissier, Parlatore, Fiori and Paoletti, and Rouy; and by Nyman and Gandoger in their respective *Conspectuses*. Meanwhile the *Index Kewensis* mentioned only a *C. muricata* of Crantz (*Classis Umb. Emend.*, 1767) which it identified with *C. daucooides*, but wrongly, for Crantz's plant (*l.c.* 114) came in that section of *Caucalis* which he had taken over from *Daucus*, and is *Daucus muricatus* L. Finally, we come to the latest authority on the Umbelliferae of Europe, Vittorio Calestani, who dealt with the family in 1905 in *Webbia*, vol. i. He keeps *muricata* "Gren. Godr. et auct. omn." as a variety of *daucooides* but makes the following observation: "Besides the

shortness of the spines, *C. muricata* differs in its fruit being shorter and broader, and is perhaps a good species." This observation holds good at least with the breadth of the fruit, and it is curious that Calestani confines his attention to dimensions, and omits reference to the distinct shape of the spines which was so carefully described by Bischoff, and which led authors to retain the plant as a species for no less than thirty years. Perhaps they thought that the difference in shape was entirely conditioned by the reduction in size, an hypothesis which does not in this instance appear to be by any means inevitable, in spite of Neilrich's analogy of the two Ranunculi, and others which might easily be produced. At any rate, it seems that he might well have expressed his concluding words in still stronger terms, and that *muricata*, if carefully studied in Central Europe, may merit restoration to its original rank. N. SANDWICH.

1192. GALIUM BOREALE L., nova forma DIFFUSUM. Large spreading plant, with broad panicles, leaves narrowly ovate, attenuated to a point. Callander, W. Perth, 1925, G. C. DRUCE.

284. BACCHARIS L.

1284 (10). B. HALIMIFOLIA L. Alien, America and West Indies. This shrubby Composite was found at Mudeford, S. Hants, by Mrs ROTHWELL in 1924, and sent to me by Mr J. F. Rayner.

1394. SENECIO JACOBAEA L., nov. var. ABROTANOIDES Murr in litt. Foliis tripinnatipartitis. This pretty plant, with very compoundly divided leaves, occurred on the sea coast of Western Ross-shire between Poolewe and Dundonnell, August 1925, G. C. DRUCE.

1495. CREPIS DRUCEANA Murr. Verisimiliter *C. biennis* × *capillaris*. Ramificatis et folia ut in *C. capillaris*; squamae obscure subglabrae basim versus percissime floccosae; capitula tripla, majora; ligulae apice rubrostriatae. Murr, ined. x., 1923. Frilford, Berks, G. C. DRUCE.

1505. HIERACIA of the London Catalogue. Rev. J. Roffey (*Journ. Bot.* 315, 1925) gives some names new to our list used by Zahn in Das Pflanzenreich. They include *H. SKYENSE* Zahn (near *anglicum*, itself cut up into several species); *H. JOVIMONTIS* Zahn

(Linton's No. 9 as *Schmidtii*); *H. BASICRINUM* Zahn (*Sommerfeltii*, var. *tactum* F. J. H.); *H. PSEUDO-LEYI* Zahn; *H. EXOTERICUM* Jord. (Linton No. 37 as *pellucidum*); *H. KILLINENSE* Zahn (Linton's No. 17 as *microcladium*); *H. SCANDINAVIORUM* Zahn (Linton's No. 38 as *sylvaticum*); *H. LANCEOLATUM* Vill.; *H. GOTHICIFORME* Dahlst.; *H. BACKHOUSEANUM* Zahn (Linton's No. 77 as *gothicum* forma *latifolium*); *H. LATOBRIGORUM* Zahn; and *H. STRICTIFORME* Zahn. The Rev. J. Roffey gives a useful clavis to the Subauda. Zahn in his Monograph gives 42 British species only, the others coming in as subspecies.

1645. *TARAXACUM*. A paper by S. B. DICKS (*Gard. Chron.* ii. 253), with fig. 102, shows a field of cultivated Dandelions with women collecting the fruits of a cabbage variety on the farm of Mr L. Clause, Bretigny-sur-Orze. The author does not seem to be aware of the scientific works on the Dandelion by Handel-Mazzetti and Dahlstedt.

1645. *T. MIMULUM* Dahlst., *l.c.* B. 8, n. 10, 1910. Skand. Elton, Hunts, 1925, G. C. DRUCE. A robust plant.

1645. *T. LITORALE* Raunk. Dansk. Ekurs.-flora, 1906. Skand. Yarnton, Oxford, 1924, G. C. DRUCE, as a var. of this species, teste DAHLSTEDT.

1645. *T. PALLESCENS* Dahlst. A plant allied to this. Oxford, 1925, G. C. DRUCE, teste DAHLSTEDT.

1645. *T. PRIVUM* Dahlst. Nya Ostsvenska Taraxaca. Arkiv. for Bot., B. 10, n. 6, 1911. Skand. Oxford, 1924, and as a var., G. C. DRUCE.

1645. *T. AMBLYCENTRUM* Dahlst. Vasts. Tarax. Arkiv. for Bot., B. 10, n. 11. For description see *Report* 1911, p. 37-40. Finland, Skand. Oxford; Teesdale, Durham, 1925, G. C. DRUCE. A large, stout plant with long narrow side lobes.

1645. *T. MACROLOBUM* Dahlst. Vasts. Tarax. 43. Arkiv. for Bot., B. 10, n. 11. See *Report* 1911, p. 43. Allied to this is a striking plant from Balta, Unst, Zetland, 1920, G. C. DRUCE.

1645. *T. LACINIOSUM* Dahlst. Vasts. Tarax., *l.c.* See *Report* 1911, p. 45. A plant very nearly allied to this from Oxford, G. C. DRUCE.

1645. *T. HAEMATOPUS* Lindb. f. in Act. Soc. pro Fauna et Fenica 29, n. 9, 1907. Skand. A form of this at Yarnton, Oxford, 1923, G. C. DRUCE.

1699. *ERICA VAGANS* L., var. *KEVERNENSIS* Turrill. This continues to be a most popular heath. (See *Gard. Chron.* ii., 468, 1925.) It was discovered by Mr P. D. Williams. A pure white variety is also grown, known as Lyonesse.

1705. *LEDUM PALUSTRE* L. Arth. Bennett (*Journ. Bot.* 148, 1925) gives its history as a Scottish plant. My reference to *Ledum* growing under trees said under alien trees. When I saw it it was over 20 years old, and was a mere fragmentary specimen. The flowering time in Sweden is June and July, so the suggestion that its early flowering led to its being so long unnoticed in Scotland can scarcely be urged seriously. Mr Bennett does not allude to the other isolated localities in the Glasgow area and Yorkshire. Mr F. J. Stubbs (*l.c.* 178) records the plant growing on Soyland Moor between Rochdale and Halifax on the line dividing Lancs. and Yorks. at 1000 feet altitude, nearest house a mile away. First noticed in 1917 by F. Taylor. It has only once flowered there.

386 (2). *CLETHRA* L.

1711 (2). *C. ALNIFOLIA* L. Alien, America, etc. In a swampy field between Clulworth and Shirley Warren, S. Hants, 1921, RAYNER.

1751 (11). *BUDDLEIA LINDLEYANA* Fortune. Alien, China. On rubbish at foot of cliff near St Laurence, at 20 feet high, 1923, LONG ex RAYNER.

1765. *GENTIANA CAMPESTRIS* L. An albino mutant was found in the Val d'Isère, Savoie, on five occasions in quite separate localities of groups of albinos. One of these groups had well over 1000 individuals. Round this patch was a zone apparently unsuited to its growth. JULIAN S. HUXLEY in *Nature* ii. 497, 1925.

418 (3). ALLOCARYA Greene in Pittonia i., 12, 1887.

(? *Plagiobothrys* Fisch. & Mey.)

1785 (3). A. STIPITATA Greene. Alien, Amer. bor. Port Meadow, Oxon, 1925, T. GAMBIER PARRY.

1789 (7). BENTHAMIA PARVIFLORA (Haller under AMSINCKIA) comb. nov. On the railway between Reading and Sonning, Berks, 1925, ARNOLD COBB. Det., with a query, A. THELLUNG.

1819. MYOSOTIS ARVENSIS Hill, var. STRICTA Bosch. is the name suggested by Wade for the plant collected by me at Hanslope, Bucks. G. C. DRUCE.

1850. SOLANUM SISYMBRIFOLIUM Lam. Alien, N. America, Mexico, Brazil. Waste ground, Bournemouth, S. Hants, Rev. C. A. S. HATTON, ex RAYNER.

1873. LINARIA LINARIA (L.) Karst., nov. var. vel. forma FOLIOSA Druce. Cardiff Docks, Glamorgan, 1924, R. L. SMITH.

1886. L. CYMBALARIA Mill. In a lecture before the Pharmaceutical Society on December 13, 1924, on The Nature and History of this British Flora, Dr E. G. Salisbury stated that Dillenius brought the seed from Italy to the Botanic Garden. I have no evidence that Dillenius was ever in that country. As a matter of fact it was grown in the garden long prior to Dillenius who came there in 1734 since it appears in our Garden Catalogue of 1658 under the name of *Cymbalaria Italica*.

1892. SCROPHULARIA AQUATICA L., nov. var. ANGUSTIFOLIA. Differs from the type in the narrow leaves which are coarsely and irregularly crenate, the blade about 4 in. by $\frac{7}{8}$ -1 in. at broadest part, narrowed to the apex; peduncle of lower leaves 4 inches long. Near the Nidd, Knaresborough, York, 1911, Miss TODD. G. C. DRUCE.

[1931. NORWEGIAN EUPHRASIA. K. JORGENSEN in Bergens Mus. Aarbok, 1916-7.

- (A) Glands staked.
- (1) Glands numerous.
- (a) Glands short; flowers large; corolla 8 mm. long (longer or shorter); bracts awned; corolla-tube, during flowering, at least 1 mm. long (an early summer form is *tenuis*). *E. brevipila*.
- (b) Glands long, relatively small-headed; bracts not clearly awned; corolla-tube, during flowering, about 1.5 mm. long (an early summer form is *montana*). *E. Rostkoviana*.
- (II) Glands very few, short.
- (aa) Large flowered, similar to *E. latifolia* in N. Norway. *E. hyperborea*.
- (bb) Small flowered. *E. latifolia*.
- (B) Stalked glands absent except sometimes on corolla.
- (1) Flowers large, 8 mm. or longer.
- (a) Late summer forms.
1. Fruiting calyx not or little enlarged, with long narrow teeth.
E. stricta, sub-sp. *cu-stricta*.
2. Fruiting calyx much enlarged, with large broad teeth.
E. borealis, sub-sp. *sub-brevipila*.
- (b) Early summer forms.
1. Corresponding to *E. stricta*. Sub-sp. *E. suecica*.
2. Corresponding to *E. borealis*. Sub-sp. *E. atlantica*.
3. Similar to *E. latifolia*. Leaves and bracts with a more or less wedge shaped base. *E. hyperborea* in Norway.
- (II) Small flowered, corolla 7 mm. or longer.
- (a) Capsule glabrous on the edge or with short hairs. ... *E. salzburgensis*.
- (b) Capsule with numerous hairs on edge.
- (1) Fruiting calyx almost smooth.
- (aa) Plant of purplish or dark green colour.
- (1) Under lip longer than the upper. Late summer forms.
E. micrantha.
- (2) Under lip about as long as upper. Moor forms, western hills. *E. scotica*.
- (3) Alpine plants. *E. minima*, var. *palustris*.
- (bb) Green or golden green. Corolla only 3.5.
N. Norway *E. latifolia*, var. *inundata*.
- (2) Fruiting calyx more or less strongly hairy.
- (a) Early summer types. Seeds large, 1.5-2 mm. long.
Alpine or northern plants.
- (aa) Capsules elliptical. *E. minima*.
- (bb) Capsules narrow, oblong. ... Large N. Norway *E. latifolia*.
- (b) Late summer type. Seeds small, about 1 mm. Generally hairy.
E. curta.]

1966 (2). OROBANCHE RETICULATA Wallr., var. PALLIDIFLORA W. & G. Near Llandowey, Brecon, June 1905, H. H. KNIGHT, ex A. BENNETT. Det. by BECK.

1974. LATHRAEA CLANDESTINA L. J. L. North (*Quart. Rep. Royal Botanic Society*) states that its seeds are propelled 27 feet when the capsules are pressed. This he thinks may explain its spreading from the roots of a Beech tree to other parts forty feet away. He alludes to the fact, originally mentioned in our Report, that I found specimens of it at Livermere 40 feet away from the

place where Lady de Sausmarez planted it several years previously. This year I was unable to find it in June.

468 (5). *LIPPIA* L.

1983 (5). *L. NODIFLORA* Michx. Fl. Bor. Amer. ii., 15. Alien, hort. Beaulieu Abbey, S. Hants, LONG, ex RAYNER.

1986 (5). *VERBENA PANICULATA* L. Alien, N. America. Waste ground, Christchurch, S. Hants, 1923, ex RAYNER.

2057. *STACHYS PALUSTRIS* L., f. *CLEISTOGAMA*. Kingswood, Bristol. Mr Sandwith sent a curious form, but with laxer habit and broader (but mostly sessile) leaves than type and cleistogamous flowers.

2079. *TEUCRIUM SCORODONIA* L. An interesting example of chloranthy, Woodland, Howth, Co. Dublin, September 23, 1925, Miss I. M. ROPER.

2082 (3). *T. SPINOSUM* L. Alien, S. Europe. An annual, very prickly species, found at Bristol, 1925, C. and N. SANDWITH.

2082 (4). *T. RESUPINATUM* Desf. Alien, Spain. Bristol, 1925, C. and N. SANDWITH. A very local annual species recorded from Baetica and Castille with yellow corolla and twisted resupinate tube.

2083. *AJUGA REPTANS* L. A stolonless form found in Unwell Wood, Berks, by Miss Todd, 1923. So much off type as to be named by one expert *pyramidalis*, by another *genevensis*.

2090. *PLANTAGO CORONOPUS* L., nov. forma *GLABRESCENS*. Noticed by myself and Mr G. C. Brown on Hythe Quay, Colchester. Conspicuous from its bright green, succulent, glabrescent foliage, September 1925, G. C. DRUCE.

Nov. var. (or lusus) *RAMOSA*. Stem bearing one spike from the base of which 3 or 4 stalked spikes arise almost equal in length to the main stem making an umbellate inflorescence. Found by Mr L. Medlin at Par, Cornwall, 1925, G. C. DRUCE.

2099. *P. MAJOR* L., var. (or lusus) *BRACTEATA*. Differs from the type in having foliaceous bracts at the base of the spike gradually

diminishing in size upwards; leaves very large, roughly waved on the margin. Wytham, Berks, 1914, G. C. DRUCE.

2124. *CHENOPODIUM ALBUM* L., forma *GROSSEDENTATA* Murr in litt. This strongly toothed form was found at Colchester, Essex, 1925, by G. C. DRUCE and Misses TROWER.

[2126. *C. FIGIFOLIUM* Sm., var. *MICROPHYLLUM* Murr in litt. Leaves small. Luxor, Egypt, 1925, G. C. DRUCE.]

2127. *C. GLAUCUM* L., var. *MICROPHYLLUM* Murr in litt. Leaves narrow, small. Port Meadow, Oxford, 1925, T. GAMBIER PARRY, teste MURR.

2131 (15). *C. DETESTANS* J. Kirk in Trans. New Zealand Inst. ix., 550, 1877. Alien, New Zealand. Charleston, Cornwall, August 1925, W. TRESIDDER. Dr Murr remarks "huic proximum, sed vidi hujus speciei unum tantum specimen non bonum."

2133. *C. SUBPALMATUM* (nova sp.) Murr in litt. Valde verisimiliter semiorphnum ex *C. atriplicis* L. f. et *C. albo* (ut e.g. *C. auricomiforme* Murr et Thell., cujus parens altera *C. auricomum* Lindl. nondum in Europam introductus). Planta pulchra, robusta, caule et foliis valde purpurascens, foliis latis subtriangularibus inciso-lobatis. *Chenopodio pseudo-Borbasi* Murr (*album-striatum*) valde simile sed omnibus partibus robustius, viridibus, magis purpurascens, foliis basi latioribus, fortius lobatis, inflorescentia valde alba farinosa ut in *C. atriplicis*. Asia, Orient. Found by G. C. DRUCE and G. C. BROWN at Colchester in 1925. I thought this handsome plant, which was barren, was an ally of *striatum* but it was only a leafing specimen. Mr G. C. BROWN could find only immature flowers on the first of November. G. C. DRUCE.

2175. *POLYGANUM PERSICARIA* L., var. nova *MACULIS INSIGNIS* Danser. Exeter, Miss TODD; Port Meadow, Oxford; Eye, Northants. This is the form with the leaves conspicuously black-blotched, which gives the plant one of its local names in Oxfordshire. The legend is that the mark was made by the Virgin Mary when she pinched the leaf and condemned it as worthless. (Hild. Friend *Flowers and Flower Lore*, p. 6.)

2176. *P. PECTETICALE* (Stokes) Druce, var. *LANCEIFOLIUM* (Danser). Botley, Oxon, [Z 1041], 1922. In a former *B.E.C. Report* it appears as *P. maculatum*. Danser named it *P. lapathifolium*, sub-sp. *nodosum lanceiforme*, var. *glabrum punctaticarule rubellum*. It is one of the many forms of Trimen and Dyer's sub-sp. *maculatum*. The earliest trivial is *pecteticale*.

2176. *P. [LAPATHIFOLIUM] TOMENTOSUM* Schrank, var. *MEOMORPHUM-SEMILANCEIFOLIUM* Danser. Colchester Sewage Farm [2233], 1924, G. C. BROWN.

2196. *RUMEX LONGIFOLIUS* DC. vel *DOMESTICUS* Hartm. × *OBTUSIFOLIUS*. Weem, M. Perth, Miss TODD; Grantown, E. Inverness, G. C. DRUCE. This is not *conspersus* which is a cross with *R. aquaticus*, and is not at present known as British. This may be named × *R. Arnottii* since Walker Arnott first pointed out in Britain its true parentage. Syme (*E.B.* viii., 49), as it appears, wrongly referred it to *conspersus*.

2200. *R. OBTUSIFOLIUS* L., var. *UNIGRANIS* (Danser). Bodorgan, Anglesey, G. C. DRUCE. Prof. Danser put it as a variety of sub-sp. *agrestis* Fr.

2207. × *R. KLOOSII* Danser. See *Rep. B.E.C.* 452, 1924. This plant was found for the first time in a wild condition on Blackheath, E. Kent, in 1920, by Mrs GERTRUDE BACON. It is a hybrid of the alien *R. dentatus* with *R. maritimus*. The cross may have originated out of Britain, as the plant is an adventive.

520 (5). *MUEHLENBECKIA* Meissn. Gen. 316; Comm. 227, 1840.

2211 (10). *M. COMPLEXA* Meissn. Alien, New Zealand. Naturalised on rocky slopes in several places at St Saviour's, Jersey, August 1925, L. ARSENE.

2214. *DAPHNE LAUREOLA* L. See *Gard. Chron.* 145, 1925, fig. 56, also p. 73, where the figures seem to be *pontica*. Discusses the fragrance said to be present in *Laureola*. Mr W. J. Bean believes some plants are scentless, but other plants are fragrant at times. On p. 218 it states that *Laureola*, moved from a beechwood in Hamp-

shire where it was fragrant to an ornamental wood in North Yorkshire, and planted on a deep, rather heavy loam, became scentless. Plants at Marlow in Bucks and Hertford were fragrant. See fig. 88. Fig. 89 represents *pontica* which has the corolla division longer and more pointed.

2250. *URTICA DIOICA* L., forma *VILLOSA*. Foliage clothed with villous hairs. Finstown, Orkney, 1920; near Fitful Head, Zetland, G. C. DRUCE.

LUSUS FOLIOSA. Inflorescences converted into small leaves. Swanwick, Derby. Sent me by the Rev. W. WRIGHT MASON.

Gen. 542. *QUERCUS*.

Sub-section 1. *SUBER*.

“Fruit ripening in a single summer.”

Sub-section 2. *AEGILOPS*.

“Fruit taking two summers to ripen.”

Cambridge British Flora, vol. ii., p. 72.

It looks to me as if these definitions had been transposed. I cannot reconcile the statements with my own experience of many years' observation of numerous trees of Evergreen and Turkey Oaks growing on this property. On the contrary the exact opposite seems to be the case.

2264. *Q. ILEX* L. (Evergreen Oak).

What I suppose to be the typical Evergreen Oak has rather narrow, entire, lanceolate leaves with slightly revolute margins. They are dark green and shining above and whitish underneath. We have some fine old trees which freely produce fruit. The small acorns are long in ripening and are firmly fixed to the long peduncles which carry two or three together. In winter it is a daily sight to see jackdaws and ring-doves busily engaged trying to pull them off the trees. Rooks and jays also feed upon them and before the disappearance of squirrels from this neighbourhood they also used to frequent the trees and devour the acorns. Now (9th October 1925) from some cause one large tree is shedding its undeveloped acorns and their stalks in great quantity. The ripe acorns which fall from the trees sometimes come up but the birds do not leave many. The oak flowers late in May or early in June when the old

leaves fall off. Long straight shoots occasionally arise from the base of the trunks of old trees which bear much larger leaves of quite a different shape from those of the rest of the trees, being broadly ovate, slightly toothed and green on the underside. The suckers also have very different leaves from those of the main tree as have also the shoots that spring from the stumps of trees that have been cut down (just as in *Populus*). There are several varieties growing here. Some have broadly-ovate, lanceolate leaves slightly toothed towards the apex; another has very broad ovate leaves—the margins strongly toothed (a tooth to each of the lateral veins) each tooth ending in a sharp spine. They are very shining above and light green underneath. This kind comes up in one of the plantations, sometimes at the root of some large tree probably dropped by birds. These plants are small scrubby shrubs or sometimes small trees. They may perhaps be the Holly-leaved Oak (*Q. gramuntia* W.) or they may belong to a distinct species and are not a variety of the Common Evergreen Oak. Another variety (?) has long lobed leaves, very white on the underside with sessile acorns. Many varieties seem to have been known to Loudon and other Victorian botanists and also the great variation in the form of the leaf of *Q. Ilex*. I wonder they were not mentioned in *Camb. Brit. Fl.*

Turkey Oak (*Q. Cerris* L.).

No mention is made in *Camb. Brit. Fl.* of the numerous varieties and hybrids of this oak. The famous "Lucombe Oak," originating in the Alphington Nurseries near Exeter at the end of the 18th or beginning of the 19th centuries, and the "Falham Oak" are not even alluded to. They retain their leaves up to Christmas and in a more or less withered state throughout the winter, shedding them in the spring.

I think one of our trees, planted in 1838, is a Lucombe Oak (*Quercus Cerris*, var. *exoniensis* Loud.). It is a fine tree but rarely or never ripens its acorns. The immature fruit resembles that of the Turkey Oak as far as relates to the cupule, but the nut is short and round. The largest known example of this variety or hybrid is at Killerton, near Exeter, and the late Sir Thomas Acland showed it to me with great pride in July 1914, and pointed out how he had had it bricked up and cemented at the base of the trunk when decay set in. Sir Thomas gave me the dimensions. It was 14 feet in cir-

cumference at 3 feet from the ground. There were also two other hybrid oaks at that famous place (owned by three Sir Thomas Aclands in succession and all fond of trees). One of these oaks, both fine trees, was grafted on a Cork Oak and the other on a Common Oak. That on the Cork Oak had corky bark and keeps its leaves till the young ones push them off in spring. The other, grafted on the English Oak, sheds its leaves in February or March, as I was informed by Mr Wilson, the head gardener.

We have a lot of hybrid Turkey Oaks growing in our small wood with very straight trunks drawn up to a great height and of considerable size. The timber is of poor quality and in some the scent of tannin from the bark and wood is so powerful and offensive that it is of no use as firewood. They retain their leaves quite green during the winter months, shedding them in spring. They do not produce ripe acorns. The leaves vary greatly in form and in the amount and depth of lobing, some being very long (9 inches) and narrow. These trees are so straight and lofty I have to depend on such twigs as are blown off for material for examination. The acorns do not seem to mature but those undeveloped ones I have found resemble the Turkey Oak, but the scales of the cupule are rather stiffer and stronger. W. S. M. D'URBAN.

2265 (2). *JUGLANS REGIA* L. Mr Douglas T. Thring reports in *Quart. Journ. Forestry*, October 1925, p. 304, a remarkable walnut tree at Cuxham near Oxford, 106 feet in height with a trunk 17 ft. 4 in. in girth at five feet from the ground. This is the largest walnut tree ever recorded in England. A. HENRY.

2276. *SALIX AURITA* × *CINEREA* f. *OLEIFOLIA*. Heath, north of Woking town, Surrey, 1925, J. FRASER.

2325. *ORCHIS LATIFOLIA* L. Mr T. A. Dymes writes, October 10, 1925, that he has three plants of this from which his seeds were taken. They flowered nicely this year, and the leaves did not lose their spots. The seeds are quite different from any of the *maculata* group, but are very like *praetermissa*, and mixed seeds would be difficult to separate. He thinks *O. O'Kellyi* is more distinct from *maculata* and *Fuchsii* than they are from one another.

2326. *O. PRAETERMISSA* Druce. Messrs Stephenson (*Journ. Bot.* 93, 1925) record finding this in three localities near Paris so it is now known for Holland and France.

2327. *O. O'KELLYI* Druce. In *Gard. Chron.* ii., 48, 1925, Mr Besant of Glas-nevin says that it is a beautiful plant but only an albino of *maculata*. This may be so on the standard that "all flesh is grass," but it is not the case here since the researches of Mr Stelfox and other Irish observers tend to prove its distinctness from *O. Fuchsii*. It is very widely removed from *maculata* which has an albino form.

2390 (2). *ASPHODELUS TENUIFOLIUS* Cav. in *Anal. Cienc. Nat.* iii., 46, 1801. Alien, Southern India. Balls Bridge Coups, Dublin, 1924, R. GRIERSON. Det. at Kew.

2406 (3). *ALLIUM MOLY* L. Alien, S. Europe. Rare, hortal. In cultivation since 1604. Swaton waste field, Great Hale, Sleaford Fen, Lincoln, Miss LONDON.

2479 (2). *SAGITTARIA HETEROPHYLLA* Pursh and *POTAMOGETON FOLIOSUS* Raf. Attempts have been made to account for the presence of two North American water plants, *Sagittaria heterophylla* Pursh and *Potamogeton foliosus* Raf. in the River Exe at Exeter. It has been suggested that they were introduced with the bark of large trees and brush-wood used for lining the interiors of the small vessels that had for generations brought salt cod from Newfoundland to Exeter (see *Rep. B.E.C.*, 1923) but Prof. Fernald of Harvard University, Cambridge, Mass., who has for many years been engaged on a Flora of Newfoundland and has lately returned from a collecting trip to that Island, kindly informs us that though the two plants are widely dispersed over the continent of North America, they do not occur in Newfoundland. That being the case the theory that they were introduced from that island is proved to be erroneous. The *Sagittaria* has been cultivated in England under the name of *S. rigida* Pursh since 1806, when it was introduced by Sir Joseph Banks, who received it from Francis Masson from Canada. James Donn gives 1798 as the date of the introduction of *S. bulbosa* Donn, now considered the same species, also from Canada. It is very pro-

bable that the well-known nurserymen, Messrs Lucombe and Pince, grew the Canadian Arrow-head in their extensive gardens at Alington near Exeter and not far from the Exe. As it is a plant that increases with great rapidity by means of its numerous runners or stoles, it is quite possible that the nurserymen disposed of their surplus stock by turning it into the river, or the plant may have obtained access to it by some other means, perhaps by a flood. That it should have for so long escaped notice is not surprising considering that the fully developed leaves bear so close a resemblance to those of *Alisma*, and that the flowers are produced rather sparingly and the whole plant usually much hidden from view from the river bank, except in a few spots. The very long weak flowering scapes bend over and become prostrate on the surface of the water, and the flowers then look much like those of a Water Crowfoot, and might easily be overlooked. It required the critical eye of an expert botanist like its discoverer, the late Mr W. P. Hiern, to detect this alien species. *Acorus Calamus* was also probably introduced to the Exe in the same manner as suggested for the *Sagittaria*. As to the *Potamogeton* the mode of introduction will probably remain unknown like that of another American water-weed, *Elodea canadensis* Mich. which reached the Exeter Canal about 1850. W. S. M. D'URBAN.

2487. POTAMOGETON DRUCEI Fryer. Mr Arthur Bennett (*Journ. Bot.* 149, 1925) asserts that this is synonymous with "*P. petiolatus* Wolfg. (ex Besser) in Roem. and Schult. Syst. Veg. Mant. 3, 352, 1827." He says his specimen is from "Wilna (Lithuania) leg. Wolfgang ex Dr Reichardt Herb. Mus. Vind.," given him by the late Dr Tiselius. In the *Mantissa* it is given as "Wolfg. MSS. No. 4, Besser in litt." and placed under *polygonifolius*. Bennett says it agrees with my Loddon specimens. He has it also from Grève du Rhone au dessus de Lyon, and from Denmark, Herr Baagoe in "amne Gudena ad Kongensbro." But Hagstrom (*Researches* 184) refers the *petiolatus* Wolfg. Lithuanian specimens from Wilna to *P. nodosus*, and he also had Baagoe's Gudena specimens before him. These he referred to *lucens* × *nodosus*. This was done while he was making an intensive study of *P. Drucei*, which he refers to *alpinus* × *natans* (as I first suggested). It must be borne in mind

that *petiolatus* is published as a *species*. Unfortunately the *Actes* allow the name to be changed when a different grade is employed and, therefore, while putting it into the hybrid grade, Fryer (*Brit. Pondweeds* 31, 1915) was entitled to change its name as he did. Of course he knew nothing of Wolfgang's plant or whether or not it was identical with the Loddon plant. In the case of *P. nerviger* Wolfg., supposing as Hagstr. (*l.c.* 149) says, this is identical with *P. Griffithii* Benn., published as a distinct species, obviously, there being no change of grade, the more recent name falls. Hagstrom says of the Welsh plant "its hybrid origin, however, is beyond all doubt and may nowadays be disputed in earnest by nobody."

2508 (2). *P. FOLIOSUS* Raf. Professor M. L. Fernald, in a letter to Mr D'Urban, says that *Potamogeton foliosus* is a generally distributed species from tropical America northwards, reaching its north-eastern limits in Nova Scotia, Prince Edward Island, and in Quebec south of the St Lawrence. *Sagittaria heterophylla* is one of our most protean species, and its eastern limits are in Lake Champlain in Vermont and in river estuaries as far east as southern Maine, but there is no evidence of the occurrence of either species in Newfoundland. Nor is there any evidence of the Hemlock Spruce being found in that country. Again *Calluna* is of very doubtful occurrence in Newfoundland although it has been recorded. The plant, when examined, proved to be *Empetrum*. Consequently the assumption that either the *Sagittaria* or *Potamogeton* were introduced into England from Newfoundland by clinging to *Calluna* or to the bark of the Hemlock Spruce is based upon a very unfortunate misapprehension as to the American occurrence of the four species concerned.

2514 (2). *P. PENNSYLVANICUS* Willd. In the *Potamogetons of the British Isles* the statement is made that this species was "most likely introduced with cotton, as it is one of the common species in the United States, being abundant in the States where cotton is grown." Prof. M. L. Fernald writes that the above statement amazes him since "*P. pennsylvanicus* is, so far as we know, quite unknown from the cotton-belt, the latter region being a fairly well defined area of the Southern United States; the pondweed being an

essentially northern species occurring in two areas—one extending from southern Labrador to the mountains of northernmost Georgia, the other along the Pacific slope from Alaska to California.” Therefore to some other cause must be attributed its occurrence in Yorkshire.

2529. *ELEOCHARIS PALUSTRIS* Br. is a very polymorphic species. Beauverd in Bull. Soc. Bot. Genev. 245, 1921, gives the following clavis:—

1. Plant deep green. 2.
- Plant glaucous or yellow green. 6.
2. Stems 20 cms. or more. 3.
- Stems scarcely 10 cms. 5.
3. Plant 20-40 cms. tall with broadly lanceolate spike. *Type*.
- Plant less high. 4.
4. Stem 40 cms. or more, spike narrowly lanceolate. Var. 2, *major* (Sond.).
- Stem less thick, reaching 90 cms. Var. 3, *Caspary* Abr.
5. Stem more or less 10 cms. high; spike ovate, more or less elongate.
- Var. 4, *arenarius* (Sond.).
- Stem more than 10 cms.; spike lanceolate. Var. 5, *minor* (Schur).
6. Plant clear green or more or less yellowish green. 8.
- Plant glaucous green. 7.
7. Spike lanceolate, more or less elongate (as in type save colour).
- Var. 6, *glaucescens* (Willd.).
- Spike very short, more or less 3 mm. long; stolons short, bracts lanceolate, pale. Var. 7, *flicaulis* (Schur).
8. Plant yellow green, with much broader stolons, stem more or less 10 cms.; spike lanceolate. Var. 8, *salinus* (Schur).
- Plant clear green; stems above 15 cms.; spike surrounded at base by a solid amplexicaul bract. Sub-sp. *E. uniglumis* (Link).

The difficulty arises in nature that the height of the stems is much influenced by surroundings and so far as *uniglumis* (which C. E. Clarke thought was a mere form) is concerned is quite unreliable.

H. Lindberg (Act. Soc. Faun. et Fl. Fennica xxxiii., 7, 1902) suggested a third species, with the clavis:—

1. Sterile bract not surrounding the spike, the fruit not punctate. 2.
- One bract only surrounding the base of the spike; fruit visibly punctate verrucose. 1, *uniglumis*.
2. Stem dark green, rigid and striate when dry, 20 fiber-bundles, stylopode longer than broad. 2, *palustris*.
- Stems clear green, flabby, with 12 fiber-bundles, stylopode broader than long. *mamillata* (Lind.).

Dr Beauverd describes a new species, *E. benedicta*, and a new variety of *E. uniglumis*, var. *macrocarpa* Beauv., the latter from the neighbourhood of Paris at St Gratien.

2548. *ERIOPHORUM ANGUSTIFOLIUM* Roth, nov. var. *BREVISETUM* Druce. Differs from the type in that the robust plants have more or less peduncled spikelets and very short bristles, 10-15 mm. only. Found by Mr T. W. ATTENBOROUGH in a marsh near Petit Port, St John, Jersey in 1925. It was the prevailing form there. It differs from *triquetrum* which has nearly sessile spikelets. G. C. DRUCE.

2551. *E. ALPINUM* L. Mr W. G. Travis tells me that there is a specimen in Dickinson's Herbarium presented to the Hartley Laboratory at the University of Liverpool. It is labelled "Drumlanrig Castle, Dumfries, R. Boyle, 1840." It is not referred to in the Flora of Dumfriesshire by Scott-Elliot. Can any one throw light on the matter?

2576. *CAREX FLAVA* × *SAXATILIS* = *C. MARSHALLI* Arth. Bennett in Trans. Bot. Soc. Edin. 137, 1925. Argyll, DRUCE; Perth, MARSHALL; Forfar; Aberdeen; W. Ross. I think my Argyll plant collected in 1888 on Ben Laoigh, cited for above by Mr Bennett, is a hybrid of *flava*, var. *oedocarpa* with *saxatilis*.

2602. *C. DISCOLOR* Nyland. Spec. Fl. Fenn. iii., n. 12, 1846. *C. aquatilis*, var. *epigeios* Fr. (not Laestr.)—but this seems to be a form of *salina*, teste Nyman, Almquist, etc.

2627 (2). *C. MICROGLOCHIN* Wahl. in *Proc. Linn. Soc.* p. 2, 1924. There it states that a sheet of specimens gathered by Mr C. E. Salmon in Glen Lyon some years ago was adduced in proof of his having gathered it. This suggests, or it might be inferred, that its discovery was not due to Miss Bacon and Lady Davy. The fact is that Mr Salmon took it, as he said, for a "neat form of *pauciflora*," and he never referred to it as *microgloch* not even in the paper which he read before the Society on plants which might be expected to occur in Britain. Nor in any other way was it published. Lady Davy not only found it, but sent it to me asking if it were not *microgloch* which she made it out to be by her Norge Flora. Its first publication as a British plant was in a supplement to the *Report* in 1921.

2636. *PANICUM MILIACEUM* L. Proso. The Common Millet. U.S.A. Dep. Agr. Bull., 1433. Largely cultivated in U.S.A. in

Dakotas, Montana, and in Western Canada. It will yield even 60 bushels to the acre. The seed is heavy, weighing 56 pounds to the bushel.

2637. *P. MAXIMUM* L. Guinea Grass. U.S.A. Dep. Agr. Bull., 1433. Native of Africa, but was early introduced to the West Indies (Jamaica 1756), incidental to the slave trade. It grows as tall as 10 feet, and a single tuft may be 4 feet in diameter. It shows a considerable range of variation. It was found as an alien at Newport and Ryde, Isle of Wight, by Mr LONG, ex RAYNER.

2643. *SPARTINA TOWNSENDII* H. & J. Groves. F. W. Oliver in the New Phytologist 79, 1925, states that Stapf says that it does not match any American material. The suggested hybrid origin is not supported by its fertility of seed and full-pollen production. Oliver suggests that its occurrence in France is due to seeds being taken to that coast by shipping. Perhaps the cytologists may unravel the tangle.

2648. *SORGHUM HALEPENSE* Pers. Johnson Grass. U.S.A. Dep. Agr. Bull., 1433. Introduced from Turkey into South Carolina about 1830. It is now widely spread across the continent northwards to Virginia, Oklahoma, and Northern California, but it cannot endure great cold. In suitable soil it is apt to become a pest. As an adventive Lady Davy has found it in allotment ground in Surrey.

2651. *PHALARIS CANARIENSE* L. U.S.A. Dept. Agr. Bull. 1433. In California it has given 10 bushels and in Saskatchewan nearly 30 bushels of seed to the acre.

2655. *P. ARUNDINACEA* L. U.S.A. Dep. Agr. Bull., 1433. Increasingly cultivated as a fodder-grass in the Northern and Western United States. It yields 6-9 tons per acre. The seeds weigh 44-48 pounds per bushel.

2662. *ALOPECURUS PRATENSIS* L. U.S.A. Dep. Agr. Bull., 1433. Has been cultivated in the States since 1750. It grows well under shade, and two crops have been obtained in the year. A bushel of

seeds weighs from 6-12 pounds, each pound contains from a half to a million seeds.

Nov. var. *BULBOSIFORME* mihi. Mr G. C. Brown sends specimens from Backwater, Weymouth, Dorset [2337], 1925, which are bulbous at base, the culms somewhat bent at the nodes, the sheaths slightly inflated, but the panicles normal. Babington (*Manual*, ed. 3, 1851) says that "in salt-marshes the base of the stem becomes fleshy and one plant may be mistaken for *bulbosus*." This fact is not mentioned by Knapp, Parnell, or Sowerby.

[*TRICHOLOENA ROSEA* Nees. U.S.A. Dep. Agr. Bull., 1433. Introduced to the States as early as 1866 it is spreading and is now abundant over the southern part of Florida where its rosy panicles give great beauty. It yields three crops in the year and seeds well in Florida, a bushel weighing 7 pounds. I found it in fields above Caraccas in Venezuela at over 4000 feet, where its beautiful inflorescence was a startling surprise.]

2685. *ANTHOXANTHUM ODORATUM* L., nov. forma *INTERRUPTUS* Dr. Inflorescence interrupted; lower internodes separated by 25 mm. Maryborough Coup, Lanark. Collected in 1923 by R. GRIERSON.

2687. *A. ODORATUM* L. U.S.A. Dep. Agr. Bull., 1433. It was early abundant in North America and now is naturalised right across the continent. It is highly variable. The seed is light, a bushel weighing about 10 pounds, and a pound contains nearly a million (924,000) seeds.

2738. *CYNOSURUS CRISTATUS* L., nov. forma *RAMOSA* Dr. Inflorescence compound and interrupted. Mid Perth, Miss TODD.

2752. *DESMAZERIA LOLIACEA* Nym., nov. forma *RAMOSA* Dr. St Ouen's, Jersey, Miss M. COBBE. In this the inflorescence is compound.

2761. *POA TRIVIALIS* L. U.S.A. Dep. Agr. Bull., 1433. This was introduced to the States very early and is now of general occurrence. It spreads by stolons or creeping branches on the ground (not subterraneously as *pratensis*). Seed is abundantly produced. A bushel weighs about 18 pounds.

2778. *GLYCERIA PROCUMBENS* Dum., nov. forma *VEGETA* Dr. A coarse luxuriant plant, 15 inches high, with open panicles, 4-5 inches long, was sent me [No. 2336] by Mr G. C. BROWN from Backwater, Weymouth, Dorset, 1925.

2787. *FESTUCA OVINA* L. W. O. Howarth, M.Sc., F.L.S. See paper in Linn. Soc. Journ. 29, 1925. Here four of Hackel's varieties are raised to species.

1. *F. CAPILLATA* Lam. Fertile glumes not awned. Lamina capillary, 0.3-0.5 mm.
Var. *HIRTULA* (Hack.). All glumes covered with minute appressed hairs. Lower leaves with spreading minute hairs.
2. *F. OVINA* L. Fertile glumes awned. Radical sheaths entire only at extreme base.
Var. *HISPIDULA* Hack. Back of flowering glumes minutely hispid, margins ciliate.
Var. *FIRMULA* Hack. Fertile glumes 4-5 mm. with scabrous or hispidulous back. Leaves somewhat firm.
3. *F. SUPINA* Schur. Leaf sheaths entire in lower $\frac{1}{2}$ part. Panicles 2-4 cm. long.
4. *F. LONGIFOLIA* Thuill. (*DURIUSCULA* auct., not of L.). Lamina subjuncaceous or juncaceous, smooth, 0.7-0.1 mm. diameter.
Var. *TRACHYPHYLLA* (Hack.). Lamina rough, especially about the tip. Doubtfully native.
5. *F. GLAUCA* Lam. Culm 20-40 cm., angular (rarely rounded) above and usually smooth. Leaves smooth, more or less pruinose. Glumes more or less pruinose. Spikelet 5-8 mm. Rachis more or less straight. Cultivated.
Var. *CAESIA* (Sm.). Spikelets 6-7 mm. Rachis wavy. Somerset; Bury St Edmunds, Suffolk; Banks of Avon, Gloucester; Leicester.

1, 2 and 3 are narrow leaved forms. In 1 the transverse section of the lamina is rounded. The subepidermal sclerenchyma is continuous and there are 5 vascular bundles. In 2 the lamina is more keeled, and there is discontinuous sclerenchyma and 5 vascular bundles. 3 is the same as 1 but with 7 vascular bundles. The leaf sheaths in 1 and 2 are split at base. in 3 entire in the lower $\frac{1}{2}$ or $\frac{1}{4}$ part.

The ligule auricle in 1 is prominent and prolonged slightly upwards; in 2 it is scarcely prominent, and in 3 it is finely or coarsely ciliate.

The panicle in 1 is narrow, the spikelets compact and small, the glumes at most sharp pointed; in 2 it is more open, the spikelets are larger, and the glumes distinctly awned. 1 mm. or more long.

2802. *BROMUS INERMIS* Leyss. Hungarian Brome. See U.S.A. Dep. Agr. Bull., 1433. A native of central Europe, extending to China. Adventive in Britain coming in probably from American sources, where it was introduced in 1884. It is now largely cultivated in the Dakotas, Montana and Western Canada, where seed is produced. It yields from 260-600 pounds per acre. A bushel weighs from 10-20 pounds and each pound contains about 137,000 seeds. I noticed it three years ago on the railway cutting near Aanalness in Norway, and this year, in some plenty, on the army

training ground at Upsala in Sweden, and by the railway near Reading, Berkshire.

2803 (2). *B. UNIOLOIDES* H.B.K. as *B. SCHRADERI* Kunth. Rescue Grass. A native of South America particularly abundant in the Argentine and Uruguay. It was first described from Carolina specimens in 1806. It is grown in South Africa and largely in Australia. The seeds are as large as oats, a bushel weighing 14-16 pounds.

2806. *B. SECALINUS* L. U.S.A. Dep. Agr. Bull., 1433. Cheat or Chess. Sometimes sown as an annual hay grass in the southern portions of the States under the name Arctic Grass. The name is derived from the supposition that wheat degenerated into this "Cheat" grass. Of course it is a distinct species.

2862. *TAXUS BACCATA* L. A case has occurred in Stirlingshire of sheep-poisoning through eating the twigs of the Yew. Sheep had been grazing in the park for a good number of years, but this was the first time any had been known to suffer. See *Gard. Chron.* ii., 33, 1925.

2880. *ASPLENIUM MARINUM* L.,* var. *PLUMOSUM* (Wollaston), teste Dr STANSFIELD. Near Budleigh Salterton, Devon, 1925, Major ORME. This was originally found in Guernsey by Mr C. Jackson, and in North Devonshire by Miss Price and Mr Thompson. It has not been seen for the last fifty years.

2892. *POLYSTICHUM BRAUNII* Spenn. under the name *Aspidium Braunii*. C. Schneider has a paper on this fern in *The Garden* for April 4, 184, 1925. Its history as a British plant is given in *Rep. B.E.C.*, 398, 1913, where it states that the figure of *angulare* in Step's "Wayside and Woodland Ferns" was identified by my friend, Dr H. Woyнар, as *Braunii*. The plant grew in the rockery at Kew. Its claim to being a British plant rests upon a specimen gathered by the Rev. W. H. Painter, near Bristol, on the Somerset side of the Avon.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1925.

(Owing to exigencies of space and the erratic receipt of foreign works
this is necessarily incomplete.)

ALSTON, A. H. G. Revision of the Genus *Cassipourea* Aublet. Into this he merges *Weihea* Sprengel. 62 species are described, *C. euryoides*, *C. Honeyi*, *C. celastroides*, *C. obovata*, *C. glomerata*, *C. latifolia*, *C. lasiocalyx*, *C. nodosa*, and *C. paradoxa* being new species. There are in addition many new combinations owing to the reduction of *Weihea*, *Dactyopetalum* and *Anstrutheriana*. Kew Bulletin 241-276, 1925. We heartily congratulate our member, the Rev. T. Alston, on his son's very promising entrance into systematic work.

ANNALS OF BOTANY. Vol. xxxix., 1925; 15/-. Thoday, T. The Geographical Distribution and Ecology of *Passerina*, 175. Good, R. D'O. Past and Present Distribution of the *Magnoliaceae*, 409. Adamson, R. S. Leaf Structure of *Juncus*, 599. *J. bufonius*, *ef-fusus*, *maritimus*, *subnodulosus* and *squarrosus* are included. Haber, Julia Mosel. Anatomy and Morphology of the Flower of *Euphorbia*. Prankerd, T. L. Ontogeny of Graviperception in *Osmunda regalis*. Guppy, H. B. A Side-issue of the Age and Area Hypothesis. Snow, R. The Correlative Inhibition of the Growth of Axillary Buds. Haas P., and Hill, T. G. *Mercurialis*. Holm, Theo. On the Development of Buds on Roots and Leaves.

ARLSCHWAGER, E. and SMILEY, E. M. Dictionary of Botanical Equivalents. pp. 124, 1925; 16/6. Williams and Wilkins Company, Baltimore; Baillièrè, Tindall & Cox, 8 Henrietta Street, London. This volume supplies a need which is often experienced when one meets with a technical word in foreign botanical literature. It gives German-English, Dutch-English, Italian-English, and French-English, the latter by Mr Smiley. That it supplies a definite want is evidenced by the appearance of this second well printed edition which gives over 7500 names. The choice of type is good and the definitions terse and precise. An interesting page

or two gives an opportunity of according to the various composers and proof readers the press workers, cutter, folder, keyboard and carters, with their names, due praise for producing this small compact volume which merits the motto " Sans tache " with which these two pages—reminiscent of Fuchs Herbal—is headed.

BAILEY, L. H. THE PRINCIPLES OF VEGETABLE GARDENING. Eighteenth edition, revised and reset. pp. 490. Macmillan & Co., New York, 1921; 20/-. Allusion has again and again been made to the extraordinary good work by this most indefatigable writer who indeed in his encyclopedic knowledge and unwearied work has had only one serious rival in our own Loudon, but Loudon belongs to an earlier period. In this classic work—the demand for which speaks volumes as to its character—it is of course gardening in the United States which is treated on, but on almost every page there is some information given which cannot but be of use to the British gardener. As the author says, the first obligation of the horticulturist is to know his plants and be able to grow them, and on both these points the volume will materially aid. It is one of the Rural Science Series to which Mr Bailey has contributed works on the Principles of Fruit-growing and of Agriculture and, as he says, the great Rose Family so abundant in the Fruit-growing work, in this on Vegetables is practically unrepresented. The Rutaceae, Myrtaceae, Vitaceae, Palmaceae and Cupuliferae are unrepresented—whereas Cruciferae, Chenopodiaceae, Labiatae, Compositae and Umbelliferae are absent from the first category—showing there is a real divergence between pomiculture and olericulture. The vegetables are divided into those in which the leafy and growing parts are eaten. They are 114 in number, and we notice many are included which are not used in Britain. We see that *Montia fontana* is included. There are 59 Root Vegetables and 74 Fruit Vegetables. In 1889 Sturtevant (*Agr. Sc.* iii., 174) classified 1070 species of cultivated food plants, and added that his notes included 4333 species of edible plants in 1383 genera, and 176 families. " It is good to know the plants on which these products grow." The book teems with sound practical information. The author knows what to say and how to say it. The numerous inset figures add much to the usefulness of the work, nor are the remedies against the attacks of in-

sects of fungicidal diseases omitted. Pumpkins and Tomatoes naturally have considerable space given to them and how to pack and grade is well described.

BAILEY, L. H. The Cultivated Brassicas. *Gentes Herbarium*, i., 51-108, f. 18-49, 1922.

BALFOUR, F. R. S. Botany in the History of Peebleshire; chap. i. Reprint, pp. 89. Includes phanerogams, mosses and hepatics. This work brings up the list of Peebles species to something more like completeness, although there are many gaps to be filled up which persevering search will assuredly find. The highest point on Broad Law is 2723 feet, but the county is poor in alpine species and the soils are not productive, and much land is under sheep. We note that several plants duly recorded in our Reports have been overlooked. *Euphrasia Lumbii* Druce is as yet unknown elsewhere. We first named it *E. variabilis*, a pre-occupied name. The chief additions to the county flora are given under New County Records. I query the occurrence in the county of *Viola lactea* Sm. It had better be omitted as should that of *Lychnis Viscaria* L. from Glen which I never saw there, nor did I see *Stellaria nemorum* L. which is a likely plant to occur. *Spiraea Filipendula* L. is surely only a planted species at Glen. *Saxifraga oppositifolia* L., moist soils near Glen, and *Hottonia palustris* L. need verification. *Carex paradoxa* Willd. is almost certainly an error. No localities are given for *Potentilla Sibbaldii* Hall., *Hymenophyllum tunbridgense* Sm., *Chrysoplenium alternifolium* L., *Asperula taurina* L., *Verbascum Thapsus* L., *Rumex sanguineus* L., *Carex laevigata* Sm., *Melica uniflora* Retz., *Festuca rigida* Roth, *Equisetum sylvaticum* L., etc. These are desirable. The *Valeriana officinalis* L. from Glen, etc., is *V. sambucifolia* Mik. *Populus serotina* Hart., *Vicia angustifolia* (L.) Reichb. (Rep. B.E.C. 104, 1917), *Alchemilla minor* Huds. (*l.c.*, 106), *Rosa apricorum* Rip. (Glen), *R. pseudo-rubiginosa* Ley (Glen), *Crataegus monogyna* Jacq., var. *quercifolia* Booth (Traquair), *Anthriscus sylvestris*, var. *angustisecta* Druce (Traquair), *Cichorium Intybus* L. (Glen 1909, onwards), *Taraxacum laevigatum* DC. (Glen), *T. specabile* Dahlst. (Glen), *Mentha gentilis* L., *Urtica dioica* L., var. *an-*

gustifolia W. & G., *Agrostis pumila* L., *Euphrasia borealis* Wettst., *E. brevipila* Burn. and *E. micrantha* Fr., are among many recorded plants which are omitted. We are grateful for this contribution to the Flora of Peeblesshire which Mr Balfour has kindly allowed us to see.

BEAN, W. J. SHRUBS FOR AMATEURS. pp. 117, tt. xv. Country Life Ltd., London, 1924; 5/-. In this small compact volume Mr Bean has again laid the owners of small and even large gardens under a debt of gratitude since his wide knowledge is placed unreservedly at their service. Trees, Conifers, Rhododendrons and Climbers are not included. He defines a shrub as "a woody plant that does not form a single clean trunk" but, as he would acknowledge, no strict line of demarcation can be drawn. Morison in his *Historia* reserved a volume for the Arbores which never saw the light but his Arbores were woody perennials so that the Thyme and the Rock-rose would be in the same group as the Pines and Oaks. But there are enough shrubs to serve under Mr Bean's definition. Of these he figures *Viburnum tomentosum*; *Cistus Loreti*, a beautiful hybrid; *Aesculus parviflora*, *Picris japonica*—the name recalls the sight of it on a hill-slope above Hakone—*Buddleia variabilis*, that most attractive plant alike for *Lepidoptera* and mankind; *Rhus Cotinus*, *Berberis stenophylla*, the early flowering *Magnolia stellata*; the New Zealand *Olearia Haastii*, which is really hardy and, somewhat unexpectedly, *Camellia japonica*, which we are accustomed to connect with cool-houses, but sheltered, it bears our weather better than it does our limy soils. I saw it growing in bitter cold on the slopes of Fuji Yama in Japan, but never so beautifully as in avenues in the mild sheltered crater of the Azorean volcano at Furnas, where trees, alternately white and red-flowered, made a carpet of fallen petals under them. Practical hints are given on Cultivation, Transplanting, Arrangement, Pruning, and Propagation, and a list of the shrubs with the time of their flowering is included; also shrubs for the rock garden, dry places, and poor soils, shrubs for autumn colouring, and shrubs with handsome or curious fruits, etc. The selection of shrubs described is excellent and, by its guide, a great improvement on British gardens might easily and inexpensively be made. The cover is adorned with *Cotoneaster Simonsii*.

BEAN, W. J. TREES AND SHRUBS HARDY IN THE BRITISH ISLES. 2 vols., pp. 704 and 744. John Murray, 1925; 63/-.

BEAUVARD, G. Phanerogamarum Novitates Complément à l'études *Paronychia Sisyriuchium, Ostenianum* Beauv., etc. Sur la flore vasculaire des environs de Modane de Bardonnèche et de Suisse, 1922. Contribution à la géographie botanique des Alpes de Savoie-Massif des Vergys, 1923. Une plante mal connue "L'Edelweiss." Le Paysage alpestre et son interprétation botanique. Echo des Alpes, 1923. Documents systématique relatifs à la connaissance phylogénétique des genres *Pulsatilla* et *Erythronium*. A propos d'une nouvelle espèce européenne du genre *Eleocharis* = *E. benedicta* in lunosis ad oras lacus alpestris dicti "Bénit" sabaudiae circa 1500 m. alt. Notes sur les *Taraxacum* à ligules eurolées. Bibl. zur Vierteljahrsch. Zurich. N. 3, 1924. Three forms are given—*T. cucullatum* Dahlst., *T. fontanum* Hand.-Mazz., and *T. stramineum* Beauv. Quelques plantes nouvelles du Valais. Nouveautés floristiques de la Vallée de Tourtemagne (Valais). Bull. Soc. Bot. Genève., 1923.

BENNETT, S. A., and CHASE, C. D. A list of plants growing in the grounds of Campbell College, Belfast, 1925.

BEWS, J. W. PLANT FORMS AND THEIR EVOLUTION IN SOUTH AFRICA. pp. 199. Longmans, Green & Co., 1925; 12/6. In the Oxford Herbarium there is a large collection of plants made by Du Bois, a treasurer of the East India Company. It is enriched by a number of Cape of Good Hope plants which were collected by A. Brown about 1700 and are among the earliest known. Cape plants were grown in the greenhouse at Oxford and at Badminton before 1720, but a Francis Masson, who discovered *Centaurium scilloides* (the white-flowered plant) in the Azores, also visited South Africa and introduced many plants to our English gardens. And as the early pages of the Botanical Magazine testify, Cape plants became very popular. The Pelargoniums and Ericas to our ancestors were what the Rhododendrons are to us. The Cape, as Prof. Bews says, has 480 species of Erica. A point was raised by a reviewer, whence was the source. It was suggested that South Europe or North Africa may have been the centre of dispersal. Prof. Bews has treated the matter from an

ecological standpoint and he has opened out many interesting fields for speculation. He is wise in his advice against coming to hasty conclusions. An immense amount of information about a most fascinating flora is given, for which all botanists must be very grateful.

BLACK, J. M. FLORA OF SOUTH AUSTRALIA. Part ii., pp. 155-358. Rogers, Adelaide, 1924; 5/-.

BONAPARTE, Prince ROLAND, Membre d'Institute. Notes Pteridologiques. Fasc. xiii., pp. 304, 1921. One may again call to mind that the nomenclature is practically identical with Prof. Christensen's Indicum. *Dryopteris* is used vice *Lastrea* and *Phegopteris* is merged into it. *Phyllitis* is also used. This volume deals mainly with plants in the Prince's own Herbarium and with Brazilian species collected by Glaziou and Brusser. Fasc. xiv., pp. 492, 1921. Here is given *Dryopteris Filix-mas*, var. *abbreviata* Bab., but the authority surely is (Lam.) bracketed. *Pteridium* is used for the Bracken but, as Schinz and Thellung have shown, the correct name is *Eupteris* Newman. This volume contains many Madagascar species. Fasc. xv., pp. 54, 1924. Includes Roosevelt's specimens and the African plants from Dummer. Fasc. xvi., pp. 198, tt. 8 concludes the series for 1925. The last volume was graciously sent me by H.H. Princess Georges of Greece. This volume, prepared by His Highness during his distressingly painful illness, describes many Madagascar Ferns and includes a map of that wonderful island. Many of the specimens are described by Christensen, who did much work in its preparation. It may be added that Fascicle 6 was not issued but the material for it has been distributed through the remaining fascicles—15 in all. It is a remarkable publication which is of great importance to Pteridologists. As we have said elsewhere, his daughter, the Princess Georges of Greece, has had the collection on which the fascicles are based (10,000 in number) splendidly and conveniently housed at 57 Rue Cuvier, in the Galérie Roland Bonaparte, a fitting monument to a great scientist and a most kindly man.

BONNIER, GASTON. BRITISH FLORA. Translation and adaptation to British conditions by Ethel Mellor, D.Sc., of La Nouvelle Flore du Nord de la France et de la Belgique. pp. 315, with 2,300

text figures and map. J. M. Dent & Co., London, 1925; 7/6. While we are awaiting a new British Flora, we have here a compact and handy volume which, while it labours under the disadvantage of being drawn up from French material, will be helpful to run down the larger species, owing to the terse descriptions and the numerous text figures. Many of our manuals err in using too lengthy and too technical terms. Bonnier himself was content with simple language and aptly chose salient characters. As he said "if the features of a person are described in detail he is not recognised, but if the face be seen the person is recognised always." The minute description of a plant is not sufficient for its determination. When the plant is seen the observer experiences a security which is not given by the description. The faults incidental to such a translation—which demands an editor well up in field-work and recent botanical investigations in Britain—are of using habitats which may be correct for France but do not apply to English plants. For instance, *Dianthus caesioides* does not grow with us in chalky fields. We miss many plants which ought to find a place and we find the inclusion of many for which there is little excuse:—for instance *Scorzonera grandiflora* is given. Yet, surely, if the garden *Scorzonera* is included the almost certainly native *C. humilis* should have been included. Here it may be said that a useful feature is the inclusion of many cultivated species which will prove helpful to the young botanist who may find a garden flower run wild and is tempted to refer it to some rare British plant. How many mistaken records of *Cotoneaster integrifolia* could have been avoided had our British Flora included descriptions of *C. microphylla* and *C. Simonsii*. Again *Prunella grandiflora* is described but not *P. laciniata*, which is found wild in many localities. The extinct *Carex Davalliana* finds a place but not the native *C. microglochin*. *Euphorbia Esula* and *dulcis* (but not *E. virgata*), *Ajuga genevensis*, *Cerastium nigrescens*, *Pyrus minima*, *Alchemilla argentea*, *Rumex arifolius*, *Orobanche reticulata*, *O. Ritro* (yet *O. ramosa* is in as an alien upon an alien), *Epilobium Lamyi* or *obscurum*, *Populus serotina*, *Spergularia atheniensis*, *Sagina scotica*, *Hydrilla*, *Tillaea aquatica*, *Orchis praetermissa*, *Gentiana septentrionalis*, *Limonium lychnidifolium* and *Carex fulva*, among others, find no place; whereas *Myosotis stricta*, neither a garden nor a native plant of Britain is included. The retention of the alien *Najas*

graminea is needless, and why is *Digitalis grandiflora* given? And why *Cornus Mas* and not *stolonifera*? Again the nomenclature used seems to follow no rule. At present our five British Floras are hopelessly discordant. This adds a sixth instance of divergency. In Britain there is no authentic evidence of the occurrence of *Rumex aquaticus* or *Salicornia fruticosa*. Some old hoary errors are perpetuated, e.g., *Orobanche arenaria* and, of course, *Roemeria*, *Pinguicula alpina*, *Tordylium* are given as if existing in Britain. The generic names of *Filago* and *Gnaphalium* are hopelessly confused. We have no *G. arvense* either garden or wild, nor *Helichrysum arenarium*. Such inclusions are mischievous. Four genera are included under *Orchis*. *Habenaria virescens* appears as *O. montana*. We cannot trace *Habenaria intacta* in the work at all. What object can there be in employing archaic and incorrect names such as *Ranunculus philonotis*, *Scirpus Rothii*, *Cirsium anglicum*, *Erythraea* instead of *Centaureium*, and *Statice* instead of *Limonium*. Many of the *Carex* names are also incorrect. Other examples are *Ornithopus ebracteatus* (*pinnatus* is the correct trivial), *Valerianella Morisonii*, *Crepis tectorum* (neither hortal nor British), and *C. virens*. *Cuscuta major*, instead of *europaea*, cites a pre-Linnean author. Miss Mellor has added about 70 species to those given for the area treated by Bonnier, and has deleted a few (but not all) which do not occur in Britain. On the whole the work is commendably free from misprints. Useful directions are given for the collection and preservation of specimens. Of course the book is not meant to be an intensive study, so we have only one Hawthorn, one Dandelion, one Capsella, five Rubi, two Burdocks, five Roses, one Eyebright, two Elms, and seven Fumarias. The best and most useful part of the work is the index which Miss Mellor has prepared. This abounds with useful information, giving as it does the etymology of the genera, some of the synonyms, and the properties of the plants. But is it *Mentha sativa* that is used in making Crème de Menthe?

BORGESSEN, F. Contributions to the Knowledge of the Vegetation of the Canary Islands in D. Kgl. Dansk. Vid. Selsk. Skr. natur. og mathem. Afd. 8. Raekke. vi., 3, 285-398, tt. 58, 1924.

BOTANICAL ABSTRACTS. Vol. xiv. William Wilkins Co., Baltimore, 1925.

BOURCART, E., D.Sc. INSECTICIDES, FUNGICIDES AND WEED-KILLERS. A Practical Manual on the Diseases of Plants and their Remedies, for the use of manufacturing Chemists, Agriculturists, Arboriculturists and Horticulturists. pp. 431. Scott, Greenwood & Son, London, 1925; 15/-. Translated from the French and adapted to British Standards and Practice. Second edition, revised and enlarged, by THOMAS K. BURTON. That this work has created a demand is evidenced by this well-printed and well-arranged second edition by Mr Burton. It is especially valuable from the various recipes given being of tried effect. The insecticide industry has been developed especially in the United States, where an active and paternal government and an excellently organised and most energetic agricultural department is tackling the great problem which cultivation of plants on a large scale is sure to create. The chief preventive methods are those by water, sulphuretted hydrogen, carbon bisulphide, sulphurous and other acids, phosphorus compounds, arsenious acid and compound alkalies, metallic salts, copper preparations—perhaps the most valuable of all—hydrocarbons, grease-banding, and poisonous alkaloids such as nicotine. To gardeners and agriculturists this work will be of real practical value, and when it is recognised that at least ten per cent. of our vegetable produce is the toll taken by plant-diseases it will be admitted that the practical utility of such a work as this must be very great. The chapter on sulphate of copper dressing for seed-wheat is alone worth the cost of the volume. There is a good index and the book is well printed and arranged.

BOWER, Prof. F. O., F.R.S. The Natural Classification of Ferns as a Study in Evolutionary Methods. Three Royal Institution Lectures, May and June, 1925. *Nature* ii., 136.

BOWER, F. O. PLANTS AND MAN. Macmillan & Co., Ltd., 1925. Professor Bower gives us in this volume a most instructive collection of essays on various aspects of man's relations with the vegetable kingdom—our entire dependence on it, direct or at second hand, for food; the injuries which we inflict upon it; the improvements which we have produced in vegetables and fruits; the changes which we have evolved in flowers; our various needs of different

kinds of food; the necessity for us of the three "Vitamins;" the fascinating resemblance between man's and plant's methods of engineering, together with interesting discussions on parasites, on "conjoint life" and on the not very old discovery of "Mycorhiza." The story of plant life and growth takes up chapters i., ii. and iii. In iv. is pointed out the theoretically unlimited scheme of the plant body as bearing on the size of plants, and in chapter v. the effect on plant developments of the fixed position as compared with the mobile life of most members of the animal kingdom. Under the head of "Meadow and pasture," he tells us of the parasites which so much injure it and we shall regret to find, if not already acquainted with the fact, that the happy-looking Eyebright and our merry friend the Yellow Rattle are among these thieves of the vegetable world. In chapter xxiii. he enlarges on this subject as regards flowering plants. As with human parasites, so with plants, it is a case of degeneracy from a nobler life, such plants having more or less completely lost their chlorophyll, their leaves, their proper roots—in a word, their self dependence. In this way plants of very different orders have fallen from the high estate of their ancestors. Most curious of all is the *Rafflesia*, of whose strange buds and enormous blossoms we are given excellent pictures. In chapter xxvi., the Professor discourses on Fungal parasitism, and gives us the now well known story of the *Aecidium Berberidis*. When the farmers asserted that the rust in wheat was caused by the Barberry the sceptics laughed, but "old experience" proved to be right after all. The lesson is one to be remembered and now other precisely similar cases have been discovered and, like the *Aecidium*, have been made the subjects of legislation. But these studies of parasitism lead us up to a much more pleasant arrangement—the mutual assistance of a Fungus and a tree or smaller plant to the benefit of both. This form of symbiosis, co-partnership or conjoint life has been called Mycorhiza, and there are, we are told, two forms of it. In the first the fungus is entirely outside the tree—Oak, Hornbeam, Beech—and draws from the soil soluble salts, combined nitrogen, and even perhaps organic material from the humus. This nourishment it supplies to some of the rootlets of the tree and, it may be, receives carbohydrates in return. In the second case the fungus penetrates the living cells of its host, the symbiosis being more intimate than in

the first case. This is characteristic of heather, rhododendron, and some orchids. The fungus reaches not only the root but also the stem, the leaves and even the coats of the seed. Experiment has shown that the heather is absolutely dependent on the fungus for the growth of the seedlings and for its subsequent existence, and on this "infection" by the fungus the life of various orchids has also been shown to depend. The history of the Bird's-nest Orchis illustrates this wonderful co-partnership. The subject suggests wide possibilities of research. But we now come to the more practical part of the essays—man's direct relation to the vegetable kingdom. In chapters vii. and viii. a very much needed warning is given for many governments. We are told, with plentiful statistics, of man's destruction of the forest. In the long war between forest and meadow nature has long ago established a truce and a balance; but man, regardless of the future wants of his race and forgetful even of the danger to himself from this reckless expenditure of capital, is everywhere cutting down the forest and failing to replenish it. "The whole world," says the Professor, "is living a spendthrift life." There is, too, the continual loss of instructive and interesting plants, even as in the animal world so many creatures are being exterminated through selfishness, greed and vanity. And who can say but that some of these endangered plants may have properties of infinite value to man? The strange and extreme changes which can be effected in cereals, fruits and vegetables by selection occupy chapters xiii., xiv. and xv., and the subject is illustrated by the manifold derivatives of the wild *Brassica oleracea* and *B. campestris*. In reading chapter xii. one may be permitted to doubt whether such changes as have been produced by "doubling" Peonies and Dahlias have not been the reverse of improvement, and the comparison which is beautifully shown on page 141 between a wild "Guelder Rose" and the meaningless ball of sterile flowers that passes for it in our gardens certainly allows us to think that nature's taste is superior to ours or at any rate to the gardeners' who produce it. In chapters xvii. to xx. we have a point of immense interest—the mechanical construction of trees and plants by which they are enabled to support or recover from the assaults of winds and storms. The professor points out the similarity of the various methods adopted by man and by plants to secure strength. It scarcely appears that men

have anywhere copied nature but one may well believe that the engineer of the future, if also a botanist, may some day get an idea from her plans. Chapter xvi. should be interesting to the matron and caterer of our homes and indeed to all who have regard for health. There we have impressed upon us the necessity of variety in food for all—fresh fruits, green vegetables, and the like, and we are told the story of the three "Vitamins" with cautions as to their preservation during the cooking of the foods which contain them. An interesting point here is the way in which men have, by some instinct and without any science, combined different foods to supply a perfect diet, as for instance almonds and raisins. In an old book, "The Chemistry of Common Life," other cases of the same thing were given, the result of either taste or of experience. Cress grown on layers of cotton wool, an amusement of our young days, is suggested as supplying a green food when other such food is not procurable. And we are not to forget that dried and preserved fruits and vegetables are not of the same value as fresh ones. We shall all of us welcome his allusion to "sensational writing" on such subjects as he has been treating of. Most of us have come across popular books of the sort, and perhaps been misled by them! These essays have mostly been reprinted from various publications and even yet I have not enumerated all the interesting subjects on which the Professor has instructed us, as the lessons of the seashore, the botany of golf links and playing fields, the production of textiles and twine, bacteria, and even scavenging and its necessity. But it will be seen that he has been equally instructive and practical in them and one can only hope that his warnings on the subject of health and on man's thoughtless interference with nature may not be without effect.

F. BENNETT.

BRITISH BRYOLOGICAL SOCIETY. Report for 1925. President, S. M. MacVicar. Includes new discoveries, also an interesting paper on "An Autumn at the English Lakes," by Rev. C. H. Binstead.

BROWN, N. E. *Mesembryanthemum* and some new Genera separated from it. Gard. Chron. ii., 211, 232. Shows that the Linnean genus was made up of discordant elements and is badly described. He makes *M. umbellatum* L. the type of the newly restricted genus and gives a very useful clavis to the large number of genera (48)

which he makes. He says the fruit-characters have been greatly neglected by botanists, although they are of great taxonomic value.

BROWNE, Lady ISABEL M. P. Notes on the Cones of the Calamostachys type in the Renault and Roche Collections in the Museum à Histoire Naturelle at Paris. *Annals of Botany*, vol. 39, 313-358, 1925. Structure of the Rhizome of *Equisetum giganteum*. *Bot. Gazette* 80, 47, 1925.

BULLETIN OF THE TORREY BOTANICAL CLUB. Vol. 52. Editor, Tracy Elliot Hazen.

BURKILL, I. H., and HENDERSON, M. R. FLORA OF TAIPING. This is one of the Federated Malay States. 1980 species of flowering plants are recorded, of which 41 have been introduced. The authors state that there are 360 endemic species in the Malay Peninsula.

CAMBRIDGE: DELECTUM SEMINUM EX HORT. CANTABRIGIENSE ACADEMIAE, 1925. Arranged according to Engler's System. No capitals are used for species named. Aizoidaceae not Ficoidaceae or Ficoideae is used. Has not Tetragoniaceae the prior claim?

CANADIAN ARCTIC EXPEDITION, 1913-18. Report of the Botany. Vol. 4, by G. K. Merrill. Lichens. Vol. 5. Southern Party, 1913-16, by Fritz Johansen. F. A. Acland Ollaway, 1924.

CHAMBERLAIN, Prof. C. J. Methods in Plant Histology. 4th revised edition. pp. xi., 349. Chicago University Press; Cambridge University Press, London, 1924. Origin of Cycads. *Science* 61, 1925. "We feel certain that the facts already known prove that the Cycadales have come from the Cycadofilicales (Pteridosperms) and that the differentiation of the two groups may have occurred long before the end of the Carboniferous." *Comparative Morphology of Cytoplasm and Chromatin*. *Bot. Gaz.* 80, 203, 1925.

CHARBONNEL, J. B. *Menthae Exsiccatae de la Monde du Plantes*, 1924-25. Includes a large number of varieties of *Mentha longifolia*.

CHEESEMAN, T. F. MANUAL OF THE NEW ZEALAND FLORA. 2nd edition. Edited by W. R. B. Oliver. pp. xlv., 1163. W. A. J. Skinner, Wellington, New Zealand, 1925.

CRAIB, W. G. FLORES SINENSIS ENUMERATIO. pp. 198. Luizac & Co., London; 12/6.

CURTIS'S BOTANICAL MAGAZINE. Edited by O. Stapf, Ph.D. tt. 9035-9081. The name *Crocus Kotschyanus* is properly restored for the plant figured by Maw in Genus *Crocus*, t. iv., as *zonatus*, Koch having described his plant 12 years before Klatt described *zonatus*. We are glad to see that Miller's Abridg. of Gard. Dict., ed. 1754, is cited for *Pulsatilla*, and the editor adopts the separation of it as a distinct genus, despite the union of it with *Anemone* by Bentham and Hooker. A beautiful new species *Chionodoxa Siehei* is described by Stapf. It was discovered by George Maw on Nymph Dagh in Asia Minor.

DAHLSTEDT, H. Taraxaca from Västra Norge. Bergens Mus. Aarbok, N. 6, 1923-4.

DANSER, Dr B. H. Over de Beteekenis van de Plantengeographie voor de Phylogenie de Systematick. pp. 31, 1925. *Rumex exsul*, nov. hybr. (*R. fennicus* × *nepalensis*) overg.-ned. Kruid. Arch. 213, 1925.

DAVIDSON, J., D.Sc. A LIST OF BRITISH APHIDES. Including notes on their Synonymy, their recorded Distribution, and Food Plants in Britain and a Food Plant Index. pp. 176. Longmans, Green & Co., London, 1925; 12/6. This is one of the valuable Rothamsted Monographs on Agricultural Science which have been edited by Sir E. John Russell. The last work on the subject, Buckton's Monograph of British Aphides, was issued 1871-1883. Since then many species have been added, and the nomenclature (Botany has not the monopoly of phantasmagorical changes) has "undergone revolutionary changes." Here the species are arranged in alphabetical order. The starting point in nomenclature dates from the *Systema Naturae* of Linnaeus 1758—so that some of the names used by Buckton, who went back to 1737, are not retained. It is to be regretted that the plant names are not more in accord with the *Actes* or general use. There is no excuse for *Tussilago petasites* or *Triticum repens* being chosen, as Linnaeus spelt the former with a capital. In this work no capitals are used in the case of old generic

names or those based on a personal name, e.g., *Achillea millefolium*, or *Asplenium felix-foemina*, so an inexcusable name is used twice for one plant since no author of repute now puts the Lady Fern as an *Asplenium*. Other extraordinary plant names are *Arundo Epigos*, *Fontederia cordata*, *Chenopodium quinosa*, both *Alisma aquatica* and *A. Plantago*, *Pimilea*, *Acrolinium*, both *Rhinanthus Cristagalli* and *R. minor*, *Larix decidua* and *L. communis*. But there are many others which suggest calling in a taxonomist to revise the next proof sheets. "*Carex dioca*" (as it is spelled in several places) "roots in nests of ants," a very unusual habitat. As far as the Aphides are concerned the work is valuable, rendered more so, as it is, by a separate list of generic names, with synonyms. There is a good bibliography. That it is well got up and printed the names of the publishers are a sufficient guarantee.

DEVON. Sixteenth Report on the Flora and Botany of Devon. Recorder, Miss C. E. Larter. Trans. Devon. Ass. 56, 111-121, 1924. Includes *Draba muralis* L. from Bishop's Tawton, "the only satisfactory record" for Devon; *Rubus Leyanus* Rogers from Atherington, Hiern; pink-flowered *Oxalis Acetosella* from Loxhore; *Ophrys Trollii* from near Veaton, and *Lilium Martagon* L. from Luppitts. When will a general Flora be published? There are many MSS. records and Miss Larter is to be congratulated in bringing these various notes together.

DIXON, H. N., and NICHOLSON, W. E. New British Bryophytes. Journ. Bot. 125, 1925. *Webera calcarea* Warnst. (Lewes, Belfast); *Grimmia andreaeoides* Limpr. (Snowdon); *Fossombronia Loitlesbergeri* Schiffn. and *Gonglanthus ericetorum* Nees (Lizard); *Cephalozia compacta* Warnst. (Goathland, Yorks).

DOMIN, Prof. KARL. Contributions to the Morphology and Teratology of Plants. Bul. Intern. l'Acad. Sc. Bohème, 1923. Instances of coleophylla in *Ranunculus bulbosus* are shown, and the evolution of leaves in *Sambucus nigra* and *Ononis spinosa*.

DRUMMOND, Prof. J. M. E. Royal Phil. Soc. of Glasgow, February, 1925. The average Linnean species which resolved itself under cultivation into a number of smaller units commonly called

varieties "could be further analysed into still smaller units, the 'pure lines'," and these may be separated from one another in the case of self-fertile plants by the simple expedient of breeding in each generation from a single self-fertilised plant. Such pure lines have been proved to maintain their distinctive characters for over fifty generations, and there is no reason to doubt that if there be any unit of a higher order of magnitude than the individual, which represents the unit of evolution, that unit is the pure line.

DYMES, T. A., F.L.S. On Collecting and Curating Fruits and Seeds for the Study of Local Dispersal. Essex Nat. xxi., '43-59. This is an extremely practical paper containing valuable suggestions and we would much like to reprint it in a condensed form.

ENGLER AND PRANTL. PFLANZENFAMILIEN. Ed. 2, enlarged, A. ENGLER. Mosses, 2nd part, V. F. Brotherus, pp. iv., 542, tt. 376 and Indices, vols. 1 and 2. W. Engelmann, Leipzig, 1925; 34 marks.

ENGLER, A. DAS PFLANZENREICH. Cruciferae-Brassicaceae. O. E. Schulz. pp. 100, tt. 26, 1923. Euphorbiaceae. F. Pax & K. Hoffmann. Engelmann, Leipzig, 1924.

EDINBURGH. TRANSACTIONS AND PROCEEDINGS OF THE BOTANICAL SOCIETY, vol. xxix., 1924. *Carex microglochin*, Scottish Taraxaca G. C. Druce. *Primula Pauliana*, Prof. W. W. Smith. Additional Notes on the Flora of Culbin Sands, E. J. A. Stewart and Donald Patton. Notes on *Potamogeton* by Arth. Bennett. These include *P. alpinus* × *polygonifolius* found by Dr Druce at St Ouen's, Jersey; *P. alpinus* × *heterophyllus* = *P. nericeus* (Hagstr.) found by Dr Druce in the River Don near Alford, N. Aberdeen; *P. heterophyllus* × *polygonifolius* = *P. Seemenii* Asch. and Graebn. found by Dr Druce in the River Laune, Co. Kerry (see *Rep. B.E.C.* 631, 1922); *P. zosterifolius*, var. nov. *americanus* A. Benn. from the States; *P. coloratus* × *pusillus* = *P. perpygmaeus* Hagstr. (see *Rep. B.E.C.* 630, 1922). My authority for the Burwell plant, being the same as the Irish plant, was Dr Hagstrom. As regards the Lligwy station it must be remembered that a century ago a lake existed above the stream, but it is now drained. In that piece of water hybridisation

might have taken place and the parent or parents may have disappeared. *P. foliosus* Raf., found by our member, Mr W. D'Urban, near Exeter, Mr Bennett names var. *diffusus*, a grade questioned by an American authority. *P. alatofructus*, a new species, found in Mandschuria, named by Bennett *P. mandschuriensis*, is raised to specific rank. *P. Hagstromii* Benn. is from British Columbia and *P. venosus* from Natal. Notes on Caithness plants, Arth. Bennett. Moss Records for Selkirk, J. R. Simpson. Additions to the Flora of Orkney, Col. H. H. Johnston. These include *Taraxacum laetifrons* Dahlst., *T. subsimile* Dahlst., and *Zannichellia repens*. This replaces *Z. polycarpa* from the Loch of Kirkbister. *Agropyron junceum* (recorded as *Triticum*) \times *repens* has been described as \times *A. Hackelii* Druce. It is not the *acutum* of DC. with which it was at first identified. Obituaries are given of Eugene Warming and Richard Globe Guyer. Flora of Salisbury Crags, G. B. Wallace. Mentions "seeds sown on Calton Hill and the Foot of Salisbury Crags in the year 1822." All these are said to be extinct. *Silene italica* was collected in 1834. Mr Wallace enumerates 178 species. He noticed 68 species in 1924. Notes on British Carices, Arth. Bennett. Regarding *Carex Davalliana* Sm. Mr Bennett says that doubts were expressed for many years whether this really had occurred in Britain. That is so since the Mearnsian specimens were only a form of *dioica* (see Extinct and Dubious Plants of Britain), but Mr Forster's plant from Lansdowne, Bath, which I have in my Herbarium, is the true species. It is now extinct as the site was built over. *C. aquatilis*, var. *rigida*, Mr Bennett considers to be a "remarkable variety" quite unlike any form in the splendid series of the Scandinavian specimens in Almqvist's herbarium. It came from the banks of the Nith, Sanquhar, Dumfries, and Kenmore Holms, New Galloway. One may add that "var. *montana*" of *C. pulicaris* was named a forma not a variety. Specific rank is awarded to *C. discolor* Nylander. Bennett found it in Herbaria from Caenlochan, Forfar (B. White) but Nyman, Richter and Almqvist all refer it to a form of *salina*. *C. flacca* Schreb., 1771 = *C. diversicolor* Crantz, 1776. See my note in *Rep. B.E.C.* where the various varieties are put under the species of Crantz. *C. flava* \times *saxatilis* = \times *C. Marshalli* Arth. Bennet. I am not sure whether the first parent is typical *flava*. Additions to the Flora of Orkney, Col. H. H. Johnston. *Cer-*

astium tetrandum Curt., var. *eglandulosum* C. E. Salm. Col. Johnston found that the plants growing in the early season were eglandular, and that those growing in the later part of the year were glandular, but one cannot be certain if the original eglandular plants developed glands, although this is not unlikely. In such fluid species as *Cerastia* soils and exposure have great influence, and a varietal grade for such a divergence seems unnecessary. One regrets to see the name *Equisetum umbrosum* replace the valid name of *E. pratense* Ehrh., for which no reason can be assigned. Notes on Strand Plants, North M. Cummings. *Atriplex Babingtonii*. The name should be *A. glabriuscula* Edmondston, given in his Flora of Shetland before Woods named it *A. Babingtonii*. Notes on Canarian and Madeiran *Semperviva*, R. L. Praeger.

EDINBURGH ROYAL BOTANIC GARDEN, NOTES FROM. xv. Revision of the Genus *Nomocharis* and the Genus *Coluria*, W. Edgar Evans.

FARROW, E. BICKWORTH, M.A., D.Sc. PLANT LIFE ON EAST ANGLICAN HEATHS: being Observational and Experimental Studies of the Vegetation of Breckland. pp. 108. Cambridge University Press, 1925; 7/6. Notices of this have appeared in our Reports as it was being published in the Journal of Ecology. It is interesting to learn that lantern slides of the photographs can be obtained at 1/6 each from Flatters & Garnett, 309 Oxford Road, Manchester. The area treated is a fascinating one to the field botanist. It has an area of about 400 square miles, and its highest point is only about 150 feet in altitude. The underlying rock is chalk, which is for the most part covered by thin layers of boulder-clay or fine sandy deposits. The low rainfall (22.5 inches) shows that it is one of the driest districts in Britain. One of its features is the sudden transition from dry heath-land, where *Silene Otites*, *Artemisia campestris*, *Scleranthus perennis*, *Herniaria glabra*, *Silene conica*, *Carex arenaria*, etc., grow to the marsh occupied by *Drosera*, *Erica Tetralix*, *Hydrocotyle*, *Anagallis tenella*, etc. One of the curious factors is that of the influence in distribution caused by the immense quantity of rabbits with which the county abounds. Mr Farrow believes that they bring about the degeneration of Calluna-heath to grass-heath, and he includes some good photographs to illustrate it. Pro-

tected spaces show *Sedum acre*, *Campanula rotundifolia*, *Galium verum*, etc., flowering freely, while open areas are bitten down. He finds that *Solanum nigrum*, *Conium maculatum*, *Urtica dioica* and *U. urens* are the only herbaceous plants which are not more or less severely attacked by them. In our Berkshire area of Wytham, where rabbits were a pestilential curse, one noticed that *Conium* and *Atropa* were attacked but *Euonymus* was shunned. Their tree ravages receive due attention. *Eupteris* is also an inimical feature in Breckland as elsewhere. The author adheres to the better known name of *Pteris*. The effects of sand-blast are also vividly shown. Dr Farrow is to be congratulated on completing so valuable a contribution to the ecology of Breckland which the Cambridge University Press has issued in such an attractive style.

FERNALD, Prof. M. L. Persistence of Plants in Unglaci-ated Areas of Boreal America. Memoirs of the Gray Herbarium of Harvard University. Reprinted from Mem. Amer. Acad. of Arts and Sciences, xv., 241-336, 1925. The author says that the vast majority of plants of continental regions are wide-spread and somewhat general in occurrence in proper habitats over extensive areas. For instance, such a tree as the Pitch Pine of Eastern North America occurs from Southern Maine to Lake Ontario and south to the hills of Northern Georgia and Tennessee; or the common pitcher plant occurs in peat-bogs from Florida to the southern slope of the Labrador peninsula and west through the Northern States and Canada to Iowa and Mackenzie. One of the first plants I noticed on the Western Coast was *Cornus canadensis* at Vancouver and it was one of the last I noticed near Quebec. Prof. Fernald says the plants which characterise the Arctic Regions show an "amazingly disrupted occurrence—on various islands of the Arctic Archipelago, or on the Arctic or sub-Arctic coasts of America, and in the Arctic areas of Eurasia, with localised colonies isolated far to the South; or on bleak spots in the alpine areas of the Pyrenees, the Alps, the Carpathians, the Himalayas, Altai, Rocky Mountains of Alberta or Colorado, Mt. Washington in New Hampshire, or Mt. Kahaddin in Maine." Dr Fernald's idea is that these regions occupied by a Western Flora remained almost completely unglaciated during the Pleistocene. He alludes to the flora of Greenland, itself still in the glacial period.

Yet in its 800,000 square miles of area 416 species of plants are known. The memoir deserves very careful study.

GAMBLE, J. S., C.I.E., F.R.S. FLORA OF THE PRESIDENCY OF MADRAS. Part vii. Nyctaginaceae to Euphorbiaceae. pp. 1161-1346. Adlard & Son & West Newman, London, 1925; 8/-. This part is carried on with the same meticulous care which marks the preceding six parts. Alas, before it was issued, its talented author passed away.

GARDNER, J. STANLEY. The Natural History of Wicken Fen. Part 2, pp. 65-171. Bowes & Bowes, Cambridge, 1925; 6/-.

GATES, Prof. RUGGLES. Mutation. Lecture at King's College. See Nature 409, 1925. *Chelidonium laciniatum* is used as an example.

GODFERY, Col. M. J. Three Hybrids of *Nigritella nigra* Reichb. in Switzerland. Journ. Bot. 313, 1925. Fertilisation of *Ophrys speculum*, *O. lutea* and *O. fusca*, l.c. 33, 1925. The Royal Horticultural Society awarded Mrs Godfery on November 3rd the Society's Gold Medal for her exhibit of 184 water colour drawings of European Orchids prepared from living plants collected during the last seventeen years by Col. Godfery.

GOULDING, R. W. Memoir of Richard Kaye, Bt., D.C.L., Dean of Lincoln. A delightful study of a notable person whose acquaintance with botany was practically unknown to most of us. However, Mr Goulding supplied a List of Plants at Welbeck and Kirkby from the Brit. Mus. MSS. 18565, pp. 68-69, which was compiled by Dr Kaye in 1777 for Welbeck and in 1774 for Kirkby. These will be in many cases the first evidence of them as plants of Notts. They include *Cymbalaria rotundifolia* and *Blackstonia perfoliata*. The adventive *Salvia Horminum* was seen by Kaye in 1782 and by Mr Goulding in 1924.

GARDENERS' CHRONICLE. 5 Tavistock Street, Covent Garden, W.C.2; 30/- per annum. This old-established gardening paper still maintains its high reputation and much of general interest will be found in its pages. Among articles of value are:—The Garden in

Antiquity : Early Persian Influence, Rev. Hilderic Friend, pp. 130-194. The Assyrian Achievements, pp. 184-252. Mummy Plants of Ancient Egypt, p. 436. Early Egyptian Garden Craft, ii., p. 70. Ancient China, p. 106. Chinese Classics, p. 150. Hindu Gardens, p. 251. An article with a portrait of Dr W. B. Brierley, the well-known Rothamsted scientist, p. 104. *Heracleum villosum*, with illustration, p. 113. *Geranium Endressi*, with a supposed hybrid with *striatum*, p. 126. The Tomato, its History, with a figure from Dodonaeus, circa 1587. Plants of chalky soils, p. 139. Stock and Scion, p. 165, mentions a graft hybrid of *Aucuba Japonica*, var. *variegata*, made by Mr F. Sansome. He took a scion from a green-leaved form and grafted on it the variegated-leaved plant when it became variegated. This is the first recorded instance of such a change. *Tilia europea* has been grafted on *T. petiolaris*. The branches of the stock were defoliated in the autumn while those of the graft still bore their green leaves. Familiar Plants of Palestine, p. 208. Hanging Gardens of Babylon, p. 284. Old Egyptian Vine Cultures, p. 375. Sanskrit Gleanings, p. 311. Sacred Plants of the Hindus, p. 350. Gardens of Damascus and Syria, p. 430. British Plants at the Royal Horticultural Hall, March 10th—plants discovered or named by the exhibitor, Dr G. C. Druce, p. 50. Vegetable Marrows, p. 224, with figures from Dodonaeus' Herbal, 1554. Timber of Ancient London, p. 302, Mr A. D. Webster. Water pipes which had been in use for 300 years were of elm—the pipes being laid by Sir Hugh Middleton, 1609-1613. The trunks were about 18 inches diameter and the wood was quite sound. In connection with the approaches to London Bridge large quantities of native trunks were found. The fosse embankment on the south side of Thames Street was formed of large solid trunks of Oak and Chestnut, roughly hewn, and about two feet square. Lower down the river at Dagenham yew was used, the trees being from 14-16 inches diameter and perfectly sound except the sap-wood. Willow trees also were found, some being two feet and more in diameter. Garden Notes from South-West Scotland, Sir Herbert Maxwell, p. 306. Kingdon Ward : Eighth Expedition in Asia, pp. 236, 318, 394, 434, ii., 12, 50, 90, 130, 191, 231, 292, 408, 448, 482. Dr G. Claridge Druce, with portrait, p. 350. Savoy Cabbage, with a picture from Dodonaeus' Herbal of 1554, p. 341. Rt. Hon. Sir Alfred Mond, Bt., p. 346. Prof.

F. W. Oliver, F.R.S., with portrait, p. 388. A new genus of *Cactaceae* from Mexico—*Roseocactus* Berger, fig. 188, p. 415. Autumn in the Punjab, G. Burrows, p. 92. On Variegation, ii., p. 21. Kale, ii., 155, with illustrations from Dodonaeus' Herbal. Half-an-hour in the Oxford Botanic Garden. The Dandelion, S. B. Dicks, p. 253, but the writer does not refer to recent works on the genus, *i.e.*, Handel-Mazzetti or Dahlstedt.

GRANT, A. L. A Monograph on the genus *Mimulus*. Ann. Miss. Bot. Gard. ii., 99-388. April-September 1924. January 1925.

HAINES, H. H. THE BOTANY OF BIHAR AND ORISSA. An Account of all the known Indigenous Plants of the Province and of the most Important or most commonly Cultivated Exotic ones. In 6 parts. pp. 199, ii., 1-1058. W. Thacker & Co., London., 1921-25; 62 rupees.

HALL, Rev. CHARLES A. The Open Book to Nature. An Introduction to Nature Study. 3rd edition, pp. 256. A. & C. Black, Ltd., London, 1925; 6/-.

HAMPTON, F. A., M.A. The Scent of Flowers and Leaves: its Purpose and Relation to Man. pp. 129. Dulau & Co., London, 1925; 6/-. This work is commendable for the original manner in which the subject is treated. He alludes to the sense of smell—a hedonistic sense, a means of pleasure, a slightly warning value—the last, an easily over-rated thing, since, while it makes one intolerant of defective sanitation, does not reject a well-hung pheasant. As he says, we do more smelling by the palate than through the nose, for the latter is just as sensitive to a trace of garlic in a bowl of salad as it is in detecting a quarter of a millionth of a grain of chlorphenol in 50 cc. of air. A good wine taster can identify 30 or more varieties of wine with his eyes shut. But the sense can be educated, so that flower scents, which at first were thought to be the same, can be segregated. He says that keenness of scent is especially developed in dark-haired people. Albinos are usually unable to smell. He points out that the odour of some substances changes with dilution—indol concentrated is sewage-like; diluted it is like *Narcissus*. We know that the flowers of *Tilia* give a perfume which is distinctly more plea-

sant and more powerful at some distances from the tree. Flower scent is primarily due to the presence of essential oils, attars, of which the type is the well-known rose-product. The various oils and their chemical composition are given. The lemon scent is due to citral, and to geraniol in *Cymbopogon citratus*, the Lemon grass. *Orchis pyramidalis* has a carnation type of scent during the day while *O. mascula* has a cat-like odour which changes as the flowers fade. The manner in which the essential oil is distributed in the plant is given, and the Function of Scent is discussed. He gives the interesting and suggestive statement that, as compared with carbolic acid the oil of Thyme has twelve times the antiseptic value, Verbena 9, Clove 8, Cinnamon 7, Rose 7, Rue 6, Rosemary 5 (decimal points are omitted) so that one sees why Cinnamon and Camphor were carried in the doctor's gold-headed cane, and why sprays of Rosemary and Rue were used on the judicial bench. Chapters are devoted to Insects and the Scent of Flowers, and Scent in Relation to Botanical Characters (*Adoxa Moschatellina* is the correct name on p. 5, and *conopsea* on p. 52). A valuable contribution is the Classification of Flower Scents, and in this there is a wealth of information. On p. 79 goose-grass should read goose-foot. This owes its horrid odour to trimethylamine. Garden Scents is a very readable production. There is also a good account of the Extraction of Scent and Perfume-making. The History of Scent is not neglected. Mr Hampton says that in A.D. 810 the Persian Province of Faristan paid a tribute of 30,000 bottles of Rose Water to Baghdad. There is a useful Bibliography and the author is to be warmly commended for his instructive work.

HOFFMAN, DR JULIUS. ALPINE FLORA FOR TOURISTS AND AMATEUR BOTANISTS, with text descriptive of the most widely distributed and attractive Alpine Plants. Translated by H. S. Barton (Mrs A. Gepp), with 43 plates containing 283 coloured figures.

HORWOOD, A. R. Leaves from a Naturalist's Diary: with Notes on What to Look for Month by Month. pp. 192, tt. iv. J. G. Harrop & Co., 1924; 3/6.

HURST, C. C., Ph.D. Chromosomes and Characters in *Rosa* and their Significance in the Origin of Species. Reprint from the Cam-

bridge University Press, 1925. This preliminary work of Dr Hurst gives due acknowledgment of the labours of his predecessors in Rose Cytology, Blackburn and Harrison, which have been noticed in these pages. It promises to be of high importance as his study, which began at Burbage in 1910, has, with the exception of war-time, been continuous, and some years must elapse before his classification and monograph of this large and difficult genus can be completed. In this introductory paper there is much of high importance and value. It is now definitely established that Strasburger in 1904 was wrong in stating that the fundamental number of chromosomes in *Rosa* was 8. Täckholm, Blackburn and Harrison almost simultaneously proved that they were 7 in number. Dr Hurst's recent work fully confirms the latter figure as correct and "we still are 7." Further, the results show that all the somatic and genetic chromosomes obtained are either seven or a multiple of seven. Gametic chromosomes, male and female, are either equal with 7-14-21 or 28 each or unequal and matroclinous with a maternal bias of 1.5-2-3-4 or 5.1. All are seven or a multiple of seven, so that *tomentosa* has 5 seplets and *mollis* has only 4 seplets. The seplet characters in *Rosa* provide a natural and precise method of classification of this species in the genus. This is based on cytological, genetical, and taxonomic characters combined. We can therefore have nine sections and these may be subdivided into 15 subsections and these again into the simple 211 simple and compound seplet species. . . . This gives a definite and uniform classification of the species in which each species in a section or sub-section differs from another simply in a seplet of chromosomes and characters. The first volume of the monograph is expected to be produced this year. It will deal with "The Five Diploid Species of *Rosa*." The significance of the seplets was evidenced when comparing the taxonomic characters of living species at Kew. One was struck by the fact that the tetraploid species showed the combined characters of two distinct diploid species while the hexaploid species showed the combined characters of three distinct diploid species, while the octoploid species showed the characters of four distinct diploid species. Those interested in the subject must refer to the original paper, but the facts ascertained are of very high importance. Just now British botanists may choose between the multitude of the Déségliseian or the paucity of Benthamian

species, five being given in the last Handbook, where *mollis* and *tomentosa* are united under *villosa*. Twenty years ago Crépin asserted, and quite rightly, that they were physiologically distinct, but Bentham not only united them but added *pomifera* as a variety, with the naïve remark that it seems in some localities to pass into a form of *canina*! But Dr Hurst shows that the various forms of *R. tomentosa* can be distinguished from those of *mollis* by an additional septet of chromosomes.

IRISH NATURALISTS' JOURNAL. A Magazine of Natural History, Antiquities and Ethnology. Editor-in-Chief, J. A. S. Stendall. Botany, S. A. Bennett, Rev. W. R. Began. Bi-monthly, 6/- per year. We hope the publication may be prosperous. A bringing up to date of Irish Topographical Botany in a supplement is much to be desired. The September number contains several botanical notes and a list of plants new to the Rathlin Island List.

IMPERIAL BOTANICAL CONFERENCE. London, July 1924. Reports of the Proceedings. Cambridge University Press, 1925. This has been already attended to in these pages, but it may be added that the following recommendations were carried:—

1. Article 36 should be replaced by a strong recommendation to supply Latin diagnoses.
2. All combinations which are homonyms (*i.e.*, later homonyms) should be rejected.
3. All generic names which are homonyms (later homonyms) should be rejected except such as may be specially conserved.
4. The principle of the Type method of applying names should be formally accepted.
5. Art. 55 (2) rejecting duplicated binomials, *e.g.*, *Linaria Linaria*, should be revoked.
6. The principle of "nomina abortiva" should be expunged from the Rules.
7. The List of Nomina Generica Conservanda should be revised.
8. It should be made clear how far each of the Nomina Conservanda is conserved.
9. That for the future the name of a group shall not be regarded as effectively published when the description is issued only with *exsiccata*.

10. Publication of new genera and species should only be in scientific publications and, if possible, only in such as habitually reach systematic botanists.

INDEX KEWENSIS. Supplement vi. is now in progress. There are many incomplete sets. Should any individual or institution have such an incomplete work they may obtain the Supplements i.-v. at the Clarendon Press, Oxford.

JONES, W. S., Hon. M.A. TIMBERS: THEIR STRUCTURE AND IDENTIFICATION. pp. 148. Clarendon Press, Oxford, 1924. In thirteen Chapters and two appendices the author gives a work of practical value to the student of Forestry. There are 165 illustrations of the sections of various woods. Of English woods he says the hardest are Box, Hawthorn, Yew, Hornbeam, then come Oak, Ash, Beech, Elm, Sycamore, and then those termed soft woods—Birch, Horse Chestnut, Poplar, Silver Fir, Spruce and Willow. The histological features are given at length. The first wood described and figured is that of *Tilia europaea*, then Holly, Horse Chestnut, Sycamore, Crab, Hawthorn, Mountain Ash, Cherry, Ash, Box, Elms (these seem scarcely sufficiently elaborated—surely the wood of the various kinds is of unequal value), Plane, Walnut, Oaks (we have *Q. pedunculata*, for contrast that of *sessiflora* might have been included and *Q. ilex* is given but not *Q. Cerris*), *Castanea*, *Fagus*, *Corylus*, *Carpinus*, *Alnus*, *Betula alba*, *Populus alba* (here the least frequent and least important Poplar is selected) and *Salix caerulea*. Some of the Indian broad-leaved timbers are included, the American *Liriodendron*, Mahogany, *Robinia*, *Liquidambar* and Greenheart. Part xii. is devoted to the Coniferae. As one might expect the work is attractively produced by the Clarendon Press.

JOURNAL OF BOTANY, 1925. Edited by A. B. Rendle, D.Sc., F.R.S., F.L.S. £1 2s 6d per annum. The vol. lxiii. has a portrait of the Editor. It contains an account of the British Association's visit to Canada by R. D'O. Good and the Editor, p. 1. An excellent paper on the Classification of Dicotyledons by T. A. Sprague, p. 9, 105. Life Cycles, cont., A. H. Church, pp. 15, 78, 132, 193. Dr Forbes's Malayan Plants as a supplement. The Fertilisation of *Ophrys speculum* and *O. fusca* by Colonel M. J. Godfrey, p. 33.

Gough Island; G. H. Wilkins, p. 65. A new species, *Apium goughense*, is described by Wilkins and E. G. Baker. Some French Marsh Orchids, Rev. Drs T. and T. A. Stephenson, p. 93. Notes on Jamaica Plants, Fawcett and Rendle, p. 114. New British Bryophytes, H. N. Dixon and W. E. Nicholson, p. 125. New Species from Tropical Africa; S. Moore, p. 145. Notes on the Flora of the Varna district of Eastern Bulgaria, part 2, W. B. Turrill, M.Sc., with new species *Jurinea Gilliati* and *Veronica euxina*, the latter allied to *spicata*, p. 157. New South African Plants, R. D'O. Good, p. 172. Mosses from Mount Everest, H. N. Dixon, p. 221. New Malvaceae from Brazil, E. G. Baker, p. 239. Identification of Loureiro's specimens in the British Museum Herbarium, S. Moore, pp. 215, 284. References to Notes and some Additions in the London Catalogue, ed. xi., C. C. Salmon, p. 291. E. G. Baker on ditto, 297; A. J. Wilmott on ditto, p. 297. Hieracia in ditto, H. W. Pugsley, p. 302; ditto, Rev. J. Roffey, p. 315. Three Hybrids of *Nigritella nigra*, Col. Godfery, p. 313. The Phylogeny of Violaceae, A. W. Exell, B.A., F.L.S., p. 330. Notes on the Genus *Erythraea*, J. A. Wheldon and C. E. Salmon, p. 345. Species, W. B. Turrill, p. 359. He holds that what we call micro-species "are certainly due to different combinations of genes brought about by crossing and kept constant by apomixis. They are not the equivalent of species in genera which reproduce by normal amphimixis, but are clones and should have special taxonomic treatment." Such are *Rosa*, *Erophila*, *Taraxacum* and *Hieracium* (may we not include *Rubus* and *Bursa*?). "On the other hand certain genera such as *Viola*, *Thymus*, *Verbascum* and *Centaurea* in the S.E. European and Oriental Floras, crossing, without so far as is known any apomixis, help to account for the numerous closely allied groups." Claussen points out the absurdity of naming for taxonomic purposes the segregates arising from *Viola arvensis* \times *tricolor* with a possible 5,308,416 combinations. The paper is a thoughtful one deserving close attention and his concluding suggestions are most valuable especially "that in order to describe the species properly every herbarium should have an experimental garden and laboratory."

W. WATSON, with lists and notices of a few Phanerogams. Ecology of British Beech Woods, A. S. WATT. Ecology of the Vegetation of Breckland, E. Pickworth Farrow. The Incidence of Species in Relation to Soil Reaction, E. J. Salisbury. Some Impressions of the International Phytogeographical Excursion in New Zealand 1923, E. J. Salisbury. The same excursion of 1924 was spent in the lower Peninsula. The Chalk Grasslands of the Hampshire-Sussex Border, A. G. Tansley and R. S. Adamson. Two Relict Upland Oak-woods in Cumberland, W. Leach. The Vegetation of the Forest of Wyre, E. J. Salisbury. Notes on Photographing Vegetation, E. Pickworth Farrow.

JOURNAL OF THE ROYAL HORTICULTURAL SOCIETY. Vincent Square, S.W.1. Edited by F. J. Chittenden. Orchid Cultivation, Sir Jeremiah Colman, Bt. Some of Canada's Wild Flowers, Lady Byngot Vinny. An extraordinarily vivid account of the floral treasures of that Dominion. Some Wild Species of Tulip, W. R. Dykes. One of the last articles from the Secretary's pen.

KEEBLE, Sir F., F.R.S. Form and Colour in the Garden. Address to the Garden Club, Mance, 1925.

KEW ROYAL BOTANIC GARDEN. Bulletin of Miscellaneous Information. Published by His Majesty's Stationery Office. Contributions to the Flora of Siam, W. G. Craib, i., 7. Notes on Madeira Plants, L. A. M. Riley, i., 26. Notes on the Flora of the Balkan Peninsula, W. B. Turrill. Review of the Work at Kew for the Year 1924, p. 12. Standard Species of the Linnean Genera of *Tetradynamia*, M. L. Green, ii., 49. Diagnoses Speciarum Dioscoreae, Sir D. Prain, and I. H. Burkill, ii., 58. Notes on Cyperaceae, W. B. Turrill, 67. Plants from Bencoolen Sumatra, H. N. Ridley, 76. New species of *Masdevallia* and Allied Genera, F. Kraenzlin, iii., 17. Trinidad Plants, L. A. M. Riley, 133. New Species of *Indigofera*, Transvaal and Swaziland, N. E. Brown, 142, with clavis to 30 species. Contributions towards a Phylogenetic Classification of Flowering Plants, v., J. Hutchinson, iv., 161. Revision of *Alphitonia*, K. W. Braid, i., 68. Sources of Industrial Alcohol, J. H. Holland, v., 193. Critical Notes on Galapagos Plants, L. A. M.

Riley, 216, includes a new *Lycopersicum*. Revision of the Genus *Cassipourea*, A. H. G. Alston, vi. 241. Flora Capensis, Sir W. T. Thiselton-Dyer, vii., 289. Humboldt and Bonpland's Itinerary in Venezuela, N.Y. Sandwich, 295. The Genus *Brachycorythis* Schecht., K. W. Braid, ix., 353. Flora of Siam, D. J. Downe, 367. Includes many of Rolfe's unpublished species. List of Seeds of Hardy Herbaceous Plants and of Trees and Shrubs. App. iv. Kikuyu Grass, *Pennisetum clandestinum*, W. Lyne Watt.

KEW ROYAL BOTANIC GARDENS. Four Hand-lists have been issued this year. (1) Herbaceous Plants, 3rd edition, pp. 170; 2/6. (2) Hardy Monocotyledons; 1/6. (3) Rock Garden Plants; 2/-. (4) Trees and Shrubs, 3rd edition; 4/6. Obtainable at Kew Gardens or from Eyre and Spottiswoode, East Harding Street, E.C.4. The plants are arranged alphabetically, the synonyms being in italics. The native home of the plant is supplied as well as its family, and in many cases the figure of it in the Botanical Magazine, a most useful adjunct. The nomenclature is on sound lines and we appreciate the use of sections for the genus *Prunus*, *Pyrus*, etc. One wonders if it were worth while separating *Arctous* from *Arctostaphylos*, although it is as distinct as some other genera. One wishes that invalid generic names like *Erythraea* and *Epipactis* were rejected. A few slips are noticeable—*Adonis annuus* is used instead of *annua*, but the lists are commendably free from misprints and are in good type. They cannot fail to be useful. All to the good is the use of *Cirsium* not *Cnicus*, *Limonium* (but why not *Statice*, vice *Armeria*), *Linum angustifolium* and *Agrostis capillaris*.

KOORDERS, S. H. Exkursionsflora von Java unfassens die Blutenpflanzen. Vierter Band. Gustav Fischer, Jena, 1925; 4 marks.

LACAITA, C. C. Plante italiane critiche o rare Nuov. Geor. Bot. Ital., 102-114, 1925. *Centaurea leucadea* is a new species.

LACAITA, C. C. Some Critical species of *Marrubium* and *Ballota* and a note on *Colchicum montanum* L. Two rare Spanish species of *Echium*. Journ. Linn. Soc., vol. 48, September 16, 1925. A valuable contribution which suggests that the name *Colchicum mon-*

tanum L. should be abandoned as it cannot be properly applied to either the Spanish or the Swiss plants which Linnaeus cites in the *Species Plantarum*.

LEE, IDA. EARLY EXPLORERS IN AUSTRALIA. From the Log Books and Journals, including the Diary of Alan Cunningham, botanist, March 1, 1817, to November 19, 1818. pp. 650, with maps and illustrations. Methuen & Co., London, 1925; 21/-. The title on the cover does not suggest that the work is of botanical interest but as a matter of fact Mrs Marriott has given us a valuable piece of botanical biography. At the outset she alludes to the earlier explorations of the island continent by Dampier, Banks and Cook, with their stirring adventures which occupy 166 pages. We should have liked to have seen fuller reference to the great painter, Ferdinand Bauer, who was the official artist on the Banks Expedition. Then comes the account of Alan Cunningham. His father, a native of Renfrewshire, came south, and Alan, the botanist, was born at Wimbledon in 1791. He first went into a law office but, not liking his occupation, he went to Kew as a clerk to Aiton, then preparing his second edition of *Hortus Kewensis*. Here he made the acquaintance of the great botanist, Robert Brown, then librarian to Sir Joseph Banks. In 1814 he was made Botanical Collector to the Royal Gardens and sailed with Captain Chambers in H.M.S. Duncan to Brazil. They sighted Rio on Christmas day and then he and James Bowie spent three months in collecting plants in that country. They returned to Rio where a year was spent in collecting. They sent home both living and dried plants. Cunningham was then ordered by Sir Joseph Banks to sail to New South Wales, and he reached Sydney after a sea journey of 95 days on December 20, 1816. We may say that Cunningham died at Sydney in 1839 where he had been superintendent of the Botanic Gardens for two years. Robert Brown dedicated the genus *Cunninghamia* to him and Endlicher's *Alania* was also given in his honour. His brother, Richard, also a botanist, was murdered by natives in the interior of Australia in 1835, when he was on an expedition under Sir Thomas Mitchell. Mrs Marriott (Ida Lee) has rendered a service to Botanical Biography in publishing at such length (pp. 167-628) and with such care Cunningham's Log Book. He came back to England in 1831

after an absence of 17 years and resided at Strand-on-the-Green close to Kew, till he was invited to be superintendent of the Sydney Garden, which post however did not appeal to him. He was an explorer and did not care to be tied by the leg. He visited New Zealand where he got a chill from which he never recovered, and in a letter (which is quoted) he writes to Robert Brown " a letter from a poor, decrepit, prematurely old traveller." Not only do Australian flowers and trees bear his name, but there is a county named Cunninghamia as well as a Mount Alan and a Mount Cunningham. The volume is a worthy tribute to a great Australian explorer and botanist.

LINNEAN SOCIETY LIBRARY CATALOGUE. Prepared by that born indexer, Dr B. Daydon Jackson. Longmans & Co., 1925; 25/-.

LINNEAN SOCIETY JOURNAL. Vol. xlvii., 1925. On the Occurrence and Distribution of *Festuca ovina* L., sens. ampl. in Britain, W. O. Howarth, M.Sc. p. 29, tt. 2. See under *Festuca ovina*. Phytoplankton of the English Lakes, W. H. Pearsall and W. Harold Pearsall, D.Sc. Ditto of Shropshire, Cheshire and Staffordshire, B. M. Griffiths, D.Sc.

LINNEAN SOCIETY PROCEEDINGS, 1925. These include Flora of Canada described by the President and Mr R. D'O. Good. The Tropical Elements in the Arborescent Flora of the Transvaal, Dr J. Burt-Davy. A Virescent *Delphinium*, Prof. R. R. Gates. Cytology of *Tulipa*, C. F. Newton; Primula Hybrids, R. J. Chittenden. A Unique Feature in the Petal of *Ranunculus*, J. Parkin. This alludes to the high polished surface of the petal. Remarks on the Flora of Southern Rhodesia, F. Eyles. On the Seedling Structure of *Tilia europaea*, Dr H. S. Holden and S. H. Clarke. Vegetation of the Amazon Basin, Prof. R. R. Gates. On the Fertilisation of *Primula vulgaris*, B. Marsden Jones.

LISTER, A. A MONOGRAPH OF THE MYCETOZOA: A Descriptive Catalogue of the Species in the Herbarium of the British Museum. 3rd ed., revised by Miss Gulielma Lister. pp. xxxii., 296, tt. 223. British Museum, 1925; 31/6.

LLOYD, NATHANIEL. GARDEN CRAFTMANSHIP ON YEW AND BOX. pp. 36, tt. 54. Ernest Benn & Co., London, 1925; 15/-. The pages, few as they are, of this delightful book teem with practical advice, the result of intimate knowledge. His advice about clipping is well worth the cost of the volume. Naturally this, in topiary work, is of vital importance. The beautiful photographs well illustrate various examples both in Yew and Box, and others exhibit methods of planting or trimming. A charming example of a tank garden with water lilies, enclosed with a dignified wall of yew with pillars and archway of the same tree, is singularly pleasing, so, too, is the yew hedge, round a rose garden, with piers and buttresses at Great Dixter. Monstrosities are shown as a "Cone and Britton Finial." The Pond Garden at Hampton Court is a graceful example. The celebrated Topiary Garden at Earls Hall seems too crowded. The views also include the Hatfield Maze. The book is eminently fitted for a present which is sure to give pleasure to the recipient.

LOTSY, Dr P. L. Lectures on Evolution considered in the Light of Hybridisation. pp. vii., 67, tt. 4. Canterbury College, New Zealand, 1925. See Nature ii., 625, 1925. New Zealand possesses, according to Dr L. Cockayne, no fewer than 206 wild hybrids between big species. In his lecture Dr Lotsy preceded his statements with a very trenchant examination of theories of transmissible variability, whether neo-Lamarckian or mutationist.

LOTSY, Dr P. L. and KOOLMAN, H. N. Resumptio Genetica. Vol. i., pp. 1-112. Nijhoff, The Hague, 1924-25; 24 fl.

MCGILL and SMITH. Research Annual, Agr. pp. 104. 1925; 1/-. Gives photographs of many interesting agricultural crops. It may be noted that seeds of *Poa palustris* are offered at 3/- per pound. In cultivation it proves to be a good bottom grass. *Trifolium subterraneum* and *T. fragiferum* (both of which are native species) are recommended. Some interesting branched forms of *Lolium perenne* L. are illustrated. They have panicles like Meadow Fescue but are stated to be pure. There are some valuable remarks on selection and breeding of pasture plants.

MANN, M. C. Chromosome number and Individuality in the Genus *Crepis*. Univ. Calif. Publ. Agr. 2, 297-314, 1925.

MARIE-VICTORIN. Les Lycopodiées de Quebec, 3, 1-121. Lab. Bot. Univ. Montreal, 1925. There are not many new varieties.

MARRIOTT, ST JOHN. BRITISH WOODLANDS AS ILLUSTRATED BY LESSNESS ABBEY WOODS. G. Routledge & Sons. pp. 72, 1925; 2/6. This gives a general survey of the flora and fauna, map, charts, photographs, explanatory notes, historical preface, botanical survey and numerous lists representing the various groups of plants and animals recorded for the woods. Mr C. H. Grinling writes the Introduction. We congratulate Mr Marriott upon the production of this very useful publication which deals thoughtfully and adequately with the subject. 328 species of Flowering Plants are mentioned, 3 Ferns, 111 Mosses, 32 Hepatics, 241 Fungi, 12 Lichens, and 46 Mycetozoa. 13 Mammals, 64 Birds, 4 Reptilia, 4 Amphibia, and 16 Mollusca are included. Some nice photographs are given and the whole work is cram full of interest.

MEISEL, MAX. A BIBLIOGRAPHY OF AMERICAN NATURAL HISTORY. The Pioneer Century, 1769-1865. The Role Played by the Scientific Societies, Scientific Journals, Natural History Museums and Botanic Gardens, State Geological and Natural History Surveys, Federal Exploring Expeditions in the Rise and Progress of American Botany, Geology, Mineralogy, Palaeontology, and Zoology. Vol. i. pp. 244. The Premier Publishing Co., 626 Broadway, Brooklyn, New York, 1924. This is clearly printed and well set up and arranged in alphabetical order. The front portion contains nearly 1500 titles relating to over 600 names of active workers in one branch or another of Natural History. There are over 700 titles of the Publications relating to the History, Biography and Bibliography of American Natural History. When needed cross references are given and there is a Geographical Index to the Annotated Bibliography. It fills a gap in needed Reference Books and the next volume is looked forward to with interest.

MOORE, S., B.Sc. A Third Contribution to the Composite Flora of Africa. Journ. Linn. Soc. 257, 1925. Many species of *Vernonia* are described.

MORSE, RICHARD AND BALMER, RAY. BRITISH WEEDS: Their Identification and Control. A Practical Handbook for the Use of Estate Owners, Farmers, Gardeners, and Students of Agriculture, Horticulture and Field Botany. Demy 8vo, pp. 207, tt. 8. E. Benn & Co., London, 1925; 10/6.

NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST OR NATURAL BEAUTY. Report for 1924-25. pp. 88. 7 Buckingham Palace Gardens, Westminster, S.W.1. Photograph showing the face of Scawfell and Mickledore from the Pulpit Rock, and of Chadworth Roman Villa are given. Cissbury Ring, Stony Jump, Surrey also are now acquired. Additional land has been obtained from Hatfield Forest, Box Hill and Stoke Poges. The additions include Scawfell, above 2000 feet on the contour map; Chadwell Manor, near Birmingham, of which a beautiful photograph is given; The Common, St Helens; Hogback Wood Penn, Bucks; Kelsich Scar, White Mon Intake, Oulney Common Bungay, Little Bookham and Bank's Common, Surrey; Crow Park, Cocksholt Wood and Cakle Head, Derwentwater.

NATURE. Weekly, 1/-. Macmillan & Co., St Martin's Street, London, W.C. This renowned scientific periodical maintains its high reputation. Among other articles of special interest to the botanist is an appreciative and able note of the "Work and Influence of the Royal Botanic Gardens, Kew," which date from 1760. A special number was devoted to the Centenary of Huxley, May 9, and appreciations are given by Ray Lankester, Poulton, Thiselton Dyer (which gives interesting details of Dyer's early studies), Bower, Vines, Bateson, Arthur Thomson, Sir A. Keith, Edward Clodd, H. A. Osborn, Smith Woodward, Prof. D. M. Watson, Prof. W. W. Watts, Prof. E. W. MacBride, C. Lloyd Morgan, Patrick Geddes, H. E. Armstrong, Sollas, Stephen Paget, and others—a great symposium. Yeast—A Presidential Address to the Royal Microscopical Society, January 21, 1925, A. C. Chapman, F.R.S., p. 839. The Centenary of the Discovery of Benzene, p. 1001. Evolution and Intellectual Freedom (ii. 69), with statements from a large number of representative scientists—a Nasmyth Hammer to crack an addled house sparrow's egg.

OSTENFELD, Prof. C. H. Botanisk Have Gennem, 50 aar, 1874-

1924. Our Honorary Member has here given a charming account of the garden which he so ably administers. It was a privilege I much enjoyed to be conducted over it by himself and to see so many plants of interest growing in as natural a position as possible. The Library has 25,000 volumes and the Herbarium is very rich especially in the plants acquired on the various polar expeditions.

PHARMACEUTICAL BOTANY. "BOTANY WITHOUT TEARS." For Students preparing for the Qualifying Examination of the Pharmaceutical Societies of the British Empire. pp. 300. Chemist and Druggist, 42 Cannon Street, London, E.C., 1925; 5/-. The gist of this practical and useful text-book has appeared from time to time in the pages of that excellently edited paper. The writers of it have wisely made use of plain and easy expressions and have avoided repellent botanical terms and definitions as far as possible. Even that obnoxious phyllotaxy—a dreadful stumbling-block to the beginners—is now simplified. The student is led on through the Processes of Life Metabolism, Nucleus, Evolution, Thallophyta, Spirogyra, Fucus, Fungi, Bacteria, Yeasts and Moulds, to the Higher Fungi, in which proper attention is given to the Life History of the Ergot (I once heard it defined as "an insect alighting on an ear of rye"). Then on to Liverworts, Mosses and Pteridophyta. We are glad to see *Dryopteris Filix Mas* is used as in the Pharmacopoeia. By a slip on p. 65 *Aspidium* is used on the figure 38. A good description of its growth and development is supplied. Illustrative examples are mainly selected from Medicinal species. Then come some useful chapters on the Flowering Plant and its parts. For Fennel the specific name *capillaceum* is given. It is superseded by *F. vulgare* Mill. or, to those who like tautonyms, *F. Foeniculum* Karst. The illustrations are excellent and their effect is sometimes much enhanced by having a black back-ground. A little more care might have been used in writing the specific names with or without capitals for we have *Sambucus Nigra* which does not need a capital and *Mentha pulegium* which does. A few pages are devoted to physiology and a very useful explanation of ions. Water dissociates into ions and although their proportion is exceedingly small this is its chemically "active" part. $H_2O = H + \text{Hydrogen ion}$ and $OH-$ Hydroxyl ion. "Neutral" water contains about one ten-millionth.

Acids increase the hydrogen ions, alkalis the hydroxyl ions. Ph numbers are used to indicate hydrogen ion concentration, thus neutrality is Ph 7—and the student is shown the part this plays in Plant Constituents. The book, if carefully studied, cannot fail to be a most useful text-book.

PHILLIPS, REG. W., M.A., D.Sc., LL.D. On the Origin of the Cystocarp in the Genus *Gracillaria*. Ann. Bot. xxxix., 787, 1925. On Vacuolar Pseudopodia in a species of *Callithamnium* from Menai Straits. Revue Algologique, 14, 1925. On the Genera *Phyllophora*, *Gymnogrongrus* and *Ahnfeldtia* and their Parasites. New Phytologist, 24, 241, 1925.

PRAIN, Sir DAVID, F.R.S. Government Botanic Gardens. The Sir George Birdwood Memorial Lecture. Gardeners' Chronicle, 39, 62, 78, 97, 109, 132, 1925. There is much of permanent interest in this excellent lecture. Sir David holds that the garden of Theophrastus was much nearer in purpose to a modern Botanic Garden than any Physic Garden of the sixteenth century.

RAYNER, J. F. List of the Alien Plants of Hampshire and the Isle of Wight. Proc. of the Isle of Wight Natural History Society. President, J. Groves, Esq. Vol. i., 229, 274, 1925. Includes *Papaver Rhoeas* L., var. *violaceum* Bréb., Swaythling. *Arabis Turrita* L. *Brassica gallica* (Willd.) Druce, Christchurch, Miss Rooke. *Trifolium spinulosum* Dougl. *Cotoneaster Simonsii* Baker, Wootton, New Forest. *Saxifraga Huetiana* Boiss. *Baccharis halimifolia*, *Senecio Cineraria* × *Jacobaea*, Newport, Long. The list is an important one and is carefully compiled. Its author is to be highly commended.

RECORD, Prof. S. J., and CLAYTON, D. MELL. TIMBERS OF TROPICAL AMERICA. pp. xviii., 610, tt. 50. Yale University Press, Oxford University Press, 1924; 10 dollars.

RENDLE, Dr A. B. Presidential Address of Linnean Society. See Proc. 35, 1924. Refers to Linnaeus Hort. Cliffort. and his plants in the British Museum collections.

RIDGE, W. T. BOYDON. Botany of North Staffordshire. See Rep. North Staffs. Field Club, 1918-23.

RIDLEY, H. N., F.R.S. THE FLORA OF THE MALAY PENINSULA. Vol. i., pp. xxv., 918, 1922; £3 3s. Vol. ii., pp. 672, 1923; £2 2s. Vol. iii., pp. 405, 1924; £2 2s. Vol. iv., pp. 383, 1924; £2 2s. Vol. v., pp. 470, 1925; £2 2s. Enumerates about 6000 species of which half are said to be endemic.

ROBBINS, WILFRED W. THE BOTANY OF CROP PLANTS. 2nd edition. pp. xxi., 674. P. Blakiston & Son, Philadelphia, 1924; 3.50 dollars.

ROLFE, R. F. and ROLFE, T. W. THE ROMANCE OF THE FUNGUS WORLD. An account of Fungus Life in its Numerous Guises, both Real and Legendary. pp. xx., 309, tt. 31, 1925. Chapman & Hall, London; 12/6.

ST JOHN HAROLD. Review of Hagstrom Potamogetons. Bull. Torr. Bot. Club, 460, 1925. Criticises Hagstrom's imperfect pollen-characters and more or less abortive pistil as evidences of hybridity. The reviewer does not feel that barren or unfertilised Potamogeta must be hybrids. He says Hagstrom places more emphasis on stem-anatomy in identifying the species and hybrids, but the reviewer thinks this is of doubtful help. In Rubi the presence of imperfect pollen is of no value in separating the hybrids from true species. Even in good species none have 100 per cent. of perfect pollen, the majority having 60-90 per cent. He states that pine-pollen has been blown hundreds of miles from the nearest known trees.

SALISBURY, Dr E. J., D.Sc. International Phytogeographical Excursion to Switzerland. See Proc. Linn. Soc. 20, 1924. The Incidences of Species in Relation to Soil Reaction. Journ. Ecol. xiii., 149, 1925.

SANDERS, T. W. THE FLOWER GARDEN: Its Design, Formation and Management. 5th edition. pp. 480. W. H. & L. Collingridge, London, 1925; 15/6.

SCHAFFNER, JOHN H. Experiments with various Plants to pro-

duce Change of Sex in the Individual. Bull. Torr. Bot. Club, 52, 35, 1925. *Thalictrum dioicum*, *Cannabis sativa*, *Morus alba*, *Arisaema triphyllum* and *A. Dracontium* were among the plants experimented on.

SCHLICH, Sir W. MANUAL OF FORESTRY: including Mensuration and Valuation. Vol. iii., ed. 5, revised, and for the greater part rewritten. pp. viii., 383, 1923. Bradbury Agnew & Co., Ltd.; 20/-.

SCHINZ, HANS. Beitrage zur Kenntniss der Schweizerflora, xx. Schinz, Hans and Thellung, A. Weitere zur Nomenklator der Schweizerflora, ix. A large number of tautonyms are given and some new ones formed. They give a large list of what they consider to be "totgeboren" names which include *Phragmites vulgaris* (Lam.) DC. This is obsolete if tautonyms are allowed, i.e., *Phragmites Phragmites* (L.). *Polygonatum angulosum* (Lam.) DC. is also superseded by *P. Polygonatum* (L.) Jiras. *Taraxacum vulgare* (Lam.) Schrank = *T. Taraxacum* (L.) Karst. The saving of confusion by adopting tautonyms is here quite evident. Mr Sprague has recently dealt with some of the "totgeboren" names.

SCHWERIN, FRITZ VON. Revisio Generis Sambucus. Mitt. Deutsch. Dendr. Ges. 194-231, 1920. Includes *S. nigra*, f. *sub-integra* and *S. Ebulus*, f. *angustifolia*.

SEEDS, THE LONGEVITY OF. See Rep. Fourth International Seed Testing Congress, in Cambridge, 1924. H.M. Stationery Office, Kingsway; 11/6. Dr Degen states that the seeds of *Nelumbium* hold the record, but *Cassia bicapsularis* germinated after 87 years and *C. biflora* after 84 years. Mr R. Dorph-Petersen found that in a six-inch cube of earth taken from the top-level of soil there were more than a hundred thousand seeds.

SETCHELL, WILLIAM ALBERT. American Samoa. Vegetation of Tutinta Island. Carnegie Publ. 341, 1924. There are a large number of new species.

SCOTT, Dr DUKINFIELD, F.R.S. The Transformations of the Plant World in Geological Time. Lecture (Section K.) British As-

sociation Meeting at Southampton. The lecturer said four such great transformations are known—(1) From Marine to Land-flora which may have occurred about the Upper Silurian Period but which some botanists put much earlier. (2) From the early Land-Flora to the typical Paleozoic Vegetation. Time about the Middle Devonian. (3) From the Paleozoic to the Mesozoic type of flora. Time Permian to Trias. (4) From typical Mesozoic to the modern type. Time Cretaceous. These transformations, as we observe them, are apparent not real. The actual origin must always have lain much further back than the date of the conspicuous transformation. See Nature, ii. 145, 1925.

SHELTON, LOUISE. BEAUTIFUL GARDENS IN AMERICA. 4to. C. Scribner & Sons, New York; 42/-.

SHEPHERD, J. C., and JELlicoe, G. A. ITALIAN GARDENS OF THE RENAISSANCE. Folio. Ernest Benn, Ltd., 1925; 105/-.

SIPKES, C. Price List of Plants (Perennials) Wild in Western Europe. Ziglgweg, 82, Overveen, Holland. Shows a view of *Artemisia Stelleriana* at Penzance.

SKENE, Dr MACGREGOR. Flowers and the Sun. Lecture to the Aberdeen Natural History and Antiquarian Society. See Gard. Chron. 173, 1925.

SOCIETY FOR THE PROMOTION OF NATURE RESERVES. Handbook for 1925. President, The Viscount Ullswater, G.C.B. Hon. Secretaries. G. F. Herbert Smith, D.Sc., Natural History Museum, S.W.7; Lord Henley, 49 Montague Street, W.1; E. G. B. Meade Waldo, Stonewall Park, Edenbridge, Kent.

STENHOUSE, ERNEST, B.Sc. A CLASS BOOK OF BOTANY. pp. 514. Macmillan & Co., London, 1925; 7/6. While one complains of the fewer number of field botanists, yet if one judges by the output of class-books, the science must have an increasing number of devotees and it requires some temerity to add to the list. However, Mr Stenhouse need make no apology for the present well written, well printed and well illustrated manual especially as it contains several hundred of recent examination questions set for a large number of ex-

amining boards. The illustrations are excellent, especially those of the Trees, but an original photograph of our *Ranunculus peltatus* might well replace the archaic figure of the Water Buttercup taken from Figuier which has leaves unlike any of our forms. We are glad to see that the sequence of Bentham is followed rather than that of Engler. A phenological list is appended.

STEPHENSON, Rev. T., D.D., and STEPHENSON, T. A., D.Sc. Some French Marsh Orchids. Journ. Bot. 93, 1925. Include (1) *O. sesquipedalis* Willd. (2) *O. praetermissa* Druce, which occurs not only in Britain but in Holland. The authors found it in three stations north of Paris. Near Isle Adam it grows with *incarnata*, *latifolia*, *militaris* and *maculata*. Of these it is the most numerous. Near Coye it grows with *latifolia* but no *maculata*. Near Arronville it grows in large numbers with *maculata*, *latifolia*, *militaris* and *incarnata*. All these are precisely similar to British forms. Messrs Stephenson think that Camus has treated *O. praetermissa* as typical *incarnata*, but they consider *incarnata* to be very different from the *praetermissa-sesquipedalis-foliosa* series. It is a valuable contribution to our knowledge of the group.

STILES, WALTER. PHYTOSYNTHESIS: The Assimilation of Carbon by Green Plants. pp. 268. Longmans, Green & Co., London, 1925; 16/-. In this book an attempt is made to fill up one of the existing gaps by presenting a comprehensive survey of the subject of Photosynthesis. It is intended primarily for students reading for University degrees in which Botany is a subject, and for research students, but it is hoped that it will appeal also to the general botanical public as well as to chemists and physiologists. There is an excellent bibliography of upwards of 870 references. The volume is well printed, and for the class of student mentioned will prove of great service since the labour of consulting scattered papers will be saved. In one handy volume is packed an immense amount of information. It is of too highly a technical character to be reviewed here, but we can heartily congratulate its author upon so well filling the gap in botanical literature which was his aim.

TAHOUDIN, C. B. NATIVE ORCHIDS OF BRITAIN. Descriptive notes on all species together with some hybrids and abnormal forms

with numerous photographic illustrations. pp. 114. Grubb, Croydon, 1925; 5/-. This little work, which is illustrated with some good photographic reproductions is, as the author says, written by an amateur for amateurs. We notice that although he cites the various articles in the Journal of Botany, the pages of our Reports, in which several new plants were first described, are not alluded to. He has followed the views (mistaken as I hold them to be) of Colonel Godfery regarding *Orchis maculata* and *O. Fuschii* (as it is misspelled—the spotted Orchis was named after Fuchs, in whose early work it is figured). Again the name *Epipactis violacea* is used in defiance of the earlier trivial and there are also many other archaic names employed. But Mr Tahourdin's object was to give some illustrations from living plants and he has included some interesting forms and popular notes about these species. We may say that *Neotinea* occurs in two distinct colours—the earliest figure of the Irish plant was pink, but that is not the common form in Ireland. As regards *Epipogon*, the account of it, published in our Reports, might have been consulted or quoted, containing as it does some precise particulars on the occurrence of this very rare Orchid in Britain. *Corallorrhiza* is not confined to boggy woods in Scotland; there it is as commonly dunal. We gladly welcome any helper in the field of Orchid investigation in Britain and we hope Mr Tahourdin may go on with his investigations of the living plants and also their history, description and nomenclature in botanic literature.

TAHOURDIN, C. B. Some Notes as to British Orchids. A single specimen of *O. hircina* is recorded from Gloucestershire.

THURSTON, E. and VIGERS, C. C. Note on the Cornish Flora. Reprinted from the Royal Institution of Cornwall, pp. 455-469, 1925. Contains the recent additions to the Flora. *Cnicus* should not be used for the Plume Thistles—*Cirsium* is the valid name.

TRELEASE, DR WM. MONOGRAPH OF AMERICAN OATS. Vol. xx., tt. 420. Museum of Nat. Acad. Science, U.S.A.

TAUNTON NATURAL HISTORY SOCIETY. Report of the Botanical Section. This gives evidence of excellent work being done, some 360 notes being sent in for the year 1924. *Erysimum orientale* Mill, is,

in error, applied to *Conringia orientalis*. Miller's plant is quite a different species. We are glad to see that *Eriophorum gracile* persists.

THELLUNG, DR ALBERT. Drei neue *Amarantus* Arten aus Bolivia = *A. Asplundii* (after Dr Erik Asplund of Upsala) and *A. Bucktienianus*. The latter is called after Dr O. Bucktien of Bolivia. *Epilobes hybrides* from Switzerland and Baden. Le Mond des Plants. September-October (December 23) 1924; November-December (February 14, 1925), 1924. *Siler, l.c.*, March-April 1925 shows that *Siler* Mill. Gard. Dict. Abr., 175, belongs to *S. montanum* Crantz. Other species are *S. garganicum* Thell., *S. Zernii* Thell., *S. siculum* Thell., and *S. Nestleri* Thell., while *Siler trilobum* belongs to *Laser* Borkh. 1795, which has three species—*L. trilobum* Borkh., *L. divaricatum* Thell. and *L. cordifolium* Thell. But surely in this we should use *Laser Siler* (L.), comb. nov. rather than *L. trilobum* which does not retain the earliest trivial. Had the genus *Siler* been retained for this species *Siler Siler* (L.) would have been the name to use for the Cherry Hinton plant, which is now extinct. Kulturpflanzen-Ergenschaften bei Un Krautern, 1924.

UNITED STATES DEPARTMENT OF AGRICULTURE. Continues to produce a most wonderfully large and valuable output. Among the numerous Bulletins is one on Bamboos: Their Culture and Uses in the United States (N. 1329. May 1925). We learn that Bamboo species number 490 belonging to 33 genera. The nomenclature is a thorny one, the Giant Timber Bamboo, referred to in literature by half a dozen different names and described as a plant 8-10 feet high or a tree 50-60 feet high is *Phyllostachys bambusoides* Sieb. and Zucc. A photograph of a typical grove of them at Savannah, Georgia, is shown. Bulletin 1331 treats of the Madonna Lily, *Lilium candidum* and gives excellent methods for its successful cultivation. Bulletin 1443. Cultivated Grasses of Secondary Importance. These include *Bromus inermis*, *Sorghum halepense* (L.) Pers., *Poa trivialis*, *Agrostis stolonifera* and other species of which the salient facts are given under the respective species in the earlier part of this Report.

VINES, DR S. H. Reminiscences of German Botanical Labora-

tories in the Seventies and Eighties, as a student of Sachs in Würzburg in 1877 and 1880 and of De Bary at Strassburg in 1879 and 1881. *New Phyt.* xxiv., 1-8, 1925.

VOUK, Prof. and Dr V. Uredio in *Acta Botanica Inst. Bot. R. Univ. Zagrebensis*. Vol. i., 1925. We congratulate our Croatian friends on this excellent publication.

WARMING, EUGENE, Ph.D. *OECOLOGY OF PLANTS*. An Introduction to the Study of Plant Communities. Assisted by Martin Vahl. Prepared for publication in English by Percy Groom, M.A., D.Sc., and Isaac Bayley Balfour, F.R.S. pp. 422. Second impression. Clarendon Press, Oxford, 1925. This important text-book has been reviewed from time to time and is acknowledged to be the standard book on a subject which Dr Warming, whose obituary will be found in *Rep. B.E.C.* 546, 1924, had made peculiarly his own. This classic volume, a most valuable addition to botanical literature, the first edition of which appeared in 1909, has paved the way for the extraordinary development of the subject among botanists in all parts of the world. In Britain the subject has been taken up by many botanists including Tansley, Moss, Adamson, etc., and from time to time we have drawn attention to the oecological treatment of various tracts of country by this school of workers. In America conspicuous oecologists, such as Cowles and Clements, have added much to our literature and the latter especially has created an enormous number of new terms which need a lexicon of their own. In Germany Drude and Graebner have been industrious exponents, as in Switzerland have Schroeter and Roebel. Belgium had its Massart and France its Flahaut and they have done yeoman service. Notwithstanding the vast output of oecological literature Warming's text-book still holds the field and the Clarendon Press has earned the thanks of thousands of students by reproducing it in such excellent style. One is again and again struck with the realistic touches Warming gives. Under "Nanism," which has nothing Zolaesque in it, he actually says of mountain plants that the "size of the flower" which by a cursory observer is often said to be larger than in the lowland plants, is a subjective impression, probably aroused by the small size of the vegetative organs, and in many instances is not supported by actual

measurements. There are cases, especially in Zetland, where this statement does not hold true, as the flowers of *Lathyrus pratensis* are nearly 50 per cent. larger than the southern form, and the florets of *Poa trivialis* 15 per cent., and of *Trifolium repens* about 30 per cent. Nor is it the case in the mountain forms of *Cerastium vulgatum* where there is no doubt of the actual difference in the size of the petals. In this work, as in others, the nomenclature is not always sound. The generic name *Psamma* is used instead of *Ammophila*; indeed it gives the term *Psammetium*, instead of *Ammophiletum*. *Triticum* is used instead of *Agropyron* so we should have *Agropyretum*. *Armeria*, instead of *Statice*, *Bromus mollis*, instead of *B. hordeaceus*, *Festuca valesiaca* for *F. Vallesiana*, *Carex stricta* for *C. elata*, *C. rostrata* for *C. inflata*, *Aira* for *Deschampsia*, *Statice* for *Limonium* are examples. What amazes one is the vivid descriptions of the various habitats and their occupants not only of Europe but of the World. Other works may supplement this, but in Warming's book on Oecology we have the foundation and the source of the development of Field Botany to which all students must have recourse.

WEBSTER, A. D. Fancy Woods: Their Uses and Value. Gard. Chron. ii., 352. He speaks highly of the wood of *Cotoneaster frigida* (which is good for golf-heads) and of Laburnum and Elder. *Euonymus* is also good. The wood of *Robinia* is of a beautiful colour. One may say that the plinth for the silver ewer which the writer gave to Christ-Church on their fourth centenary was made of *Robinia*. It is of remarkable lasting properties when in contact with soil. Apple wood is valuable for saw-handles, and when of good reddish colour is sometimes used instead of *Erica* for Tobacco pipes.

WEISS, Prof. F. E., D.Sc., F.R.S. On the Leaf-tissues of the Graft-Hybrids *Crataego-Mespilus Asniersii*, and *Crataego-Mespilus Dardari*. Mem. & Proc. Manch. Lit. & Phil. Soc., July 19th, 1925. Plant Structure and Environment, with Special Reference to Fossil Plants. The Presidential Address to the British Oecological Society, January 10, 1925. Journ. of Ecology, xiii., 301, 1925.

WHELDON, J. A. (the late), and WILSON, A. West Lancashire Fern Notes. Additions and Extinctions. Lanc. and Chesh. Natur-

alist, May, 1925. Several new county records are given which are noticed under the respective species. *Drosera anglica* and *Carex limosa* have been destroyed owing to the drainage of the Cockerham Moor.

PROCEEDINGS OF THE ISLE OF WIGHT NATURAL HISTORY SOCIETY FOR 1924. Vol. i. County Press, Newport, 1925; 3/-. Contains a List of the Alien Plants of Hampshire and Isle of Wight by J. F. Rayner, F.R.H.S. A large and valuable list. Some of these are noticed in our New Records.

WILD FLOWER MAGAZINE. Edited by Mrs Dent. Bi-monthly. The Society, of which it is the organ, continues a most vigorous existence. A great improvement in the identification of plants has taken place, but one doubts if the Alpine Columbine has been found in Strathday. The *Euphorbia Esula* for Northumberland, Sussex, etc., is probably *E. virgata*. *Linaria Pelisseriana* and *Stachys germanica* are also errors. Interesting papers are contributed on South Devon Orchids by Paul Furse, on Orchids by C. B. Tahourdin, The Speedwell by Dr Power, A Parson's Holiday by the Rev. H. H. Harvey, and Flowers of the Taurus by Lt. J. Codrington. Miss Dent found the local *Carex ornithopoda* in the grounds of her house at Flass.

WILLIS, J. C. A DICTIONARY OF THE FLOWERING PLANTS AND FERNS. Fifth Edition. pp. lvi., 727. Cambridge University Press, 1925; 20/-. In our Report for 1919, pp. 617-8, we warmly commended the fourth edition of this most excellent work. There we said "for many years Lindley and Moore's *Treasury of Botany* was an almost indispensable occupant of the shelves of the botanist and it is still handy to keep within reach; but in a more specialised manner and with stricter limitations, this new edition of Willis' Dictionary should be in every scientific or reference library. This fifth edition has 28 additional pages. We notice that *Epipactis* Adans. is alone used, but *Epipactis* Haller En. St. Helv. i., 77, 1742, brought into the sphere of citation by Borck., which is the older name of *Goodyera*, is omitted. We are sorry to see *Erythraea* still used instead of *Centaurium* although the latter is properly inserted on p. 129. Gilibert is given as the author but it was previously used by

Hill. The graminaceous *Cuviera* is not mentioned. Under *Vaccinium Myrtillus* the English name, Huckleberry, used in Bucks and Beds, might well be added as it was the origin of the American name so extensively used in the Northern States not only for *Myrtillus* but for species of *Gaylussacia*. One is also pleased to see that *Dryopteris*, following Christensen, is used for the Male Fern. *Gymnogramma* is however employed instead of *Anogramma* (which is omitted) for the Jersey Fern. *Cirsium* is correctly used for the Plume Thistles. How long will our English botanists be in coming to this simple point and not use *Cnicus*, which has a single species, *Cnicus benedictus*. Its use for the plume thistles is by no means a blessing. The oldest name for the Ivy-leaved Bell-Flower, *Cervicina hederacea*, is omitted, yet its genus was properly described. It had species put under it, and one of them was well figured by Redouté in Delile's sumptuous Flore d'Egypt, yet *Wahlenbergia*, an incorrect name, of much later date, published in a seed list, is preferred and alone cited. The book itself is a mass of well digested information. It is compact, excellently printed and, as a supplement, there is a most useful and valuable key to the families of flowering plants. The book is a necessity for every scientific library. One can speak of it in the highest praise.

WILSON, E. H. AMERICA'S GREATEST GARDEN. The Arnold Arboretum. pp. 126, tt. 50. The Stratford Comp., Boston, Massachusetts; 3 dollars. As a branch of Harvard University, about five miles from the State House in Boston, is this wonderful area which, mainly through the personal devotion of its great keeper, Charles Sprague Sargent, whose portrait is appropriately appended to the volume, is now one of the most wonderful gardens in America, if not in the world. Although connected with the University the threads which bind it to the teaching department are of the flimsiest. It pursues its own purpose of cultivation, acclimatisation and study of woody perennials for which purpose it was expressly founded in 1872. In half a century it has known only one director. As Mr Wilson truthfully and eloquently says, Sargent's energy, ability, enthusiasm and devotion have made it what it is to-day. It is known wherever plants are loved and studied, and of its beauty gardens in every land have shared. Towards bringing man nearer

to man this garden is a potent force. It exists for service, which service knows no boundary of race or creed. It is a bit of beautiful New England forever preserved as a garden, a garden where bosky hills, wooded knolls, steep cliffs, open meadows, and valleys are fragrant with the odours of foliage, flowers, and fruit. It owed its origin to the imagination of George R. Emerson and to the munificence of a merchant, Mr James Arnold. He gave a quarter of his residuary estate in trust to Emerson and two others to the value of about £28,000. 125 acres were devoted to the purpose. It was land worn out in a pastoral sense, partly covered with plantations of native trees and nearly ruined by excessive pasturage. The income allowed was less than 3000 dollars a year—so it was not a very rosy prospect which was before Sargent on his appointment, but big men do big things. Then when Olmsted was constructing a park for Boston came the opportunity of a great onward movement, and in 1882 the city agreed to add certain lands, to be responsible for taxation, and to make and maintain certain roads and walks in return for which the University agreed to extend admission to visitors at the same times and conditions as the Parks and to pay a yearly rent of one dollar—the agreement to run for 1000 years and to be then renewed for ever. Now its area is 250 acres. It is a beautifully diversified garden for it has the pleasant Bossy Brook running through it; there is Peter's Hill and Hemlock Hill, the latter having steep cliffs and being covered with a dense canopy of Hemlocks, through which here and there rise White Pine, Birch or Sugar Maple, and then there are the rejuvenated members of the old forest of many kinds of oak. The most recently planted trees are grouped as far as possible, into their families and genera. You may begin with Magnolia at the Jamaica Plan Gate and end with the Coniferae at Walter Street Gate. How it has prospered is shown by the fact that now the Arboretum contains between five and six thousand species and varieties belonging to 87 families and 325 genera. These are all from the Northern Hemisphere. It is a little surprising to hear that no tree from S. Chili or New Zealand proves hardy in the Arboretum. We must refer members to this delightful work itself where the arboreal features are so eloquently and graphically described. To enable one more fully to realise the Arboretum's charm very beautiful illustrations by the author are included. That of the Pond with

its flowering cherries is elegantly dainty. Spring, Summer, Autumn (illustrated with a branch of fruiting *Berberis vulgaris* and the American Mountain Ash), and Winter (showing the naked Birch in all its beauty) are shown. Boston, too, has its Cherry blossom festival, and Crab Apples their opulence. Who would not like to go there in "Lilac time" though very far from London, and instead of Nice go to view the carnival of Azaleas at the Arboretum. To me the glories of the Azaleas in Japan far exceed in beauty the cherry with its too formal loveliness. The Hawthorns must not be forgotten. Whoever could visit Arnold and omit paying due worship to the thorns and to the director who has "Dahlstedted" them, albeit there is only one edible one cultivated there. Curiously the Rhododendron, in all its multitudinous variations, does not take kindly to Boston, but *Kalmia* makes up to some extent. The Conifers are a group to themselves, and there are many climbing plants grown there, while even the road borders are made beautiful with low-growing species of Rose and Juniper. One may add the function of the establishment does not end with the Arboretum. The Herbarium contains a quarter of a million specimens, the library 35,000 volumes and 8000 pamphlets and nearly 10,000 photographs. Such is what this charming volume discloses. When will Oxford attempt to combine the work begun by Danby in 1621 and utilise some of the many available acres in the near vicinity to some such a purpose as has been done by its American rival. Dana said, "Thoughtful skill and refined taste are needed to produce a beautiful work," and the Stratford Publishing Company have done it.

WILSON, ERNEST H. THE LILIES OF EASTERN ASIA. A Monograph. pp. xiv., 110, tt. 17. Dulau & Co., London, 1925; 25/-. Here the results of three journeys into Eastern Asia, the headquarters of *Lilium*, are detailed. It fitly summarises the knowledge which has accumulated since the publication of Elwes Monograph in 1880.

WRIGHT, WALTER P. ALPINE FLOWERS AND ROCK GARDENS. Illustrated in colour with Notes on Alpine Plants at Home by William Graveson. pp. 292, with 44 coloured plates. Third edition. George Allen and Unwin, London, 1924; 15/-. This is a very at-

tractive volume, with brilliant plates of flowers set amid their natural surroundings. *Gentiana acaulis* is given on the frontispiece, and there is a delightful representation of *Androsace helvetica* with a white glacier as the background. There is a lovely group of *Myosotis alpestris* with *Silene acaulis* and *Primula longifolia*; another of *Erica carnea* on a hill slope, with distant mountain-tops suffused with the alpine glow, the startling rosy-red of *Rhododendron ferrugineum* contrasting with black-green pine, and the graceful *Soldanella* with "snow and fire" as a background. These are things to delight the eye and to bring back memories of far distant excursions in the Alps and Dolomites. The text is useful and practical and the work is divided into "Characteristics and Habitat, Alpine Plants at Home, Cultural, Descriptive and Selective," the latter in three sections. The former deals with fit species for culture, the second includes Shrubs for the Rock Garden, Lessons from the Japanese, and Selections recommended to the Maker of the Rock Garden, including Bog Plants and Ferns. Our member, Mr Graveson, contributes a very readable article on British Alpine Plants in which there are two good photographs of the Devil's Kitchen and the Snowdon Cliffs, home of *Lloydia* and the Saxifrages. In his article he gives a sympathetic reference to George Don of Forfar, and a good description of the homes of the Scottish alpines, albeit *Saxifraga caespitosa* is limited to two widely separated Scottish localities. Excellent and practical advice "How to form Rockeries" is given as also how to choose the kinds of stones and soils. The book makes an ideal present to a garden-lover and its possessor will be able to find value and pleasure in its perusal. A word of criticism may be offered. More attention should be given to the use of capitals in specific names. These are often used where they are not needed, e.g., *Scutellaria Alpina*, and they are not employed where they should be, as in *Adiantum Capillus-veneris*. *Scolopendrium* is more correctly *Phyllitis*.

OBITUARIES.

BALL, HENRY, F.L.S., M.R.S. Born 1857; died May 1925. He was born in Southport and, with the exception of a few years in pursuit of his vocation, he spent the whole of his life there. After a brief period as an apprentice to his brother, Mr George Ball, pharmaceutical chemist, he set up business on his own. He devoted his life to public service—religious and social enterprise taking the first place among his many interests. Though he was the last man in the world to claim prominence, Mr Ball was the foremost in local circles. His knowledge of the local flora could hardly be surpassed. He had haunted the sandhills since a child and botany was almost an instinct to him. He was a great authority on the Yellow Bird's-Nest—on which some controversy had waged—and he was able to write of the plant from actual observation. He was concerned in an amusing story at a meeting where a foreign professor was elaborating on the flora of the district. The professor had spent weeks in photographing a certain place on the sandhills and elaborating a theory. His fundamental finding was that the trees on the sandhills were the remnants of an antedeluvian forest, and on that he propounded a wonderful scheme. Permission was given to Mr Ball to reply. He did so by saying "I saw those trees set!" He was untiring in his wish to interest the public of Southport in science, and exhibited wild flowers and plants gathered in the district in the Atkinson Free Library, renewing them almost daily. He had great experience in Radiography. When Röntgen discovered X-rays, Mr Ball took up the study immediately and was the first in the town to produce an actual photograph. He was made Honorary Radiographer to the Southport Infirmary. He paid 3000 visits to the Infirmary to apply X-rays to patients, without fee. He was admitted a fellow of the Linnean Society about 1915, and was a member of the Society of Radiographers. He was a prominent Methodist layman, and was a Methodist of the fourth generation. He was the best known local preacher in the district, and was elected President of the Wesleyan Methodist Local Preachers Mutual Aid Association. During the war Mr Ball's municipal work was carried on with the greatest enthusiasm. He was elected Mayor of Southport in 1915 and made great

efforts in raising war relief funds. He had conferred upon him, in connection with the Russian Flag Day movement in England, the Russian Imperial Order in recognition of his services. Councillor Ball also received a medal from the Order of St John of Jerusalem in recognition of his work. His special knowledge well fitted him for the chairmanship of the Agricultural Committee which he held up to the time of his death. He was keenly interested in education and had been vice-chairman of the Education Committee. Mr Ball was always ready and willing to help in all good causes. His help to amateur botanists was unlimited. Though always busy, he never failed to give help in naming specimens of wild flowers, etc., and he is greatly missed by all. He died at Plymouth on Sunday, May 10, 1925, as he would have wished, working to the very last. Having preached there twice on the Sunday, he passed away suddenly after the evening service at the house of his host. He leaves a widow to mourn his loss.

RUTH BRIGHT.

BELL, WILLIAM, F.R.H.S. Born 1862; died 1925. By the death of William Bell, Leicestershire botany is deprived of one of its most assiduous field workers. From early boyhood until within a short time of his death, our late member devoted himself in a very thorough way to the investigation of the local flora. He was for many years secretary of the Botanical Section of the Leicester Literary and Philosophical Society and when the new Flora was suggested no more worthy person could be found to edit the phanerogams. He had a very wide knowledge of plants and was ever ready to impart to others. His time was fully taken up with lectures in consequence. He made a number of interesting first records for Leicestershire and received the Royal Horticultural Society's Medal in 1894. He prepared the article on Botany for the British Association Guide in Leicester in 1907. In 1908 he acted as Distributor to the Botanical Society and Exchange Club.

BRANDEGEE, T. S. Born 1843; died April 7, 1925. He was Hon. Curator of the Herbarium of the University of California.

CLARKE, WILLIAM GEORGE, F.G.S. Born at Stokesley, Yorks, January 7, 1877; died June 13, 1925. Educated at Thetford Gram-

mar School he began to take an interest in Natural History as is not unusual, in a predaceous way, by collecting birds' eggs. Early in life he obtained a copy of Sir John Evans' "Ancient Stone Implements." This he used to good advantage in the Brandon and Thetford neighbourhoods, both rich hunting-grounds. In 1894 he was elected a member of the Norfolk and Norwich Natural History Society and his first paper was on Neolithic Man in the Thetford district. Later on he became a reporter on the "Norwich Mercury," of which paper he eventually became sub-editor. He founded a Rambling Club, mainly for botanical research, but he was connected with many societies, and "ask Clarke" became a household word. He was elected a Fellow of the Geological Society, and in 1921 he published an important work "Norfolk and Suffolk." A third book on Breckland, a name which he coined, now in general use, had been completed a few months before his death but it has not been published. "He loved Nature in all her moods, and she in turn imparted to him her secrets." I found him very inspiring and helpful and the Society has lost a useful member. His funeral was very largely attended and expressed the respect and affection he had gained among the citizens of Norwich.

DARWIN, SIR FRANCIS, F.R.S. Born at Down, Kent, 1848; died at Cambridge, September 19, 1925; aged 77. Educated at Clapham Grammar School and Trinity College, Cambridge, and at Würzburg in Germany under Sachs, he collaborated with his distinguished father in the epoch making work on the Power of Movement in Plants. He acted as University Lecturer in Botany at Cambridge from 1884 until 1888 and Reader until 1904, and was Deputy for Prof. Babington until 1895. He published with E. H. Acton a "Practical Physiology of Plants." He also wrote a book on the "Elements of Botany." He was an ardent and original worker in plant physiology. We owe to Sir Francis one of the best biographies yet issued that of the "Life and Letters of Charles Darwin." He was Vice-President of the Royal Society 1907-8, and was knighted in 1913. At the Charles Darwin Celebration at Cambridge, he was a most kindly personage, and the wonderful testimony paid to a great scientist must have been one of the proudest moments of his lengthy and eminently useful career.

DYKES, WILLIAM RICKATSON. Born November 4, 1877; died, after a motor collision, December 1, 1925. He was educated at the City of London School and Wadham College, Oxford, taking honours in the Classical School. He then went to the Sorbonne and took his L. ès L. at the University of Paris. He was assistant master at Charterhouse from 1903-1919. While there he began the cultivation of Iris and its study. He visited Oxford for the purpose of examining the old specimens in the Morisonian and other Herbaria. He had a wide correspondence and took great pains to arrive at a correct conclusion, while his vacations were largely spent in visiting the classic habitats of many species. In 1912 he published a Monograph of the genus, which is reviewed in *Rep. B.E.C.* 188, 1912. The illustrations are good and it was a valued contribution to our knowledge of the genus. The section *spuria* seemed to be treated less happily. In 1919 he was selected to take the secretaryship of the Royal Horticultural Society succeeding the Rev. W. W. Wilkes of Shirley Poppy renown. He threw great energy into his work and the Society gained lustre under his regime. Its membership roll is now 23,000. He was contemplating a Monograph of *Tulipa*. In 1924 he issued a "Handbook of Garden Irises," full of practical advice. It is a cause of great regret that his useful career should have been so prematurely cut off. He was motoring near Woking when his car collided with a lorry. His ear was torn away and his right arm broken. After the necessary amputation he succumbed to shock, at the early age of 48. There was a portrait of him published in the *Gard. Chron.* on December 5. "The Times" will miss a valued contributor.

EARLE, Mrs C. W. Born June 8, 1836; died at the Woodlands, Cobham, Surrey, February 27, 1925. Authoress of "Pot Pourri from a Surrey Garden"; "More Pot Pourri from a Surrey Garden" in 1903; "A Third Pot Pourri" in 1906; "Gardening for the Ignorant" in 1912. A delightfully charming personality, Mrs Earle, by her writings, interested a large circle in Herbals and their contents. On one occasion at a house party at Kiddington Hall our host, Captain Gaskell, himself a great garden lover and the discoverer of *Muscari* near Ditchley, was making some remarks antagonistic to papistry but we got the subject changed by my turning to Mrs Earle and saying he must not expect to make converts to a

no-popery cry in the presence of the authoress of Pot-Pourri. We had an expedition to a delightful wood, the home of *Ornithogalum*, but the rain came on. One of our guests was dressed in a state brocade, much more fitted for marble-halls. She was a Miss Throgmorton, but she bravely turned it up and walked us off our legs. The truth dawned upon me after dinner for I remembered she had been lady-in-waiting to the ill-fated Empress of Austria who herself was an extraordinary pedestrian. Mrs Earle was practically a vegetarian, at least when I knew her and would have bread and cheese despite all temptation.

GAMBLE, JAMES SYKES, C.I.E., F.R.S. Born July 2, 1847; died East Luss, September 16, 1925. He was the second son of Dr Harpur Gamble, R.N., and was educated at New Cross, Royal Naval School and at Magdalen College, Oxford, as a Demy, where he took first-class in mathematics. He entered the Forest Service and studied Forestry practically at Nancy (where Nanquette was director) in the Ecole National des Eaux et Forêts until the Franco-Prussian war, when he pursued his studies at St Andrews under Dr Cleghorn. He collaborated with Sir George King in the preparation of the Flora of the Malaya Peninsula, many new species being described by him. After King's death he continued the gigantic task. He also had on hand the arduous work of the Flora of Madras of which six parts have appeared from Ranunculaceae to Plantaginaceae. These have already been reviewed in these pages. His issue of the Monograph on the Indian Bamboos was followed by his election to the Royal Society. Another magnificent piece of work was his most useful "Manual of Indian Timbers," 1881, which from time to time has been referred to in these pages, each edition being an improvement on its predecessor. A large part of the Asian plants in the Du Bois and Sherardian Herbaria at Oxford were kindly identified by him. In 1899, on his retirement from the Forest Service, he received the C.I.E. See Nature, ii., 684, 1925. He also received the Jury Medal and Diploma of the Paris Exposition of 1906. For this he organised the Indian forestry section. He was a most patient and untiring taxonomic worker as is fully exemplified in his Madras Flora. Owing to his kindness I was enabled to give some particulars of Lawson's work in India in our last Report. Oxford owes him a debt of

gratitude for much timely assistance. An excellent appreciation of him is given in the Kew Bulletin 1925 with a good Bibliography.

GIBBS, Miss LILIAN SUZETTE, F.L.S. Died at Santa Cruz, Tenerife, January 30, 1925. Miss Gibbs had two years' training at the Swanley Horticultural College and in 1901 became a student of the Royal College of Science, South Newington, under Prof. J. B. Farmer. She stayed on for some years as a research student gaining the Huxley Medal in Natural Science. Then, in pursuance of her aim, which was to investigate the high-mountain flora, she visited the Alps in 1905, in 1906 Southern Rhodesia, in 1907 the Mount Victoria range in Fiji, and in 1910 the peak of Mount Kinabalu, 13,000 feet, in British North Borneo, collecting many plants new to science. Then in 1913 she made an adventurous journey to the Arfak mountains in Dutch New Guinea where she studied the flora assiduously from the coast level to the main ridge, 7000 feet in altitude. The results appeared in "The Phytogeography and Flora of the Arfak Mountains." Many new plants were discovered. The Bellenden-Ker range in Queensland she ascended in the rainy season, results being given in Journ. Bot., 1917. The mountain summit plateau of Tasmania was also explored, the results being described in two papers in Journ. Ecol. in 1920. Later on she visited South America and at her death was working out the result of her expeditions. I had the pleasure of hearing her lecture on her New Guinea experiences which she did with considerable vim. I also got from her afterwards a vivid personal account of her experiences. By her will she left the Trustees of the British Museum all her collections of plants, books, and papers, now in the British Museum, and a scholarship for Cancer Research to the University of London of the annual value of £150, to be called, in memory of her mother, the Laura de Saliceto Studentship.

GODLEE, Sir RICKMAN JOHN. Died, suddenly, April 20, 1925. A nephew of Lord Lister, and his biographer. He was surgeon to the Household of Queen Victoria, Surgeon-in-ordinary to King Edward VII., and King George V., and President of the Royal College of Surgeons. He returned in 1920 to a beautifully situated home near Pangbourne. He left, after his wife's death, £10,000 for travelling

scholarships for students of University College Hospital Medical School. His note on *Sonchus palustris* is in the *Report* 524, 1924.

HENSLOW, REV. GEORGE. Born March 23, 1835; died at Bournemouth, December 30, 1925. He was the son of the Rev. John S. Henslow, rector of Hitcham, Suffolk, and Professor of Botany at Cambridge. He was educated at the Grammar School, Bury St Edmunds, became a scholar of Christ's College, Cambridge, and took a first-class in the Natural Science Tripos and second-class in both Mathematics and Divinity. His sister was married to Sir Joseph Hooker. Henslow became curate of Steyning, Sussex, and was later appointed Headmaster of Frampton Lucy Grammar School, Warwick, then of the Grammar School in Stone Street, London. In 1886 he was appointed Lecturer on Botany at St Bartholemew's Medical School and also held lectureships on botany at the Birkbeck Institute and Queen's College, London. For many years he was Hon. Professor of Botany to the Royal Horticultural Society. In 1888 he published "The Origin of Floral Structures," and in 1895 "The Origin of Plant Structures," but his views that the shape and arrangements of the parts of the flowers were directly the result of bee-visits over a long period were generally ignored. He also published several works such as "How to Study Wild Flowers," "Poisonous Plants," "The Plants of the Bible" as well as many on religious subjects. In his later years at Bournemouth after his retirement he took up Spiritualism.

HIERN, WILLIAM PHILIP. Born at Stafford, January 12, 1839; died at the Castle, Barnstaple, November 1, 1925. Hiern's father, Mr J. G. Hiern, lived at the Castle and his paternal grandmother was a member of the poet Gay's family. But mathematics rather than song was the bent of W. P. Hiern, whose early education was at Worcester and St John's College, Cambridge, which he entered in 1857, taking a high position (ninth) in the mathematical tripos in 1861. He was a fellow of his College from 1863 to 1868. In 1868 he was admitted *ad eundem* M.A. at Oxford, and in that year he married Martha Bamford, member of an old Yorkshire family. The married couple took up their residence at Richmond and there the proximity of Kew Gardens exerted their influence, and Mr

Hiern was drawn to our science in which he became proficient. One of his earliest contributions was a paper in Seemann's Journ. Bot. 1871, on the British Water Buttercups, entitled "On the Forms and Distribution over the world of the Batrachian Section of *Ranunculus*." He says 75 different specific names have been published, but after investigation he thought "that the most philosophical course to follow was to unite all the forms under one aggregate species." Even then he reduces the named "forms" to 35, about six of which were not British. They include *hederaceus* and *Lenormandi* and *Drouetii* as distinct from *trichophyllus*. He described *sphaerospermos* for the first time as British on the evidence of Dr Kirk's Warwickshire specimens. His mathematical bias is shown in this paper, and is illustrated by the leaf curvatures of the *hederaceus* and *heterophyllus* groups. He published a "Monograph of the Ebenaceae" in 1873, through the Cambridge Philosophical Society, of which I have his autographed copy; "Dicotyledons," 1896-1900, a "Catalogue of the African plants collected by the Portuguese botanist. Dr. Welwitsch (commemorating the genus *Welwitschia*) in 1853-61. This and other work on Serpa Pinto's collection gained him the Corresponding Membership of the Royal Academy of Lisbon, and an autograph letter from the King of Portugal. More than 50 botanical contributions were made by him. He was an early convert to the principle of priority and in his contributions to the Flora of Tropical Africa and elsewhere he had the courage of his opinions. He was a contributor to the Linnean Society's Journal, of which body he was a Fellow, and in 1903 he was elected F.R.S. In later years he threw himself whole-heartedly into the cause of education in Devonshire, became chairman of the Education Committee and Alderman of the County Council. Indeed he filled an enormous number of offices, for which his early training in the local firm of bankers at Barnstaple had given him fitness. He, however, did not neglect his Botany for he wrote the article on that subject for the Victoria County History for Devon in 1906, and also in the Court Guide and County Blue Book. He acted as Secretary to the Botanical Committee of the Devonshire Association and issued annual reports most of which have been noticed in these pages from 1909-1919. In an appreciative note by his friend, Mr Brokenshire, he is called the Linnaeus of Barnstaple. Here he con-

ducted many botanical rambles—and these were not picnics—they were much more serious, and I have had the privilege of being with him on more than one occasion. He took life seriously, and perhaps some people thought him somewhat dogmatic and precise, but what else could a mathematician be. One always looked forward to his publishing his large store of accumulated material which would have made a Flora worthy of his glorious county. Here is a picture of him, "Punctual to the minute he arrives in tall hard hat, and Dartmoor boots, carrying a roll of 6-inch Ordnance maps and newspaper sheets tied round with thick cord. He was blessed with 17 pockets. He liked to get the serious work done before lunch—after which for a time two plants occupied his attention—tobacco and briar." He did his botanical work with low power glasses. His simple dissecting microscope formerly belonged to the great Indian botanist, Wallich. In his earlier days he had visited the great botanical gardens of Paris, Stockholm, Lisbon, Vienna, Petersburg and Moscow. The last time I met him was in Adelaide where, like myself, he was one of the guests of Australia at the British Association meeting. There Hiern was arrested as a spy. He made a short ramble from one of the ports and was detected by a lynx-eyed sentinel. He was, however, soon released, and he got back to his hotel safe and sound. One might add that he made an Index Abecedarius to the "Species Plantarum," and wrote a paper on *Alsine* and *Minuartia* to Journ. Bot. Almost my last note from him was on the discovery of true *Ranunculus tripartitus* in Devon, and I was able to tell him that I had seen his *Ranunculus sphaerospermus* growing in the Jordan. Until 1923 he had robust health, but he had a slight seizure in Exeter at a public meeting. The week before his death he attended a function at the Barnstaple Grammar School, so that he died in harness. In politics he was strong Liberal and a President of the Barnstaple Central Liberal Association. We shall miss a valued member and Devonshire one of its characteristic and courageous country men. Spencer Moore named the African Acanthaceous genus *Hiernia* in his honour.

LEVERHULME, VISCOUNT AND LORD OF THE WESTERN ISLES. William Hesketh Lever, Hon. LL.D. (Edin.), etc. Born at Bolton, 1851; died, from pneumonia, May 7, 1925. He married Elizabeth

Ellen Hulme—hence his title Leverhulme—a happy union, and there is one son who succeeds him. He was made a Baronet in 1911, a Baron in 1917, and in 1922 a Viscount. His career is one of the romances of industry. Born of humble parents, at the age of 16 he entered his father's grocery business, and at 26 started business for himself at Wigan. He began making Sunlight Soap at Warrington, and with his genius for advertising he succeeded so well that Port Sunlight was founded and a limited company formed. The manufacture of glycerine was added to the existing soap works. He made Port Sunlight a model town and added one conquest to another in his acquisition of the firms of Crosfield, Vinolia and Pears until he had the soap-trade in his hands. He was a very cheery soul and a lover of beautiful things, and had a real patriotic spirit as evidenced by his gifts to the nation of Stafford House as a repository for the London Museum and the establishment of a Lady Lever Art Gallery at Port Sunlight. He was an indefatigable worker. In his later years he lost his hearing, but he was as fresh in thought and vigorous as ever when I met him at a Health Congress in Brussels. In Belgium he had very wide interests and had won for himself the respect and the affection of the King and Queen. Something of importance arose. We had a Committee nearly on to midnight, but the next day he made his Presidential Address before King Albert and an excellent one it was, and evidently pleasing to his Majesty. He was one of our Life Members—an excellent insurance policy that I recommended to him. It was a great disappointment to me that I could never find time to visit him in the Lewes nor to see him at Port Sunlight with "a thousand clerks on his right and a thousand on his left hand." Indeed the last time I saw him was in 1924. I had just come back from Spain but slept in London. It came to my memory that the Academy Private View was about due, so I said to my young travelling companion that I would go down to Burlington House to enquire. He said "you cannot possibly go to the Academy dressed as you are." Well, I said, even if it is the day perhaps there will be some one as badly dressed. "That's impossible," was the unflattering reply. It was the Private View, and the first person whom I knew was Lord Leverhulme, and he ran me pretty close. I said "Come and look at my picture." He stared, and when he looked at it, said, "Oh, I thought you had painted it."

I said, "Did you think I wanted to sell it to you." However, as usual, we had our joke—for he loved one and had many choice stories. He was as keen as mustard, and his speeches always had some attic salt and a great amount of worldly wisdom. Despite temptation he kept to the simple faith of his forbears, and in the world's commerce he commanded that respect which his honesty and integrity have justly won for him in all the quarters of the globe—he could really take the motto of the old Apothecary Society "Opiferque per orbem dior," for he had associated businesses in Germany, Belgium, Switzerland, Australia, Canada, America and Africa. His funeral was of a most impressive character, 7000 employees lining the road and the 400 wreaths included one from King Albert. One feels that the commercial world is the poorer for his loss however much richer it may be for his example.

MAIDEN, JOSEPH HENRY, I.S.O., C.M.G., F.R.S. Born St John's Wood, London, April 1859; died, at Sydney, November 8, 1925. He was educated at the City of London Middle Class School and was a student in London under Prof. Bentley. His health failing he was ordered to take a long sea voyage. He went out to Sydney and being glamourised by the wonderful harbour determined to make that colony his home. He first did work as an educational lecturer, and in 1881 he became Curator of the Sydney Technological Museum. Here, in collaboration with Baker and Smith, he began his researches on the Eucalypti which have borne so rich a harvest. To this work he devoted year after year of study and the Monograph grew in interest and value. Fortunately he lived long enough to see it practically completed and seven completed quarto volumes are before me as I write. They contain 225 plates. He was very pleased to be made an Hon. Member of our Society in 1920. I had long before made his acquaintance, and he was to have been my host at Sydney on the British Association visit, but the outbreak of war altered my arrangements. In reply to my apology came a wire from Sydney, "Deeply deplore not seeing you once again." Maiden was also the author of "Useful Native Plants of Australia," "Illustrated Flowering Plants and Ferns," "Manual of the Grasses of New South Wales," "Wattles and Wattle Bark," and a most useful and inexpensive "Forest Flora of New South Wales," occupying

no fewer than eight quarto volumes. Few botanists more richly deserved the Linnean Gold Medal which was conferred on him in 1915. His tenure of the wonderful Botanical Garden at Sydney was highly successful. These gardens, with their extraordinary history, once a portion of the convict settlement, he made one of the loveliest gardens in the world, and there he formed one of the largest herbaria in the southern hemisphere. He was President of the Royal Society of New South Wales on two occasions. Only last year (p. 429) we offered him our hearty good wishes on his retirement. Alas his retirement from office, not his cessation from labour, was all too brief. There is a portrait and eulogium of him in the *Gardeners' Chronicle* 400, 1924. As the memoir in *Pharm. Journ.*, written by one who knew him, says "It is given to few of us to carry out so faithfully, fully, and fruitfully so noble an idea and discipline of thought and deed as were exemplified in his character and career."

MASSART, Prof. JEAN. Born at Etterbeek, a suburb of Brussels, in 1865; died at Houx, August 1925. He was a Corresponding Member of the Paris Academy of Science, a Foreign Associate of the Royal Academy of the Lincei. Educated at Brussels University, under Errera, whence he took his doctorate in Science in 1895, his earlier researches were in general biologic science. On the death of Prof. Leo Errera he was appointed director of the Errera Institute, and much of his early work is published in the *Memoirs of that Institute*. He took up Ecology with zeal and, as he was an expert photographer, he was enabled to illustrate beautifully his work on the *Vegetation of Belgium*. In his able "Esquisse de la Géographie Botanique de la Belgique" (*Rec. de l'Inst. Bot. Leo Errera* vii., bis) 1910 there is much original and valuable work. The companion volume was illustrated with about 500 photographs. This more popular work "Pour la Protection de la Nature en Belgique," issued in 1912, was a powerful advocacy for conserving the natural beauty of his country—so soon to be devastated by war, and his photographs of the beauty spots were excellent. In the same year was issued his "La Cinquantième Herborisation Générale de la Société de Botanique de Belgique," treating specially of the littoral, the polders and dunes which are such a feature of that coast. I

made his acquaintance—which developed into a true friendship—on the occasion of the International Phytogeographical Excursion in Britain in 1911. He was of robust build, had a swarthy complexion, was instinct with kindness, and without a touch of that superiority which some savants or would-be savants affect. He was “the photographer” of that very successful expedition, and many of his delightful views are in evidence before me. In his note on the excursion, he said what struck him most was (1) L’abondance et la beauté des grandes arbres, surtout des chênes qui vivent partout entre les champs et au bord des chemins. (2) La douceur extraordinaire du climat, permettant de cultiver en plein air (a) à Cambridge, *Eucalyptus Gunnii*, *Viburnum Tinus*, *Quercus Ilex*, (b) presque dans les Highlands, *Araucaria excelsa*, *Tropaeolum speciosum*, (c) en Irlande *Passiflora caerulea*, *Bambusa fastuosa*, *Musa Bajoo*, *Cordyline australis*, (d) en Cornouaille, des fougères arborescentes (*Dicksonia antarctica*). . . . (14) Last not least, l’amiabilité et la grande compétence des botanistes anglais, qui nous ont permis de voir énormément de choses en un mois.” Then, too soon, came the havoc of war. Honest Jean’s outspoken denunciation of the iniquities perpetrated by the invaders led to his having to flee first to Holland, then to Antibes in France, whence I had much evidence of his activity with the “subterranean press” in Belgium and his zeal for the Red Cross. He was one of our very valued Honorary Members, and when I last saw him in Brussels in 1922, I sounded him on the question of resuming international discussion, but he was emphatically negative. I was to have gone over again to stay with him, but the opportunity did not arise. But the vivid personality of a kindly man and an able botanist remain. His memory will be cherished by many a student who passed under his hands and only last month the son of the distinguished botanist of Geneva, M. Chodat, was speaking to me in the warmest way of Massart’s fatherly friendliness to his pupils.

MOREY, FRANK. Born at Newport, Isle of Wight, March 1858; died there December 29, 1925, after an operation, having been in his usual health until five days before the end. From boyhood he was a keen naturalist, and made collections of most of the groups of insects and kindred creatures. These were very extensive.

Botany attracted him later and in 1920 he formulated a scheme for a census of the plants of the Island, but the paucity of workers prevented much progress. Previously to this, in 1909, he published "A Guide to the Natural History of the Isle of Wight," a substantial volume of 560 pages, to which, besides himself, a score of specialists contributed. In 1919, with Mr James Groves, he founded the Isle of Wight Natural History Society, which has now a membership of 275, acting as honorary secretary and editor of its "Proceedings." A year ago he purchased Borthwood Copse, a beautiful wood of 55 acres, to save it from impending destruction, and bequeathed it to the National Trust of the Island Committee, of which he was a member, as he was also of many scientific societies, local and national. For a time (till the war prevented his attendance) he was on the Council of the Ray Society, and was to the last meteorological observer at Newport for the Meteorological Society. He spent time and money to secure a home for local geological collections, and to add to them. He was also President of the Newport Literary Society. As a citizen he was no less active. He was manager and trustee of the Newport Savings Bank for many years, a manager of the County Council Evening Classes, and a co-opted member of the Borough Educational Committee. He was fond of travel, visited the northern capitals of Europe, including Moscow, went to Egypt, Palestine, Greece, etc., and spent eighteen months in India and Ceylon, planned to go to China and Japan, but was compelled by illness to return home. As chairman of H. W. Morey & Sons, timber merchants, he occupied a leading position in the commercial as well as civic life of the Island. A man fastidiously just, of unobtrusive disposition, and ever-courteous manners, he was as popular as he was respected throughout the beautiful island he loved so well.

J. F. RAYNER.

SAUNDERS, JAMES. Born at Salisbury, March 30, 1839; died at Luton, Beds, April 17, 1925. Having spent some years in teaching he went early in life into the local industry of Luton straw-hat making. For most of his life he was interested in Botany and Ecology. He made some valuable discoveries in Bedfordshire, some of these appearing in Journ. Bot. 249, 1884. In the same Journal 271, 1889, he records the occurrence in Buckinghamshire of *Arnoseria* and

Dryopteris Thelypteris which still persist. But naturally it was Bedfordshire that benefitted most by his exertions, and in 1883 he sent a list of South Bedfordshire plants to the Journal of Botany following it up with other papers. His best find was that of *Toly-pella intricata* from near Luton, etc. He also gathered *Nitella mucronata*. We had much correspondence a quarter of a century ago and he sent me, in 1907, a specimen of *Lycopodium clavatum* saying, "you will understand my pleasure in finding it as my first observation of this species in Beds during my twenty-five years' search. He contributed the Mycetozoa for the Victoria County History of Beds and Herts and in the botany of that work, my colleague and myself pay a tribute to his arduous work in Bedfordshire not only on the groups mentioned, but also on the Mosses. A bibliography is given in Miss Lister's appreciative review of him in Journ. Bot. 181, 1925.

SCHLICH, Sir W. Born at Hesse Darmstadt; died at Oxford, September 28, 1925; aged 85. He took his degree of Ph.D. at Gies-sen in 1866, and was appointed assistant keeper to the Burmese Forests by the Government of India when he was only 26 years of age. Then in 1870 he went to Sind and if he could not say "Pec-cavi," he did his work there so well that in 1872 he was made Con-servator of Forests in Bengal. After seven successful years there he went to the Punjab, and there succeeded Sir Dietrich Brandis as Chief of the Indian Forestry Department. In 1885 he came to Eng-land to organise the School of Forestry of the Royal Engineering College, Cooper's Hill. Most of his Indian collections he gave to the Oxford Herbarium. He then came to Oxford to our Forestry School and became the Holder of the Chair which with untiring exertion he had helped to found. St John's College made him an Honorary Fellow. He was elected F.R.S. in 1908 and was made K.C.I.E. in 1909. His published works were of great importance, and include a "Manual of Forestry" in five volumes; "Afforestation in Great Britain and Ireland," and "Forestry in the United Kingdom." A friend and neighbour, he was always willing to help our Ashmo-lean Society, of which he was a member and a welcome lecturer. During the difficult period of the Great War he never lost the affec-tion of those who knew him.

SCHWEINFURTH, Dr GEORG AUGUST. Born of German parents at Riga, December 29, 1836; died at Berlin, September 20, 1925. See *Nature* ii., 680, 1925. A distinguished botanist and traveller in East Central Africa in the years 1863-6 he investigated the flora of Egypt from the Delta to Khartoum and from the Red Sea along the slopes of the Abyssinian highlands to the Blue Nile. In 1866 he explored the Sudan and his researches were so valuable that the Fouden Medal of the British Geographical Society was awarded him in 1874. It may be remembered that he discovered the Akka pygmies. He also found an aberrant type of chimpanzee in *A. troglodytes Schweinfurthii*. His account of his journey "The Heart of Africa" is a most attractive and valuable book of travel. A new edition appeared in 1918 after he had taken up his residence in Berlin. His botanical and geological collections are now exhibited in the Berlin Museum. Braun named in 1866 a Scrophulariaceous genus, akin to *Antirrhinum*, from Egypt, *Nubia*, in his honour, and Otto Kuntze suggested that *Schweinfurthia* should replace the Tiliaceous genus *Glyphaea* of Hook. f.

SUTTON, ARTHUR W., V.M.H. Born at Reading in 1854; died April 15, 1925. He was a grandson of John Sutton, founder of the well-known firm. He received the Victoria Medal of Honour in Horticulture, and for some years was on the Council of the Royal Horticultural Society. He was senior partner in the Reading firm of Sutton & Sons. He cultivated and read papers on a Pea which he found in Palestine and crossed with the Garden Pea. *Linn. Soc. Journ.*, 1914. In the same Journal are papers on *Brassica* Crosses, and wild forms and species of tuber-bearing *Solanums*.

TONI, GIOVANNI BATTISTA DE. Died July 31, 1925. The author of the monumental work "Sylloge Algarum" in five volumes, published between the years 1889 and 1907. His other multifarious occupations included his investigations into the life of Aldrovandi, and his account of that botanist's friendship with his tutor Luca di Ghini of Faenza, Maranta, Clusius and contemporary botanists. He also continued Mattiolo's *Illustrazione* of Aldrovandi's Herbarium, of which a brief account was given in the Reports. De Toni's Bibliography has 400 titles, one of them, the *Sylloge*, of thousands of pages. For forty years he was editor of "La Nuova Notarisca."

WATSON, W. Born at Garston 1858; died January 30, 1925; aged 67. (See paper on his work by Sir F. Moore, Gard. Chron. July 15, 1922.) Kew Bulletin, i., 96, 1925. He joined the Kew establishment in 1879, and on the retirement of Mr George Nicholson, he was appointed Curator, an office which he held till 1922. He was author of "Orchids: their Culture and Management;" "Cactus Culture for Amateurs;" "Climbing Plants," and "Rhododendrons and Azaleas." He was elected A.L.S. in 1904, and received the V.M.H. of the Royal Horticultural Society and the Veitch Memorial Medal in 1891. Sir Joseph Hooker dedicated Vol. 130 of the Botanical Magazine to him in commendatory words.

NEW COUNTY AND OTHER RECORDS.

ABBREVIATIONS.—*Rep. B.E.C.* = *Report of the Botanical Society and Exchange Club*; *Wats. B.E.C.* = *Report of Watson Botanical Exchange Club*; *Journ. Bot.* = *Journal of Botany*; *Nat.* = *Naturalist*; † = Adventive; * = New County Record (in the case of adventive plants this is only rarely added); † placed after a plant signifies that the compiler has seen a specimen; † placed after a locality that the compiler has seen it there; × placed between two scientific names means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Watsonian vice-county in *Topographical Botany*; [] enclosing a record mean that confirmatory evidence is needed.

We are under great indebtedness to Dr A. Thellung for his most kindly help in determining so many of the adventive species and also to the Director of the Royal Botanic Gardens, Kew, to Mr J. Fraser, Mr W. O. Howarth, Prof. C. H. Ostenfeld, Dr J. Murr, Dr E. Almqvist, Mr A. Bennett, Mr C. E. Britton, Dr Dahlstedt, M. Paul de Riencourt, Mr C. E. Salmon, Mr C. V. Marquand, Mr W. O. Howarth, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

4. *THALICTRUM MINUS* L., var. *FLEXUOSUM* (Bernh.). Ardtal-naig, M. Perth, three different gatherings, 1924, D. HAGGART.

24. *RANUNCULUS FLAMMULA* L., var. *PSEUDO-REPTANS* Syme (= *tenuifolius* Wallr.), Kenfig, Glamorgan, Miss E. VACHELL. Flore pleno, Cuckfield, Sussex, H. BAINES.

28. *R. SARDOUS* Cr., flore pleno. †W. Linton, Peebles, BALFOUR; Bel Royal, Jersey, Miss M. COBBE.

36. *R. FLUITANS* Lam. A small form approaching *Bachii*, near Trescott, Staffs, DRUCE.

38. *R. TRICHOPHYLLUS* Chaix, var. *GODRONII* (Gren.). Byfleet, Surrey, 1895, C. B. CLARKE.

*39. *R. DROUETH* F. Sch. Wood Walton, Hunts, July 1924, DRUCE.

39 (2). *R. SPHAEROSPERMOS* R. & B. River Mimram, Digswell, Herts, LITTLE. Mr T. B. Blow added it to the British flora from Herts. (River Marum, Welwyn, 1875.) Curiously enough, on the same day, in August 1917, I received from the Herbarium Boissier at Geneva the type specimen of *sphaerospermus*, and Blow's own specimen gathered at Welwyn.

41. *R. PSEUDOFLOUTANS* Bak. & Fogg., var. *MINOR* Pears. Andover, Wilts, DRUCE.

*42. *R. BAUDOTH* Godr. Cheviot, HESLOP-HARRISON.

*45. *R. LENORMANDI* F. Sch. At 1800 feet, Garvald, Peebles, BALFOUR.

†51. *HELLEBORUS VIRIDIS* L. In rocky thicket at Pont Ynysewen, Carmarthen, 1925, Mrs C. W. BEGG.

52. *H. FOETIDUS* L. Caswell, Glamorgan, WEBB.

*54. *AQUILEGIA VULGARIS* L. Stibbington, Hunts, DRUCE.

†55. *NIGELLA DAMASCENA* L. In a field near St Saviour's Church, Jersey, L. ARSENE.

55 (2). *N. HISPANICA* L. Airdrie, Lanark, GRIERSON.

72. *BERBERIS VULGARIS* L. Quite wild, Cheriton, Glamorgan, C. MARKS; *near Presteigne, Radnor, Mrs DEBENHAM.

*77. *CASTALEA ALBA* Wood. Traquair, Peebles, BALFOUR. ? native.

†79. *PAPAVER SOMNIFERUM* L. Among the sand-dunes at Melvich, W. Sutherland, July 1925, DRUCE. Var. *HORTENSE*. In a potato field, Fort Augustus, Easternness, WEBB.

80. *P. RHOEAS* L., var. *CAUDATIFOLIUM* Fedde. In plenty, amid many thousands of *P. Rhoeas*, in various forms near Bury St Edmunds, Suffolk. Gathered with Miss TROWER. Amongst these were var. *Pryorii* Druce and var. *Hoffmannianum* Fedde which has a large, intensely black blotch at base of petal, the blotch being fimbriatedly margined with white. *Caudatifolium* also occurred at Wansford, Hunts; Oundle, Northants, and Thetford, Norfolk, DRUCE.

*83. *P. ARGEMONE* L. Peebles, BALFOUR.

†90. *GLAUCIUM CORNICULATUM* Curt. Millbrook, Hants, Miss M. COBBE.

†93. *ESCHSCHOLZIA DOUGLASII* Walp. Persisting in Jersey, L. ARSENE.

†97. *CAPNORCHIS FORMOSA* (Walp.) O.K. Slate quarries, Luss, Dumbarton, Grierson.

*104. *FUMARIA CAPREOLATA* L. Peebles, BALFOUR.

107. *F. BORAEI* Jord., var. *GRACILIS* Pugl. Barry Dock, Glamorgan, R. L. SMITH.

109. *F. BASTARDI* Jord. Tenby, Pembroke; Ullapool, W. Ross. DRUCE.

114. *F. PARVIFLORA* Lam., var. *ACUMINATA* Clav. Winton. Hants, DRUCE.

125. *RADICULA AMPHIBIA* Druce. Bluntisham, Hunts, July 1925, DRUCE.

- †128. *BARBAREA VERNA* Asch. Mayals, Glamorgan, WEBB.
- *130. *B. ARQUATA* Reichb. Nanpean, Cornwall, THURSTON; Venlaw, Peebles, BALFOUR.
- †132. *ARABIS TURRITA* L. Christchurch, Hants, Miss ROOKE, ex RAYNER.
- *143. *CARDAMINE AMARA* L. Glen, Peebles, BALFOUR. Not seen there by me, EDITOR.
144. *C. IMPATIENS* L. Found on a pollard willow near Powick Bridge about two miles from Worcester, 1922, as a seedling. Cult. 1925, Mrs C. U. STUART.
162. *DRABA MURALIS* L. Still at Coleford, W. Gloster, J. H. HAINES; *on a wall just outside Berkhamstead, Herts, Mrs BROWN; Bishop's Tawton, N. Devon, *Trans. Devon Ass.*
170. *COCHLEARIA GROENLANDICA* L. In great quantity and abundantly flowering in the wet shingle near Poolewe, W. Ross, July 1925, DRUCE.
- †184. *SISYMBRIUM ALTISSIMUM* L. Fletton, Hunts; Wansford, Northants, DRUCE, with †185. *S. ORIENTALE* L.
- †198. *ERYSIMUM REPANDUM* L. Romsey, RAYNER; Christchurch, S. Hants, Miss ROOKE.
204. *SUBULARIA AQUATICA* L. Llyn Bodlin, near Barmouth, Merioneth, N. WOODHEAD in *Journ. Bot.* 339, 1925.
- †217. *BRASSICA ALBA* Boiss. Cornfields, Peebles, BALFOUR.
- †218. *B. JUNCEA* Coss. Bude, Cornwall, THURSTON; Bitterne, S. Hants, RAYNER.
- †223. *B. GALLICA* (Willd.) Druce. Christchurch, S. Hants, Miss ROOKE, ex RAYNER.
227. *DIPLOTAXIS MURALIS* DC. Newport, Salop, DRUCE; †*on rubbish, Wick Park, Caithness, WEBB.

†228. *ERUCA ERUCA* (L.) (E. SATIVA Cr.), Bitterne, S. Hants, RAYNER.

†231. *CARRICHTERA ANNUA* (L.) Prantl. West Dock, Hull, E. Yorks, WATERFALL (as *Eruca*), ex G. C. BROWN.

(All the Bursas named by Dr E. Almquist.)

232. *BURSA ANGLICA* (At.). Marston, Oxon; Basildon, Berks, DRUCE.

232. *B. BRITTONII* (At.). Hunsbury Hill, Northants, DRUCE; Bitterne, S. Hants, RAYNER.

232. *B. CONCAVA* (At.). Elton, Godmanchester, Hunts; Oundle, Northants, DRUCE; Bitterne, S. Hants, RAYNER; Lichfield, Staffs; Birmingham, Warwick; [Damascus, Syria], DRUCE.

~~232. *B. DRUCEANA* (At.). Abbey Wood, W. Kent, ST JOHN MARRIOTT; Birmingham, Warwick; Wood Walton, Hunts, DRUCE.~~

~~232. *B. GALLICA* (At.). Bostall Heath, W. Kent; The Terrace, Folkestone, E. Kent, ST JOHN MARRIOTT; Swathling, S. Hants, RAYNER; Cardiff, Glamorgan; [Kongsvold, Norway], DRUCE.~~

~~232. *B. GERMANICA* (At.). Belvedere, W. Kent, ST JOHN MARRIOTT; Wansford, Northants; Shotover, Oxon; Cardiff, Glamorgan, DRUCE.~~

232. *B. LAEVIGATA* (At.). Leith, Midlothian; Bucklebury, Berks, DRUCE.

~~232. *B. PATAGONICA* (At.). Joydens Wood, W. Kent, ST JOHN MARRIOTT; Peterborough, Northants; Bridge of Allan, Stirling; [Gethsemene, Palestine; Damascus, Syria], DRUCE.~~

~~232. *B. TREVIRORUM* (At.). Woolwich Common, Bostall Heath, Abbey Wood, W. Kent, ST J. MARRIOTT; Leith, Midlothian, DRUCE.~~

232. *B. TURONIENSIS* (At.). Middleton, Durham; Wood Walton, Hunts; Oundle, Northants; Leith, Midlothian; Gairloch, W.

Ross; [Hedoloma, Sweden], DRUCE. Probably this at Belvedere, W. Kent, St J. MARRIOTT.

[232. *B. RUBELLA* (At.). Damascus, Syria, and its hybrid at Tiberius, Mosque of the Dome, Jerusalem, DRUCE.]

†233. *CORONOPUS DIDYMUS* Sm. St Michael's on Wyre, W. LANCs. WHELDON & WILSON.

†235. *LEPIDIUM GRAMINIFOLIUM* L. Avonmouth, C. & N. SANDWICH.

†239. *L. PERFOLIATUM* L. Leicester, BEMROSE.

†240. *L. DENSIFLORUM* Schrad. Hackney Marshes, Middlesex. 1921 [Ref. No. 2002], COOPER, ex BROWN; Port Meadow, Oxon, 1924, DRUCE & PARRY; Bitterne, S. Hants, Miss COBBE; Godmanchester, Hunts, DRUCE; Burnage, Lancs, H. BRITTEN; Par. Cornwall, TRESSIDER.

†240. *L. NEGLECTUM* Thell. Fowey, Cornwall, TRESSIDER.

246. *L. SMITHII* Hook. f. Glenfield, Leicester, BEMROSE. This is, I think, the var. *dubium* like the Northants plant, DRUCE.

†258. *VOGELIA PANICULATA* Horn. Oundle, Northants, July 1925, DRUCE; Fowey, Cornwall, TRESSIDER.

†260. *MYAGRUM PERFOLIATUM* L. Waste ground at railway, Peterborough, Northants, DRUCE; Wormwood Little Scrubs, REYNOLDS.

†263. *BUNIAS ORIENTALIS* L. Byfleet, Surrey, DRUCE; Hitchin. Baldock, Ashwell, etc., Herts, LITTLE.

264. *CRAMBE MARITIMA* L. St. Brelade's, Jersey; Bordeaux, (Guernsey, 1925, Miss M. COBBE.

†268. *RAPISTRUM RUGOSUM* All., var. *GLABRUM* (Host). Newport, Isle of Wight, LONG; Bitterne, S. Hants, RAYNER. Det. THELLUNG.

†269. *R. LINNABANUM* B. & R., var. *HIRSUTUM* Cariot. With above, LONG.

284. RESEDA LUTEA L. Fletton, Hunts, July 1925, DRUCE.

(The Violets have been named by Mrs Gregory.)

291. VIOLA STAGNINA Kit. In 1925 I visited Wood Walton on three occasions in May and July. This species was in good condition and flowered freely. It existed also as the shade form, *umbrosa* Greg., and as the hybrid with *canina* (*V. stricta* auct., non Hornem.) and a triple hybrid *canina* × *montana* × *stagnina* = *V. Fryeri* mihi, DRUCE.

292. V. MONTANA L. It was pleasing to see this rare plant again in good condition and, as Mrs Gregory says, exactly the same as the original gathering made by her at Wood Walton. See *British Violets* 100-102, 1912. Other plants occurred which were crossed with *canina* = *V. Gregoriae* mihi, DRUCE.

293. V. SYLVESTRIS, var. PUNCTATA Druce. Silverdale, W. Lancs, CRYER.

294. V. RIVINIANA × RUPESTRIS. Penrhos, Anglesey, May 1925, DRUCE.

298. V. ODORATA L., var. SULFUREA Cariot. Knightswick, Worcester, C. REA; †Senlaw, Peebles, doubtless planted, BALFOUR.

295. V. RUPESTRIS Schmidt, var. GLABRESCENS Neum. Budleigh Salterton cliffs, S. Devon, 1925, Major ORME; Widdy Bank, Durham, June 1925; Cnoch, W. Ross, DRUCE. × *canina*. Cnoch-an Rocks, W. Sutherland and W. Ross, July 1925, DRUCE.

296. V. CANINA L. × LACTEA = V. WATSONI Druce. Penrhos, Anglesey, with Lady K. Stanley and Mrs Guy Baring, May 1925, DRUCE. Var. MACRANTHA Gren. & Godr. Culbin Sands, Elgin, July 1925. Plants from dry and sun scorched rocks by the Lune (v.-c. 65-69) resemble plants named *rupestris* by Becker. They await further study, TRAPNELL. See *Brit. Violets* 97, 1912.

297. V. LACTEA × RIVINIANA. Mellow Down, Guildford, 1925, F. CLARKE.

- *304. *V. LEJEUNII* Jord. Carnforth, W. Lancs, WHELDON & WILSON.
- *304. *V. OBTUSIFOLIA* Jord. Lytham, W. Lancs, WHELDON.
304. *V. SEGETALIS* Jord. Strath Carron, W. Ross, DRUCE.
- *304. *V. LEPIDA* Jord. Ullapool, W. Ross, DRUCE.
309. *POLYGALA VULGARIS* L. Near Wrexham, Denbigh, JONES.
310. *P. DUBIA* Belynyck. Walney Isle, Lake Lancs, Miss COBBE.
318. *DIANTHUS DELTOIDES* L. Mayals, Glamorgan, HYDE.
- †322. *D. PLUMARIUS* L. Barnwell Castle, Northants, Marchioness of HUNTLY.
- †324. *D. CARYOPHYLLUS* L. On the walls of Elizabeth Castle, Jersey, July 1925, L. ARSENE.
- *340. *SILENE NOCTIFLORA* L. As a casual, Peebles, BALFOUR.
- †341. *S. DICHOTOMA* Ehrh. Ware, Herts, Miss TROWER & DRUCE.
- †353. *S. CATHOLICA* Ait. Hortal. Weed in wood at High Abberley, Hale, Salop, Mrs MAW.
359. *LYCHNIS ALBA* × *DIOICA*. Rowney Warren, Beds, LITTLE; Abbey Wood, W. Kent, St J. MARRIOTT.
- *367. *CERASTIUM ARVENSE* L. Dolphinton, Peebles, BALFOUR.
- †368. *C. ALPINUM* L. Sgurr nan Banachdich, Skye, 2600 ft., in some plenty on very steep rocks, MARQUAND.
371. *C. VISCOSUM* L. A very viscous form [R. n. 2317] on the foreshore at Beacon Hill, St Osyth, N. Essex, May 17, 1925, BROWN.
374. *C. TETRANDRUM* Curt., var. *CAESPITOSUM* Druce. Gairloch, W. Ross, July 1925; Tenby, Pembroke; Aberfraw, Anglesey. This has much of the facies of *semidecandrum* in its narrow capsule and strict condensed habit. A diffuse plant also occurred at Gairloch,

W. ROSS, DRUCE, and a very glandular, darker green foliaged plant [2316] from Beacon Hill, St Osyth, Essex, BROWN.

377. *STELLARIA AQUATICA* Scop. Bank of the Gipping near Claydon, Suffolk, A. LASCELLES.

*378. *S. NEMORUM* L. Glen, Peebles, BALFOUR. Not seen there by Editor.

*380. *S. NEGLECTA* Weihe. Almost certainly this but the seeds are rather small, Ullapool, West Ross, DRUCE.

383. *S. GRAMINEA* L. With very short petals, Whinlatter Pass, Cumberland, J. HAINES.

†387. *ARENARIA BALEARICA* L. Village wall, Warmington, Northants, July 1925, DRUCE.

396. *A. VERNA* L. Away from lead-mines, "Boat Meadow" by Tyne at Stocksfield, Northumberland, K. D. LITTLE.

399. *SAGINA NODOSA* Fenzl. Aqualate, Staffs, DRUCE; †Medwyn, Peebles, BALFOUR.

401. *S. SUBULATA* Presl. Summit of pass, 1488 ft., Dalnaspidal, Perth, DRUCE.

408. *S. PROCUMBENS* L., var. *DAVIESII* Druce. Golf course, Littlestone-on-Sea, E. Kent, June 1925, ST JOHN MARRIOTT. This interesting little plant, which has many conspicuous petals, is of rare occurrence in Britain. It was first found near Beaumaris in Anglesey in 1817 by the Rev. H. Davies and is figured in Baxter's *Phaen. Bot.* iii.; 199, 1837. It occurred in 1850 near Rugely in Staffordshire. See *Rep. B.E.C.* 280, 1918, DRUCE.

410. *SPERGULA SATIVA* Boenn. Culbin Sands, Elgin, wind-blown from cultivated ground a mile away, July 1925, DRUCE.

411. *SPERGULARIA RUPESTRIS* Leb. Bolton-le-Sands, W. Lancs, ELLIS.

415. *S. RUBRA* Presl. At the top of the Dalnaspidal Pass, 1488

feet, Perthshire. In Fl. Perth. 1000 feet is given as the highest altitude, DRUCE.

†417. *PORTULACA OLERACEA* L. Naturalised at Tresco, Scilly Isles.

†418. *CLAYTONIA SIBIRICA* L. Peebles, BALFOUR; Eddleston, banks of the Girvan, Ayrshire, 1925, C. W. JAMES; Dartmoor, Devon, Miss SMITH; Armadale, Skye.

421. *MONTIA LAMPROSPERMA* Cham. Dalnaspidal, Perth; Strathpeffer, E. Ross, Gairloch, etc., W. Ross, DRUCE.

421. *M. VERNA* L. Lands End, Cornwall, E. B. WILKINSON. Var. *INTERMEDIA* (Beeby) Druce. Abundant at Penrhos, Anglesey, May 1925, DRUCE.

*435. *HYPERICUM DESETANGII* Lam. Banks of Lune near Coton, W. Lancs, WHELDON.

*437. *H. HUMIFUSUM* L. Glen Docharty, W. Ross, July 1925, DRUCE & R. H. WILLIAMSON.

444. *LAVATERA ARBOREA* L. Near Prestatyn, Flint, Miss B. ALLEN.

451. *MALVA MOSCHATA* L. Abundant at Upton Wood, Hunts, DRUCE; *Eddleston, Peebles, BALFOUR.

452 and 453. *M. SYLVESTRIS* L. and *M. ROTUNDIFOLIA* L. *Peebles, BALFOUR; Mellte Valley, Brecon, WEBB.

†452 (2). *M. NICAENSIS* All. Port Meadow, Oxford, GAMBIEPARRY; Fowey, Cornwall, TRESSIDER. Det. THELLUNG.

†454. *M. PUSILLA* With. *Rep. B.E.C.* 1924, p. 563, line 20. The statement about *Bab. Man.* appears incorrect. *Bab.* (Ed. ix.) says of *M. pusilla* "Carpels meeting each other with a toothed edge," and under *M. borealis* (ed. iv.) the same appears. But Coste, *Fl. de France*, says of *M. parviflora* "Carpelles glabres ou pubescentes, fortement ridés à bords ailés et dentés." Near Hitchin, Herts, LITTLE; Bowling, Dumbarton, GRIERSON.

†454. *M. PUSILLA* With. Near Hitchin, Herts, LITTLE; Bowling, Dumbarton, GRIERSON.

†456. *M. PARVIFLORA* L., var. *MICROCARPA* Loscos. Fowey, Cornwall, TRESSIDER; Colchester, 1924, DRUCE. Det. THELLUNG.

†459 (5). *ABUTILON THEOPHRASTI* Med. Basingstoke allotment, N. Hants, G. WILLIS, ex. RAYNER. Det. N. SANDWITH.

†461. *HIBISCUS TRIONUM* L. A form with dark purple flowers, on waste ground, Victoria Road, Colchester, October 1925, BROWN; Fowey, Cornwall, TRESSIDER.

*465. *TILIA CORDATA* Mill. (*T. ulmifolia* Scop.) Near Boot Eskdale, Cumberland, PICKARD.

466. *RADIOLA LINOIDES* Roth. Culbin Sands, Elgin, DRUCE.

†479. *GERANIUM PHAEBUM* L. Field border near Duncroft Farm, Sydmonton, N. Hants, Capt. SAMUELSON.

†479 (2). *G. ENDRESSI* Gay. In a boggy common near Hassocks, Sussex, July 1925, Lady ALETHEA BUXTON; Leicester Abbey, BEMROSE.

481. *G. PYRENAICUM* Burm. f. Plentiful at Elton, Hunts, July 1925, DRUCE.

488 (2). *G. PURPUREUM* Vill. North side of St Vincent Rocks, W. Gloster, C. WALL, ex J. W. WHITE.

497. *ERODIUM CICUTARIUM* L'Hér., var. *NEGLECTUM* (B. & S.). Lihou Isle, Guernsey [31], BARTON; Pwllheli, Carnarvon; Harlech, Merioneth, DRUCE. Var. *NEGLECTUM* (B. & S.). Burnham, N. Somerset, W. WATSON, ex J. W. WHITE. Var. *GLUTINOSUM* (Dum.). Ainsdale, Lancs, 1912, WHELDON.

497 (2). *E. PIMPINELLIFOLIUM* Sibth. Brickhill, Bucks; Elgin, DRUCE.

504. *OXALIS ACETOSELLA* L., var. *SUBPURPURASCENS* DC. Loxhore, Devon, *Trans. Dev. Ass.*

†512. *IMPATIENS PARVIFLORA* DC. Booth, Cumberland, J. HAINES.

†513. *I. GLANDULIFERA* Royle. Trysull, Staffordshire, in great abundance and completely naturalised, Sir R. CURTIS & DRUCE; by the river above Manchester, 1925, Justice TALBOT.

515. *ILEX AQUIFOLIUM* L., var. *LAURIFOLIUM* Lej. Glen Urquhart, Easternness, WEBB.

†531. *LABURNUM LABURNUM* (L.). Clachnaharry, Easternness, with *L. alpinum* Presl, WEBB.

535. *GENISTA TINCTORIA* L. Ufton Wood, Hunts, DRUCE; *Peebles, BALFOUR.

547. *TRIGONELLA ORNITHOPODIOIDES* DC. Pwllldhu, Glamorgan, WEBB.

†550. *T. POLYGERATA* L. Millbrook, S. Hants, Miss A. B. COBBE.

†554. *T. CAERULEA* (L.). Abbey Wood, W. Kent, ST J. MARRIOTT.

562. *MEDICAGO FALCATA* L., var. *TENUIFOLIOLATA* Vuyck. Portishead, N. Somerset, Major ORME; Newhaven, Sussex, DRUCE.

†580. *M. ARABICA* Huds. Peebles, BALFOUR.

†584. *M. CILIARIS* Willd. St Philip's Marsh, W. Gloster, C. & N. SANDWITH.

†592. *MELILOTUS SULCATA* Desf. Ryde and Newport, Isle of Wight, LONG, ex RAYNER.

593. *M. ALTISSIMA* Thuill., var. *UNGUICULATA* Ser. Constant at Uphill, N. Somerset, N. SANDWITH; *Walkerburn, Peebles, BALFOUR.

602. *TRIFOLIUM OCHROLEUCON* Huds. Abundant near Upton Wood and near Winnington Wood, Hunts, DRUCE.

626. *T. STRICTUM* L. L'Ancrese Quarry, Guernsey, Miss M. COBBE. Doubtless a recent arrival.

628. T. REPENS L., var. PHYLLANTHUM Ser. Abbey Wood, W. Kent, St J. MARRIOTT.

†631. T. PARVIFLORUM Ehrh. Airdrie, Lanark, GRIERSON.

*633. T. SUFFOCATUM L. (labelled *subterraneum*). Parkgate, Cheshire, July 1840, Hb. DICKINSON, ex W. TRAVIS.

†635. T. AGRARIUM L. Bel Royal, Jersey, Miss A. B. COBBE.

637. T. DUBIUM Sibth. Ullapool, W. Ross, DRUCE.

†668 (2). ORNITHOPUS ROSEUS Desf. Wormwood Little Scrubbs, B. REYNOLDS.

*671. HIPPOCREPIS COMOSA L. Langton Wold, S. E. Yorks, Miss PURCHAS in *Nat.* 213, 1925. New to Yorkshire.

680. VICIA OROBUS DC. Boot, Cumberland, N. ADAIR & J. F. PICKARD; Mellte Castle, Brecon, H. A. HYDE.

†680 (2). V. BENGHALENSE L. Eastville, Bristol, C. & N. SANDWITH; Stansteadbury, Herts, Miss TROWER.

705. V. TETRASPERMA Moench. Stibbington, Hunts, DRUCE; *Cheviot, HESLOP-HARRISON.

710. LATHYRUS SYLVESTRIS L. Narrow-leaved form. Sleaford, Lincoln, Miss LANDON; Knucklas, Radnor, WEBB.

†718. L. HIRSUTUS L. Cobham and Rochester, Kent, C. STEVENS.

†723. L. CLYMENUM L. Near Don Bridge, Jersey, DRUCE.

†724. L. OCHRUS L. Tadcaster, Yorks, PICKARD; Newhaven, Sussex, DRUCE.

†734 (10). GLYCINE SOJA (L.) S. & Z. Bristol, W. Gloster, N. SANDWITH. Det. A. THELLUNG.

746. SPIRAEA ULMARIA L., var. DENUDATA Boenn. Marsh near Combe Wear, S. Devon, a plant seven feet high, D'URBAN.

(The Rubi have been named by the Rev. H. J. Riddelsdell.)

*759. *RUBUS HOLERYTHROS* Focke. Shotover, Oxon, RIDDELSDELL & DRUCE.

*764. *R. INCURVATUS* Bab., var. *SUBCARPINIFOLIUS* R. & R. Shotover, Oxon; Boars Hill, Berks, RIDDELSDELL.

*769. *R. BAKERI* F. A. Lees. Wigginton Heath, Oxon, RIDDELSDELL.

779. *R. CALVATUS* Blox. Bould Wood, Oxon, RIDDELSDELL.

*789. *R. HESPERIUS* (Rogers). Shotover, Oxon, RIDDELSDELL.

822. *R. LEYANUS* Rogers. Atherington, N. Devon, HIERN, in *Trans. Dev. Ass.*

*832. *R. PODOPHYLLUS* P. J. M. Shotover, Oxon, RIDDELSDELL. I was with Mr Riddelsdell when the Shotover and Boars Hill Rubi were gathered last July.

*852. *R. ADORNATUS* P. J. M. Bould Wood, Oxon, RIDDELSDELL.

†878. *R. SPECTABILIS* Pursh. Dolphinton, Peebles, BALFOUR.

†885. *FRAGARIA MOSCHATA* Duch. Salmonby, Lincs, Rev. W. WRIGHT MASON.

901. *POTENTILLA REPTANS* L., flore pleno. Offham, Lewes, Sussex, Miss COTTES.

*908. *P. PALUSTRIS* Scop. Traquair, Peebles, BALFOUR.

909. *ALCHEMILLA ALPESTRIS* Schmidt. Callander, W. Perth; Cnochan, W. Ross, DRUCE.

*913. *AGRIMONIA EUPATORIA* L. Peebles, BALFOUR.

(The Rosae have been named by Col. A. H. Wolley-Dod.)

925. *ROSA SYSTYLA* Bast. Upton, Hunts, DRUCE.

926. *R. CANINA* L., var. *CURTICOLA* Rouy. Boars Hill, Berks,

1925, DRUCE. Var. *GLOBULARIA* Dum. Shotover, Oxon, DRUCE.
 Var. *NEMOPHILA* Rouy. Saffron Walden, N. Essex, C. B. CLARKE.
 Var. *INSIGNIS* Rouy. Winnington, Upton Wood, Hunts, DRUCE.
 Var. *SENTICOSA* (Ach.). Pool Bottom, Oxon; Llandudno, Carnarvon, 1924, DRUCE.

932. *R. DUMETORUM* Thuill., var. *PLATYPHYLLA*, f. *SPHAEROCARPA* W.-Dod. Shotover, Oxon, DRUCE.

937. *R. EGLANTERIA* L. Culbin Sands, Elgin, DRUCE.

941. *R. SCABRIUSCULA* Wood. Hassocks, E. Sussex, DRUCE.

+944. *R. POMIFERA* Herrm. Keltny Burn, M. Perth, R. W. BUTCHER.

950. *R. SPINOSISSIMA* L. With very large blossoms on a hillside, Ledmore, W. Sutherland, July 1925, DRUCE.

946. × *R. HIBERNICA* Templ. Dewbottom Scar Grass Wood, Yorks, PICKARD.

+954. *PYRUS COMMUNIS* L. Warren at Corbière, Guernsey, Miss M. COBBE.

966. *CRATAEGUS MONOGYNA* Jacq., var. *PARVIFOLIA* Druce. Eastleigh, S. Hants, RAYNER; Dartford Heath, W. Kent, St J. MARRIOTT.
~~Var. *INCISIFOLIA* Druce. Dartford Heath, W. Kent, St J. MARRIOTT.~~

+969 (3). *C. CRUS-CORVI* L. Near Mells, Somerset, Mrs LINDSAY.

+970. *C. PYRACANTHA* Med. Milbrook, S. Hants, RAYNER.

972 (2). *COTONEASTER MICROPHYLLA* Wall. Naturalised on walls, St Brelade, Gorey, Grouville, etc., Jersey, L. ARSENE.

+972 (3). *C. SIMONSII* Baker. Chalk cliffs, Folkestone, F. W. PLACE; Hogs Back, Surrey, LITTLE.

+973. *AMELANCHIER CANADENSE* Med. Aldridgehill enclosure, New Forest, RAYNER.

*981. *SAXIFRAGA HYPNOIDES* L. Pentlands, Peebles, BALFOUR.

*982. *S. GRANULATA* L. Traquair, Peebles, BALFOUR. Doubtless planted.

988. *S. STELLARIS* L., var. *FONTANA* Druce. Widdy Bank, Durham, June 1925, DRUCE.

†989. *S. UMBROSA* L. On escarpments of Craig-y-Llyn, Glamorgan, doubtless planted, WEBB.

†1001. *RIBES UVA-CRISPA* L. Stibbington, Hunts, DRUCE.

†1002. *R. NIGRUM* L. Stobo, Peebles, BALFOUR.

†1003. *R. RUBRUM* L. Llanberis, Carnarvon, 1925, DRUCE. Var. *PETRAEUM* (Sm.) (*pubescens* Hartw.). Height of Winder, Sedbergh, N.W. Yorks [165], TRAPNELL.

†1004. *R. ALPINUM* L. Ham Tor, Dovedale, Staffs, PICKARD.

1004 (2). *R. SANGUINEUM* L. Middleton, Durham, DRUCE; Christchurch, S. Hants, RAYNER.

†1006 (2). *TILLAEA AQUATICA* L. Still at Adel and on both sides of pond, W. A. SLEDGE.

†1007 (10). *TETRAGONA EXPANSA*. Waste ground, Budleigh Salterton, S. Devon, 1924, 1925, Major ORME.

1010. *SEDUM PURPUREUM* Koch. Mellte Castle, Brecon, WEBB.

1011. *S. RUPESTRE* L. Llandoverly, Carmarthen, WEBB.

1018. *S. DASYPHYLLUM* L. Would any member visiting Loch Coruisk, Skye, look out for a *Sedum* growing on a rock there? Mrs W. ARTHUR SMITH brought specimens back which she identified as *dasyphyllum*. They reached me in too battered a condition to be certain, and I doubtfully refer them to *anglicum*.

†1023. *S. STOLONIFERUM* Gmel. Tir Hester, Glamorgan, WEBB.

1025. *S. ROSEUM* Scop. Abundant at Craig-y-Llyn, Glamorgan, WEBB.

- *1030. *HIPPURIS VULGARIS* L. Peebles, BALFOUR.
1035. *CALLITRICHE STAGNALIS* Scop., var. *SERPYLLIFOLIA* Lönnr. Poolewe, W. Ross, DRUCE.
1036. *C. OBTUSANGULA* Le Gall. Wood, Plimpton, W. Lancs, WILSON.
- *1038. *C. POLYMORPHA* Lönnr. Near Poolewe, W. Ross. Quite the typical plant of Zetland, July, 1925, DRUCE.
- *1042. *PEPLIS PORTULA* L. North Esk reservoir, Peebles, BALFOUR.
- †1044. *LYTHRUM MEONANTHUM* Link. Coatbridge, Lanark, GRIERSON.
1047. *EPILOBIUM HIRSUTUM* L. Douglas Burn, Peebles, BALFOUR. Var. *VILLOSISSIMUM* Koch. Houghton on the Hill, Leicestershire, BEMROSE.
- *1048. *E. PARVIFLORUM* Schreb. Kerfield, Peebles, BALFOUR.
1049. *E. TETRAGONUM* L. Upton Wood, Hunts, DRUCE.
- *1050. *E. LAMYI* Schultz. Hanslope, Bucks, DRUCE.
- *1052. *E. ROSEUM* Schreb. Cheviot, HESLOP-HARRISON.
- †1058. *E. NUMMULARIFOLIUM* Cunn. Hortal. Tubney Wood, Berks, Mrs SHAWER.
1067. *OENOTHERA SINUATA* L. St Brelade, Jersey, Miss A. B. COBBE; Christchurch, S. Hants, Mrs ROTHWELL.
- †1071. *FUCHSIA RICCARTONI* Hort. Brodick, Arran, DALTON.
1073. *CIRCAEA ALPINA* L. Cnochan, W. Ross and W. Sutherland, July 1925, DRUCE.
- *1078. *HYDROCOTYLE VULGARIS* L. Peebles, BALFOUR.
- *1084. *SANICULA EUROPÆA* L. Traquair, Peebles, BALFOUR.

†1075 (10). CITRULLUS COLOCYNTHIS Schrad. Bitterne, S. Hants, RAYNER.

*1080. ERYNGIUM CAMPESTRE L. Known for upwards of fifty years on Charterhouse Farm near Colerne, Wilts, E. H. STEVENSON.

1087. SMYRNIUM OLUSATRUM L. Preesall, W. Lancs, WILSON.

†1099. APIUM LEPTOPHYLLUM F.V.M. Alien. Hammersmith and Putney, Surrey, 1907, B. REYNOLDS.

†1101. AMMI MAJUS L. Falconbridge, Kent, Mr JUSTICE TALBOT; Cardiff, DRUCE.

†1105 (2). CARUM AROMATICUM (L.) Druce (= *C. copticum* B. & H.). Coatbridge, Lanark, very common in 1925, GRIERSON.

†1109. PRIONITIS FALCARIA Dum. Lanresse Bay, Guernsey, Miss M. COBBE.

1126. CHAEROPOLIUM SYLVESTRE (L.) S. & T., var. ANGUSTISECTUM (Druce) mihi. Middleton, Durham; Poolewe, W. Ross; Strathpeffer, E. Ross; Callander, W. Perth; Glen Farg, E. Perth; Bridge of Allan, Stirling; Corstorphine, Midlothian; Linlithgow, DRUCE. Var. LATISECTUM (Druce). Elton, Hunts; Wansford, Northants; Pippingham, Rutland; Lutterworth, Leicester; Lichfield, Staffs, DRUCE.

*1134. OENANTHE CROCATA L. Traquair, Peebles, BALFOUR.

1135. OE. PIMPINELLOIDES L. Churchdown, Gloster, GREENWOOD.

1144. LIGUSTICUM SCOTICUM L. Gairloch, W. Ross, DRUCE.

1147. ANGELICA SYLVESTRIS L., var. DECURRENS Fisch. Middlewich, E. Denyland, Essex, BROWN.

1172. HEDERA HELIX L., var. BOREALIS Druce. Black Down, Sussex; West Mill, Hitchin, Herts, LITTLE.

*1174. CORNUS SUECICA L. Dollar Law, Peebles, at 2000 feet, BALFOUR.

†1181. *VIBURNUM LANTANA* L. Near Aviemore, Easternness; Achterneed, E. Ross, WEBB.

†1189. *LEYCESTERIA FORMOSA* Wall. Self-sown at Northwood Park, Cowes, Isle of Wight; Chandler's Ford, S. Hants, RAYNER.

1192. *GALIUM BOREALE* L., var. *STENOPHYLLUM* Druce in *Rep. B.E.C.*, 1917. Cnochan, W. Ross; Inchnadamph, W. Sutherland, DRUCE; Ballantrae, Ayrshire, 1902, SOMERVILLE in *Hb. Druce*.

1193. *G. OCHROLEUCUM* Wolf. St Brelade, Jersey, Miss COBBE.

1195. *G. HERCYNICUM* Weig., var. *TRANSIENS* (Rouy). Forest Moor, above Harrogate, York, Miss TODD.

*1196. *G. PUMILUM* Murr. Cnochan, W. Ross, July 1925, DRUCE.

1198. *G. PALUSTRE* L., var. *LANCEOLATUM* Uechtr. Bluntisham, Hunts, DRUCE.

*1204. *G. ANGLICUM* Huds. Border of Bedford Purlieus, Northants, J. S. GILMOUR, a splendid New County Record.

†1211. *ASPERULA CILIATA* Rochel. Side of the River Stort, near Roydon, Herts, September 1925, Miss TROWER; Mullion, Cornwall, THURSTON.

*1215. *VALERIANA OFFICINALIS* L. Upton Wood, Hunts, DRUCE.

†1218. *V. PYRENAICA* L. West Linton, Peebles, BALFOUR.

1243. *SOLIDAGO VIRGAUREA* L., var. *PLUKENETIANA* Druce, sub-var. *ACUTIFOLIA* Druce. Bruar, E. Perth, DRUCE.

1248. *BELLIS PERENNIS* L., var. *DISCOIDEA*. Bridlington, Yorks, PICKARD.

†1255. *ASTER NOVI-BELGII* L. North Kessock, Easternness, WEBB; Colchester [n. 2312-2320], approaching *versicolor*, G. C. BROWN, teste THELLUNG.

1258. *A. TRIFOLIUM* L., var. *GLABER* Bolzon. Beaulieu, J. VAUGHAN; Redbridge, S. Hants, 1852, PIQUET; Lelant, Cornwall,

Hb. Druce. Var. ARCTICUM Fries. Poolewe, W. Ross, July 1925, DRUCE.

†1264. ERIGERON MUCRONATUS DC., var. KARWINSKIANUS DC.
Walls, Grouville, St Peter's, St Ouen's, Jersey, L. ARSENE.

†1278. GNAPHALIUM UNDULATUM L. Grand Havre, Guernsey, Miss COBBE.

†1278 (2). HELICHRYSUM STOECHAS L. Barry, Glamorgan, SMITH, teste KEW.

†1279. INULA HELENIUM L. Lower Dyserth, near Elms River, Dolben, Flint, Miss B. ALLEN.

†1289. IVA XANTHIFOLIA Nutt. Wet lane, Stapleton, W. Gloster, H. J. GIBBONS, ex J. W. WHITE.

†1291. AMBROSIA ARTEMISIFOLIA L. Poole Harbour, Dorset, L. B. HALL.

†1292. A. TRIFIDA L. Twyford Mill, Berks, Mrs WEDGWOOD; Stansteadbury, Herts, Miss A. TROWER.

1309. BIDENS CERNUA L. Near Alton, Staffs, PICKARD.

†1327. ACHILLEA TANACETIFOLIA L. Colwall, near Malvern, Worcester, F. M. DAY.

1329. A. MILLEFOLIUM L., var. CONSPICUA Druce. Colchester, N. Essex, DRUCE.

†1344 (3). ANTHEMIS WIEDEMANNIANA F. & M. Colchester [2025], BROWN, teste THELLUNG.

†1358. CHRYSANTHEMUM BALSAMITA L. Barry, Glamorgan, SMITH. A nearly ray-less form.

†1362. MATRICARIA SUAVEOLENS Buch. Noirmont, Jersey, Miss COBBE; Christchurch, Hants, GRAVESON; Newport, Salop, DRUCE.

†1368. ARTEMISIA CAMPESTRIS L. Alien. Headley, S Hants. Miss DAVIDSON, ex RAYNER.

†1369. *A. DRACUNCULUS* L., vel. aff. Christchurch, S. Hants, L. B. HALL, teste THELLUNG.

†1380. *A. BIENNIS* Willd. Christchurch, S. Hants, L. B. HALL, Port Meadow, Oxford; Abingdon, Berks, GAMBIER-PARRY; Moulshford, Berks, Miss NEILD.

†1386. *PETASITES ALBUS* Gaertn. Waltham, Leicester, BEMROSE.

†1388. *DORONICUM PARDALIANCHES* L. Eddleston Water, Peebles, BALFOUR.

†1390. *SENECIO SARRACENICUS* L. Kingussie, Easternness, WHITE.

1393. *S. AQUATICUS* Hill, var. *DISCOIDEUS* Druce. Near Cannock, S. Stafford. Differs from type in the ligules being absent. Forma *AURANTIACUS* mihi. Ligules deep orange-coloured. Bodorgan, Anglesey, 1918; near Cannock, Stafford, 1925; Binsey, Oxon, DRUCE; Wrentham, Suffolk, HORWOOD.

1395. *S. ERUCIFOLIUS* L. Symonds Yat, Gloster, RILSTONE.

†1396. *S. SQUALIDUS* L. Spreading rapidly from Brymbo about Wrexham, Denbigh, JONES; plentiful, Abbey Wood, W. Kent, St J. MARRIOTT; between Fareham and Bridgemary, Hants, RAYNER.

†1399. *S. VISCOSUS* L. Stokes Bay, Isle of Wight, LONG, ex RAYNER; South Kessock, etc., Easternness, WEBB.

†1402. *S. CINERARIA* DC. Hortal. St Clare Road, Colchester, October 1925, BROWN. × *JACOBAEA*. Wall top, Newport, Isle of Wight, LONG, ex RAYNER.

1404. *S. SPATHULIFOLIUS* DC. In several places about Holyhead. In May the flowers were scarcely open but Lady KATHLEEN STANLEY sent it in good blossom in June.

†1408 (12). *S. CLIVORUM* Maxim. Banks of the Rother at Sheet, S. Hants, 1925, F. R. BROWNING.

†1411. *CALENDULA ARVENSIS* L. Eastville, Bristol, C. & N. SANDWITH.

1418. *ARCTIUM LAPPA* L. (= *majus*). Hitchin, Herts; Shouldham Warren, Wretton Fen, W. Norfolk, LITTLE.

1424. *CARDUUS ACANTHOIDES* L., var. *LITIGIOSUS* (G. & G.). Henley, Oxon, Mrs WEDGWOOD & N. SANDWICH.

1434. *CIRSIUM PALUSTRE* Scop., var. *FEROX* Druce. Dundonnell, W. Ross, DRUCE.

†1443. *MARIANA MARIANA* Hill. Fortrose, Easternness, WEBB.

1445. *SAUSSUREA ALPINA* DC. Esk House, Cumberland, J. HAINES.

(The *Centaureae* have been named by Mr C. E. Britton.)

1451. *CENTAUREA NEMORALIS* Jord. (= *radiata*). Upham, S. Hants, RAYNER; Weston in Trym, W. Gloster, TRAPNELL; Marcham, Berks; Wansford, Northants; Biddesden, Wilts, DRUCE; Knowle Green, W. Lancs, WHELDON.

1451. *C. OBSCURA* Jord. Ullapool, W. Ross; Aqualate, Staffs, DRUCE; Wigston, Leicester, BEMROSE; Abbeystead, W. Lancs, WHELDON & WILSON.

*1451. *C. PRATENSIS* Thuill. Bucklebury, Berks, September 1925, DRUCE, teste BRITTON.

1456. *C. SCABIOSA* L., probably f. *HETEROPHYLLA* Hedl. Bettyhill, W. Sutherland, DRUCE.

†1462. *C. SOLSTITIALIS* L. Glenfield, Leicester, BEMROSE.

†1474. *C. DILUTA* Bieb. Bristol, C. & N. SANDWICH.

†1477. *CARTHAMUS TINCTORIUS* L. Bitterne, S. Hants, Miss COBBE; Ryde, Newport, Isle of Wight, LONG, ex RAYNER; Malvern Wells, Worcester, C. REA.

†1478. *SCOLYMUS HISPANICUS* L. Kingsmill Beck, Easternness, WEBB.

1493. *CREPIS PALUDOSA* Moench. Mellte Glen. Brecon, WEBB.

1497. *C. CAPILLARIS* Wallr., var. *DENTATA* (Bisch.) Druce. Corwen, Denbigh, DRUCE, teste THELLUNG. Var. *ANGLICA* Dr. & Th. Strathpeffer, E. Ross; Ullapool, etc., W. Ross; Bruar, E. Perth; Lawers, M. Perth; Ufton, Hunts, with f. *griseola* in all places. DRUCE. Det. THELLUNG. Var. *DIFFUSA* (DC.) DRUCE. Fordham, Cambridge, 1881, FRYER.

(Mr J. Cryer has kindly named the *Hieracia*.)

1505. *HIERACIUM PILOSELLA* L., var. *CONCINNATUM* F.J.H. Bruar, E. Perth; Grantown, E. Inverness, 1925, DRUCE. Var. *NIGRESCENS* Fr. Gairloch, W. Ross, DRUCE.

†1512. *H. AURANTIACUM* L. (not of Pugsley). Saxby, Cropstone. Leicester, BEMROSE; Margam, Glamorgan, WEBB.

1513. *H. ANGLICUM* Fr., var. *ACUTIFOLIUM* Backh. and var. *CERINTHEFORME* Backh. Cnochan, W. Ross, DRUCE.

1542 (2). *H. PSEUDOZETLANDICUM* Roffey. Bettyhill, W. Sutherland (locus classicus), July 1925, DRUCE.

1542 (3). *H. SHOOLBREDI* Zahn (not E.S.M.). Bettyhill, W. Sutherland, July 1925, DRUCE.

1546. *H. ARGENTEUM* Fr. Melvich, W. Sutherland; Cnochan, W. Ross, DRUCE.

1581. *H. RIVALE* F.J.H. (probably). Cnochan, W. Ross, DRUCE.

1583. *H. CYMBIFOLIUM* Purchas. Hawes Water, W. Lancs, CRYER.

*1584. *H. LINTONI* Ley. Gairloch, W. Ross, DRUCE.

1599. *H. VULGATUM* Fr., var. *SEJUNCTUM* W.R.L. Oykell Bridge, Melvich, W. Sutherland; Cnochan, Ullapool, W. Ross, DRUCE. Var. *SUBRAVUSCULUM* W.R.L. Melvich, W. Sutherland, DRUCE.

*1627. *H. SPARSIFOLIUM* Lindeb., var. *LONGICILIATUM* F.J.H. Cnochan, W. Ross, July 1925, DRUCE.

1636. *H. MARITIMUM* F.J.H. It was very pleasing to see this very local endemic Hawkweed this year at Melvich in W. Sutherland, but most of the plants were dried up by the hot month. DRUCE.

1641. *HYPOCHAERIS GLABRA* L., var. *ROSTRATA* C. & G. Thetford, Suffolk, June 1925, DRUCE.

1644. *LEONTODON NUDICAULIS* Banks, var. *LEIOLENA*. Petersfield, S. Hants, F. R. BROWNING.

(The *Taraxaca* have been named by Herr Dahlstedt.)

*1645. *TARAXACUM NAEVOSUM* Dahlst. This good species was noticed at Byfleet, Surrey; Yardley Gobion, Northants; Ullapool, W. Ross; Teesdale, Durham, DRUCE.

*1645. *T. NAEVOSIFORME* Dahlst. Base of Annacoona, Sligo, 1924, Mrs WEDGWOOD. New to Ireland. As a var., Llanberis, Carnarvon, DRUCE.

1645. *T. TENEBRICANS* Dahlst. Yarnton, Oxon, DRUCE.

1645. *T. CYANOLEPIS* Dahlst. Llanberis, Carnarvon, 1925, and as a modification, DRUCE.

1645. *T. GELERTII* Raunk. High Force, Durham; and as a var., Ben Bulben, Sligo, DRUCE.

1645. *T. NORDSTEDTII* Dahlst. Llanberis, Carnarvon [BB. 267], 1924; Ben Bulben, Sligo, DRUCE.

1645. *T. POLYODON* Dahlst., mod. f. Ollaberry, Zetland, 1923, DRUCE.

1645. *T. CROCERUM* Dahlst. Oxford, DRUCE.

1645. *T. DILATATUM* Lindb. f. Elton, Hunts, DRUCE.

1645. *T. LONGISQUAMEUM* Lindb. f. Ware, Herts, DRUCE.

1645. *T. MUCRONATUM* Lindb. f. Allied to this, Yardley Gobion, Northants, DRUCE.

1645. *T. EXPALLIDIFORME* Dahlst. Oxford, DRUCE.
1656. *SONCHUS ARVENSIS* Hill, var. *LAEVIS* (G. G. & W.). Avonmouth Dock, W. Gloster, C. & N. SANDWITH.
1658. *S. OLERACEUS* L., var. *CILIATUS* Lam. (= *lacerus*). Cardiff; [CC. 30] Barry, Glamorgan; St Aubin's, Jersey, DRUCE.
- †1660. *TRAGOPOGON PORRIFOLIUS* L. Tenby, Pembroke; Fletton, S. Hunts, abundant, DRUCE.
- 1663 (2). *SCORZONERA HUMILIS* L. Still abundant in the old locality, N. SANDWITH.
1666. *JASIONE MONTANA* L., f. *LAEVIS*. Hengistbury, S. Hants, Miss TODD, teste PUGSLEY.
1665. *LOBELIA URENS* L. Heath in E. Sussex, E. J. BEDFORD, ex WILMOTT in *Journ. Bot.* 26, 1925. The Christchurch locality has been known to me for some time.
1667. *CERVICINA HEDERACEA* (L.) Druce. On both sides of a rill at Winster over the boundary line of N. Lincs, September 10, 1925, so that it is in both v.-c. 69 and v.-c. 69b, W. H. PEARSALL.
- †1674. *CAMPANULA RAPUNCULOIDES* L. Naturalised in arable fields, Wood Walton, Hunts, DRUCE.
- *1678. *C. PATULA* L. Near Bucklebury, Berks, October 1925, Major BATES VAN DE WEYER. An excellent record, since the previous note in *Fl. Berks* related to its occurrence among grass seed. Here, on a wood border and about old gravel pits, it seems certainly native. It was still in flower in October when I saw it by the finder's directions, DRUCE; † a single plant, casual, Swaythling, S. Hants, RAYNER.
- *1684. *VACCINIUM ULIGINOSUM* L. Solitary plant, Talla Linn, Peebles, BALFOUR.
1691. *ARCTOSTAPHYLOS ALPINA* Spreng. N.W. of Ronas Hill, Zetland, ex Mr J. CAMPBELL; Scur Marxie, E. Rosshire, WEBB.

1692. *ANDROMEDA POLIFOLIA* L. On the bog-mosses up to 1500 feet on the borders of W. Lancs and M. Yorks, PICKARD.

1693. *CALLUNA VULGARIS* Hull, var. *SPECIOSA* Druce in *Rep. B.E.C.* 328, 1913. Chun Castle, Cornwall, 1925, Sir A. EVANS.

†1691 (5). *GAULTHERIA SHALLON* Pursh. Rhinefield, Southampton Gorse, S. Hants, RAYNER.

1695. *ERICA TETRALIX* L., var. *FISSA* Druce. Hants and Dorset, L. B. HALL.

*1708. *PYROLA MEDIA* Sw. Kailzie, Peebles, BALFOUR.

1709. *P. MINOR* L. Abundant on the Culbin Sands, Elgin, DRUCE; Dummins Dale, Alton, Stafford, PICKARD; *Dawyck, Peebles, BALFOUR.

1713. *LIMONIUM LIMONIUM* (DC.) Druce, var. vel forma *PYRAMIDALE* Druce. Scott Head, E. Norfolk, H. K. AIRY SHAW.

1717. *L. BINERVOSUM* C.E.S. Bay S.W. of Telegraph Tower, Alderney, 1923, TEMPLEMAN; Elizabeth Castle, Jersey, L. ARSENE.

1721. *STATICE PLANIFOLIA* Druce. Helvellyn, Westmoreland, 2800 feet, PICKARD.

1722. *S. PLANTAGINEA* All., var. *BRACTESCENS* Druce. Millbrook, Jersey, Miss COBBE.

†1734. *LYSIMACHIA PUNCTATA* L. Brightstone, S. Hants, ex RAYNER; Rommano, Peebles, BALFOUR.

1736. *L. NUMMULARIA* L. Bluntisham, Hunts, DRUCE.

*1740. *TRIENTALIS EUROPAEA* L. Manor Head, Peebles, BALFOUR.

1746. *SAMOLUS VALERANDI* L. In great plenty at Aqualate. Stafford, DRUCE and Sir R. CURTIS; Droitwich, Worcester, Hon. Mrs CHAPMAN.

†1747. *SYRINGA VULGARIS* L. In heaps, N. of Lairg, E. Sutherland, WEBB.

†1750. *VINCA MAJOR* L. Alwalton, Hunts; Tenby, Pembroke, DRUCE.

1755. *CENTAURIUM VULGARE* Rafn. Culbin Sands, Elgin, DRUCE.

1757. *C. PULCHELLUM* Druce. Small sub-simple plants, Formby, S. Lancs, WYNNE EDWARDS; Crawley Sands, Gloucester, WEBB.

1758. *C. CAPITATUM* Druce. Kettlethness, near Whitby, Yorks, FLINTOFF; Warton Crag, W. Lancs, WHELDON.

1763 (3). *GENTIANA SEPTENTRIONALIS* Druce. Bettyhill, Melvich, W. Sutherland, the prevailing form, DRUCE.

1765. *G. BALTICA* Murb. Bamborough, Northumberland, R. B. COOKE.

†1767. *NYMPHOIDES NYMPHAEOIDES* (L.) Druce. Clyne Ponds, Glamorgan, introduced, WEBB.

†1780. *PHACELIA TANACETIFOLIA* Benth. Abingdon, Berks, 1925, GAMBIER-PARRY.

†1781. *HELIOTROPIUM EUROPAEUM* L. Bitterne, S. Hants, Miss COBBE.

†1783. *OMPHALODES OMPHALODES* (L.). Fairy Hill, Gower, Glamorgan, WEBB.

1785. *CYNOGLOSSUM MONTANUM* L. Herm, Channel Isles, Mrs HICHENS. Specimen not seen by me.

†1789 (5). *BENTHAMIA (AMSINKIA) MENZIESII* (McBr.). Govan Haven, E. HENSLOW; Port Meadow, Oxon, GAMBIER-PARRY.

†1789 (6). *B. PARVIFLORA* (Keller) with above at Port Meadow.

1791. *SYMPHYTUM TUBEROSUM* L. East Row, Sandsend, near Whitby, Yorks, June 1925, FLINTOFF.

†1797. *BORAGO ORIENTALIS* L. Hagley, Worcester, Rev. E. REYNOLDS.

1813. *MYOSOTIS PALUSTRIS* Hill, var. *COMMUTATA* (R. & S.).
Cothill, Wytham, Berks; Bladon, Oxon, teste WADE, see *Rep. B.E.C.*
511, 1918, DRUCE.

1815 (2). *M. SICULA* Guss. In some plenty on the watery bank
of an old quarry between Portelet Bay and Noirmont, Jersey,
August 2, 1925. It appears to be the same plant I collected at
Pleise, Loire Inférieure, France, L. ARSENE. This is the same as
the plant given me by F. Druce who was with Mr Wilmott when it
was first found. Rouy refers all the mainland plants to his var.
confusa of *multiflora*.

†1817. *M. SYLVATICA* Hoffm. Abundantly and completely natur-
alised at Elton Bank, Northants, May 1925. With it was var.
LACTEA, DRUCE. *West Linton, Peebles, BALFOUR.

*1820. *M. COLLINA* Hoffm. Niedpath Castle, Peebles, BALFOUR.

1821. *M. VERSICOLOR* Sm., var. *PALLIDA* (Bréb.). Menmarsh,
Oxon, DRUCE.

1824. *LITHOSPERMUM ARVENSE*. L. Luxuriant examples, Buck-
den, Hunts, DRUCE.

†1827. *ECHIMUM PLANTAGINEUM* L. S. Devon, Miss TACKER; near
Corves, Calver Cliff, Isle of Wight, UPWARD, ex RAYNER.

†1850 (3). *SOLANUM MARITIMUM* Meyen. Bitterne, S. Hants,
Miss A. B. COBBE.

†1852. *NICANDRA PHYSALOIDES* Gaertn. Les Petits Vaux and
Beaumont, Jersey, L. ARSENE.

†1853. *LYCIUM CHINENSE* Mill. North Kessock, Easternness,
WEBB.

†1854. *ATROPA BELLADONNA* L. Friends Burial Ground near
the Roman Wall, Colchester, BROWN; on the cliffs, Gairloch, W.
Ross, DRUCE.

†1855. *DATURA STRAMONIUM* L. Laughton, N. Lincoln, Miss
MEYNELL.

- †1856. *HYOSCYAMUS NIGER* L. Glen, Peebles, BALFOUR.
- †1860. *VERBASCUM PHLOMOIDES* L. Quarry ground, Tytherington, W. Gloster, 1925, Miss I. M. ROPER.
- †1864. *V. BLATTARIA* L. Belgrave, Leicester, BEMROSE.
- †1866. *V. LYCHNITIS* L. In a fowl-run, Sowerby, Yorks, F. M. DAY; railway bank, Tilehurst, Berks, DRUCE.
- †1867. *V. NIGRUM* L. Near Prestatyn, Flint, perhaps a garden escape, Miss B. ALLEN; †Eddleston, Peebles, BALFOUR; native at *Stibbington, Hunts, DRUCE.
- †1877. *LINARIA PURPUREA* Mill. By railway, Daviot, Easternness, WEBB.
- †1878. *L. REPENS* Mill. Giggleswick Station, Yorks, PICKARD.
1884. *L. SPURIA* Mill. (*peloria*). Upton, Hunts, 1925, with 1885. *L. ELATINE* Mill., the latter also at Shipton, DRUCE.
- †1899. *MIMULUS MOSCHATUS* Dougl. Naturalised in Glen Lyon, M. Perth, 1925, Miss TODD.
- †1904. *ERINUS ALPINUS* L. On a wall near Malvern, Worcester, September 1925, TOWNDROW; Dolphinton, Peebles, BALFOUR.
1906. *VERONICA HYBRIDA* L. Moughton Scar, M.W. Yorks, MATTINSON in *Nature*, March 1925.
1907. *V. OFFICINALIS* L., var. *INTEGRA* Druce (*V. officinalis* L., var. *hirsuta* Williams, non Hopk.). Culbin Sands, Elgin, July 1925, DRUCE.
1910. *V. SCUTELLATA* L. The glabrous plant, W. Ballyvaghan, Co. Clare. 1925. P. B. O'KELLY. Culbin Sands, Elgin, DRUCE.
- †1923. *V. TOURNEFORTHII* Gmel. Garden weed, Ullapool, W. Ross, DRUCE.

(The Euphrasiae have been named by Messrs D. Lumb and
W. H. Pearsall.)

1932. EUPHRASIA BOREALIS Wettst. Culbin Sands, Elgin;
Bettyhill, W. Sutherland, DRUCE.

1933. E. BREVIPILA B. & G. Poolewe, Gairloch, W. Ross;
Corfe, Dorset, DRUCE. A sub-glandular form from Windy Gap, Co.
Kerry, TRAPNELL, and from Dunnet, Caithness, DRUCE.

1934. E. NEMOROSA Pers. Poulsallough, Co. Clare, TRAPNELL.

1934 (2). E. CAMPESTRIS Jord. In great abundance and very
robust on Chilham Down, Kent, Miss M. COBBE.

1935. E. CURTA Fr. Bettyhill, W. Sutherland, DRUCE. Var.
GLABRESCENS Wettst. Cnochan, W. Ross, DRUCE.

1937. E. LATIFOLIA Pursh. Cnochan, W. Ross; islet, Bettyhill,
W. Sutherland, DRUCE.

1938. E. FOULAENSIS Towns. Islet, Bettyhill, W. Sutherland,
DRUCE.

1939. E. MICRANTHA Fr. (= *gracilis* Fr.). Gairloch, Poolewe,
W. Ross; Boat of Garten, Easternness; Ben Hope, W. Sutherland,
DRUCE.

1941. E. ROSTKOVIANA Hayne. Poulsallough, Co. Clare, TRAP-
NELL; Upper Cloughton, W. Lincs, WILSON, teste PEARSALL.

1943. E. KERNERI Wettst. Near Ballycullinan Lough, Co.
Clare, TRAPNELL, teste PEARSALL.

1948. BARTSIA ODONTITES Huds., var. PALLIDA (Lange). Castle-
gar, Ahascragh, Co. Galway, Miss TALBOT.

1958. MELAMPYRUM CRISTATUM L. In beautiful flower on the
borders of Monks Wood, Hunts, July 1925, DRUCE.

1962. OROBANCHE RAPUM-GENISTAE Thuill. Llandrindod Wells,
Miss WILDING.

1977. *UTRICULARIA INTERMEDIA* Hayne, teste Dr Glück. Tubber Bog, Galway, P. B. O'KELLY.

(The *Menthae* have been named by Mr J. Fraser.)

1988. *MENTHA ROTUNDIFOLIA* Huds. Strangford, Co. Down, 1925, Major HEAD.

†1989. *M. ALOPECUROIDES* Hull. Near Biddesden, but in N. Hants, October 1925, Hon. Mrs GUY BARING and DRUCE.

†1990. *M. LONGIFOLIA* Huds. × *AQUATICA*. Applecross, W. Ross, DRUCE.

†1991. *M. SPICATA* L. Callander, W. Perth, July 1925, DRUCE.

1993. *M. PIPERITA* L. Strangford, Co. Down, 1925, Major HEAD.

1996. *M. VERTICILLATA* L., var. *SUBGLABRA* (Baker). Aqualate, Stafford, 1925, DRUCE. Var. *OVALIFOLIA* Briq. Bank of Arun, Houghton, W. Sussex, RAYNER.

1997. *M. GENTILIS* L., var. *VARIEGATA* (Sole). Tyndrum, M. Perth, Rev. H. HARVEY. This is probably synonymous with var. *HACKENBRUCHII*, Editor.

1999. *M. RUBRA* Sm., var. *RARIFILA* Briq. Near Falconhurst, Kent, Mr JUSTICE TALBOT.

2000. *M. ARVENSIS* L., var. *PRAECOX* Sole. Ashopton, Derby; Welford, near Hereford, PURCHAS; Amberley, Sussex; Fence Wood, Berks; Perth, 1911, DRUCE; Arundel, W. Sussex, RAYNER. Var. *NUMMULARIA* (Schreb.). Fence Wood, Berks; Dalmally, Argyll, 1893; Dunning, Perth, DRUCE. Var. *OBTUSIFOLIA* Briq. Odiham, N. Hants, Miss C. E. PALMER; Cheddar, N. Somerset, 1849; St Ouen's, Jersey, 1850, PIQUET; Braunston Pool, Leicester (as *sativa* in *Rep. B.E.C.* 1919), WADE; Shandon, Dumbarton, C. BAILEY; Yardley Gobion, Harleston, 1878, Northants; Otmoor, Oxford; Dalmally, Argyll; Freshwater, Isle of Wight, DRUCE. Var. *SCRIBAE* Briq. Banbury, Oxford, BEESLEY. Var. *AGRESTIS* Sole. Banbury, Oxford, BEESLEY; Kintbury, Berks, DRUCE. Var. *DENSIFOLIOLATA*

Briq. Dalrnally, Argyll, 1893, MARSHALL; Odiham, N. Hants, Miss C. E. PALMER; Summertown; Port Meadow, Oxford, DRUCE; Ashopton, Derby, PURCHAS. Var. PARITARIIFOLIA (Beck). Fort William, Inverness, 1903, DRUCE. Var. ALLIONII (Bor.). Godstow, Oxford, DRUCE. Var. AUSTRIACA (Jacq.). Lathfield, N. Derby (as *Allionii*), C. BAILEY; Headley, N. Hants, J. VAUGHAN; Megavessey, Cornwall, Miss TODD; north of Southport, Lancs, 1894, WHELDON; Westwater, Fife, 1845, W. GARDINER; Woking, Virginia Water, Surrey; Moss Bridge, S. Lancs; Harefield, Middlesex; Naphill, Bucks, DRUCE; Tiddenham Chase, W. Gloster, RIDDELSDELL.

†2004. *ORIGANUM VULGARE* L. Rachan, Peebles, BALFOUR.

†2019 (2). *SALVIA SCLAREA* L. Hortal, on rubbish, abundant, Hamble Common, S. Hants, RAYNER.

2023. *S. PRATENSIS* L. In a field, no houses near, Erlestoke, Devizes, Wilts, October 2, 1925, MARSDEN JONES, ex R. G. GWATKIN.

2042. *SCUTELLARIA GALERICULATA* L., var. *LITTORALIS* Druce. Arisaig, Westerness, Mrs DUNCAN. See *Rep. B.E.C.* 275, 1912; Strath Carron, W. Ross, DRUCE.

2046. *PRUNELLA LACINIATA* L. In a little used grassy track between Sparshort and Farly Chamberlayne, S. Hants, July 1925, Rt. Hon. H. BAKER.

†2049. *MARRUBIUM VULGARE* L. Holme, Hunts, DRUCE.

2057. *STACHYS PALUSTRIS* L., var. *CANESCENS* Lange. Sennen Cliffs, Cornwall, 1925, E. B. WILKINSON.

2062. *GALEOPSIS TETRAHIT* L., var. *NIGRICANS* Bréb. Wotton, Surrey, H. W. MONCKTON.

†2082. *TEUCRIUM CHAMAEDRYIS* L. In a grass-dive in a pine and larch wood near Halton, Bucks, Mrs SWORDEN; in pretty good quantity in thick old turf on a high down about three miles N.W. of Lewes, Sussex, looking very wild, July 1925, Mr JUSTICE TALBOT.

2083. *AJUGA REPTANS* L., ? var. *ALPINA* Koch. = *PSEUDO-REPTANS* Syme. Langdon Beek, Durham, DRUCE.

†2085. *A. GENEVENSIS* L. Good examples have been sent to the Club by Mr REES from the Cornish Station, Phillack Towans, where it is adventitious but has persisted for some years. See *Rep. B.E.C.* 465, 1924.

†2089. *PLANTAGO INDICA* L. Eastbourne, Sussex, H. S. SALT, ex RAYNER.

2101. *LITTORELLA UNIFLORA* Asch. Sweethope Lough, Northumberland, J. E. NOWERS.

†2112. *AMARANTHUS ALBUS* L. Bitterne, S. Hants, Miss A. B. COBBE; Barry, Glamorgan, SMITH.

†2113 (2). *A. THUNBERGII* Moq. Bristol, C. & N. SANDWICH.

†2114. *A. CHLOROSTACHYS* Willd., var. *ARISTULATUS* Thell. Millbrook, S. Hants, Miss A. B. COBBE.

†2116. *A. SYLVESTRIS* Desf. Bristol, C. & N. SANDWICH.

(The Chenopods have been named by Dr J. Murr.)

2117. *CHENOPODIUM RUBRUM* L., var. *BLITOIDES* Wallr. Cardiff, Glamorgan, DRUCE; Wilbury Hill, Herts; Wretton Fen, E. Norfolk, LITTLE.

2120. *C. URBICUM* L. Potterne, Wilts, GWATKIN.

†2122. *C. MURALE* L., var. *MICROPHYLLUM* Gürke. Bitterne, S. Hants, Miss A. B. COBBE.

†2123. *C. OPULIFOLIUM* Schrad. Hitchin, Herts, LITTLE.

2124. *C. ALBUM* L., var. *VIRIDE* L. Newport, Salop, DRUCE; Budleigh Salterton, S. Devon, Major ORME; Colchester, verging to *GLOMERULOSUM* Reichb., Dedham, N. Essex [2021], BROWN. Var. *LANCEOLATUM* (Muhl.). Bude, Cornwall, THURSTON. Var. *SUBFICIFOLIUM* Murr. Colchester, N. Essex, DRUCE.

†2124. *C. PSEUDOSTRIATUM* Zschacke. Hythe Quay, Colchester [2314], N. Essex, BROWN.

†2125. *C. LEPTOPHYLLUM* Nutt. Alverstone, Isle of Wight, RAYNER.

2127. *C. GLAUCUM* L. Edenbridge, Kent, Mr JUSTICE TALBOT; Rocester, Hon. WM. DAWSON; N. Staffs, RIDGE.

†2127 (2). *C. AMBIGUUM* (R. Br.). Bristol, N. SANDWITH.

†2128. *C. VULVARIA* L. Airdrie, Lanark, GRIERSON.

†2130. *C. AMBROSIODES* L. Eastleigh, S. Hants, RAYNER.

†2131. *C. BOTRYS* L. Flint, A. DALLMAN.

†2131 (5). *C. ZSCHACKEI* Murr. In good condition close to the Maltings, Hythe Quay, Colchester, July 1925, DRUCE. Here also "sed paullum commixtum cum *C. albo* videtur," teste Murr. Also [2313] from same place, August 1925, G. C. BROWN.

†2133. *C. CAPITATUM* Asch. Near Mills, N. Somerset, Mrs LINDSAY.

†2153 (10). *AXYRIS AMARANTHOIDES* L. Port Meadow, Oxon, 1925, GAMBIER-PARRY; Stoughton, Leicester, BEMROSE; St Austell, Cornwall, TRESSIDER.

†2168. *SALSOLA KALI* L., var. *TENUIFOLIA* Reichb. Bristol, Lady DAY; Cardiff, DRUCE & SMITH, teste THELLUNG.

†2168. *PHYTOLACCA AMERICANA* L. Chillerton, Isle of Wight, YOUNG, ex RAYNER.

2169. *POLYGONUM DUMETORUM* L. Bishopstoke, S. Hants; Alverstone, Isle of Wight, RAYNER. Sp. non vidi.

2171. *P. BISTORTA* L., var. *ALBUM*. By the Teith, Callander, W. Perth, 1925, DRUCE.

*2172. *P. VIVIPARUM* L. Peebles in 1715, see BALFOUR.

2178. *P. MITE* Schrank. Shapwick Moor, N. Somerset, Mrs TODD, teste DANSER. The plant is infested with *Sphacelotheca hydro-piperis*. I follow Schinz and Thellung in using the name *P. mite*.

- †2180. *P. Equisetiforme* S. & S. Airdrie, Lanark, GRIERSON.
2182. *P. Rari* Bab. Turnberry, Ayr, H. K. A. SHAW.
- †2183. *P. Bellardi* All. Bristol and Avonmouth, C. & N. SANDWICH. Not seen by me.
- †2183 (2). *P. Patulum* M.B. Cardiff [C. 21], DRUCE & SMITH.
- †2185 (3). *P. Plebejum* R. Br. Probably this, Hasketon, Suffolk, H. K. A. SHAW, teste DANSER.
- †2197. *Rumex Patientia* L. Stone Marshes, W. Kent, 1923, two large plants by the side of a dyke, St J. MARRIOTT. Det. DRUCE.
- †2199. *R. Alpinus* L. Morridge Leek, Staffs, Dr McALDOWIE; Leadburn, Peebles, BALFOUR.
2200. *R. obtusifolius* L. (*agrestis*), var. *unigranus* Danser. Stoke Bishop, Walton, Surrey, DRUCE.
2200. *R. obtusifolius* × *viridis* Sibth. = *R. Duffii* Haussk. Between Putney and Barnes, Surrey [214], 1911, BRITTON. See *Rep. B.E.C.* 1911, where it is named × *R. Duffii* by DANSER.
- †2201. *R. sanguineus* L. Rare at Inverness, WEBB. Sp. non vidi.
2206. *R. palustris* Sm. Acle, Norfolk; Chard, Somerset, E. S. MARSHALL.
2207. *R. maritimus* L. Clifton, Notts; Swansea Dock, Glamorgan, WEBB; Whittlesey, Hunts, DRUCE.
- *2209. *R. arifolius* All. Cnochan, W. Ross, at about 400-800 feet, and on the same range of rocks in W. Sutherland, DRUCE.
- †2210. *R. salicifolius* Weinm. Twyford Mill, Berks, 1925, Mrs WEDGWOOD; Port Meadow, Oxon, GAMBIER-PARRY.
- †2210. *R. obovatus* Danser. Southwick, Sussex, Miss COTTES.
- †2210 (3). *R. dentatus* L. Par, Cornwall, MEDLIN; Manifold Valley, Staffs, Miss A. B. COBBE.

†2210 (4). *R. MAGELLANICUS* Gris. Cardiff, SANDWICH and DRUCE. Named at Kew.

2212. *ASARUM EUROPAEUM* L. Rutland, BEMROSE.

†2213. *ARISTOLOCHIA CLEMATITIS* L. Grounds of Hampton Court, Middlesex, 1925, Miss G. BACON.

2215. *DAPHNE MEZEREUM* L. Beeston Tor, Stafford, J. A ANDLEY.

†2216. *HIPPOPHAE RHAMNOIDES* L. Gairloch, W. Ross, DRUCE.

2217. *VISCUM ALBUM* L. On *Robinia Pseudacacia*, Singleton, Glamorgan, WEBB.

†2229. *EUPHORBIA VIRGATA* W. & K. Prestwood, Bucks, in some quantity, Mrs DEBENHAM.

†2241. *BUXUS SEMPERVIRENS* L. Large specimens at Mellte Castle, Brecon, WEBB.

2243. *MERCURIALIS ANNUA* L. Leicester, BEMROSE; Singleton, Glamorgan, WEBB.

2246. *ULMUS SARNIENSIS* (Loud.). Heathencote, Northants, DRUCE.

2246. *U. PLOTII* Druce. Heathencote, Northants, DRUCE; near Stondon Vic, Beds, LITTLE.

2250. *URTICA DIOICA* L., var. *ANGUSTIFOLIA* W. & G. Abbey Wood, W. Kent, St J. MARRIOTT.

2254. *MYRICA GALE* L. Very large specimens, five feet high, under larch at Holme, Hunts, 1925, DRUCE.

†2258. *ALNUS INCANA* Willd. Bradoonie, Forfar, R. GRIERSON.

†2263. *QUERCUS CERRIS* L. Penzance, Cornwall, Miss TODD; near Elton, Hunts, large trees, DRUCE.

†2264. *Q. ILEX* L. Naturalised on screes at Caswell, Glamorgan, WEBB.

†2265 (2). *JUGLANS REGIA* L. Limestone cliff, Widegate, Glamorgan, WEBB.

2266. *FAGUS SYLVATICA* L. Seedlings on rocks above Rogie Falls, East Ross, WEBB.

[*PLATANUS ORIENTALIS* L., genuina. Runcton Holme Rector's Garden and meadow opposite Crow Hall, Denver, W. Norfolk, 1924. Det. A. HENRY; edge of Piper Harrow Park, W. Surrey (many *P. ACERIFOLIA* in Park), 1925, LITTLE.]

(The *Salices* have been named by Mr J. Fraser.)

2267. *SALIX PENTANDRA* L. Near Leicester, BEMROSE; Stafford, DRUCE and CURTIS.

2269. *S. ALBA* L., var. *CAERULEA* (Sm.). Elton, Hunts, DRUCE.

†2272. *S. DAPHNOIDES* Vill. Near Penzance, W. Cornwall, Miss M. BROWN. Var. *PRUINOSA* (Wendl.) Near Petersfield, S. Hants, DRUCE.

2273. *S. VIMINALIS* L., var. *LINEARIFOLIA* W. & G. Near this. Langdon Beck, Durham, DRUCE.

2273. *S. ACUMINATA* Sm. Kingston, Surrey, FRASER.

2275. *S. CAPREA* × *VIMINALIS* = *MOLLISSIMA* Sm., non Ehrh. Titsey Park, Limpsfield, Surrey, FRASER.

2276. *S. AURITA* × *CAPREA*. Wood near Parkhurst House, W. Sussex, LITTLE; Oxted, Surrey, FRASER.

2276. *S. AURITA* × *CINEREA* = *S. LUTESCENS* A. Kern. Oxted. Surrey, FRASER; Holme, Hunts, DRUCE.

2276. *S. AURITA* × *PENTANDRA* = *LUDIFICANS* And. Sedbergh, N.W. Yorks, TRAPNELL.

2277. *S. CINEREA* × *VIMINALIS* = *S. SMITHIANA* Willd. Weybridge, Surrey, FRASER.

2278. *S. REPENS* L. Dollar Law, Peebles, BALFOUR. Var. FUSCA (Sm.). Culbin Sands, Elgin; Holme, Hunts, DRUCE.

2279. *S. NIGRICANS* × *PHYLICIFOLIA* Wimm. Langdon Beck, Durham, June 1925, DRUCE.

2296. *CERATOPHYLLUM AQUATICUM* agg. Hersol, Glamorgan, Miss VACHELL.

2297. *C. DEMERSUM* L. The Orkney specimens (Trans. Bot. Soc. Edin. 134, 1917) prove to be *Utricularia major*. See Johnston, *l.c.*, 1925. The vice county 111 record must be deleted.

*2304. *NEOTTIA NIDUS-AVIS* Rich. Glen, Peebles, BALFOUR.

*2305. *LISTERA OVATA* Br. Glen, Peebles, BALFOUR.

2306. *L. CORDATA* Br. Moor west of Robin Hood Bay, N.E. Yorks, Mrs L. LITTLE.

2310. *GOODYERA REPENS* Br. Very abundant on the Culbin Sands, Elgin, DRUCE; Nethy Bridge, Easternness, Lord HENLEY.

~~2320. *ORCHIS PURPUREA* Huds. Near Godmersham, E. Kent, Mrs ARMITAGE. The specimens sent showed a considerable range of variation. One had small narrow divisions of the flower and this I suspect has been mistaken for *O. militaris*.~~

2324. *O. MORIO* L., var. *CHURCHILLII* Druce. Between Yateley and Cricket Hill, ? Hants; near Chobham, Surrey, MONCKTON.

2325. *O. PRAETERMISSA* Druce. A seedling of the original plant was flowered in 1925 by B. S. OGLE. It was like its parent. [Carronville, near Paris, 1925, T. A. STEPHENSON.] Colbren, near Glamorgan, WEBB. Var. *PULCHELLA* Druce. Teesdale, Durham; Cronkley, York; Gairloch, W. Ross, DRUCE.

2325. *O. PRAETERMISSA* × *FUCHSII*. Groby Pool, Leicester, BEMROSE; near Lyme Regis, Dorset, MONCKTON; probably this from Wrexham, Denbigh, D. A. JONES.

2325 (3). *O. PURPURELLA* Steph. Gairloch, Poolewe, W. ROSS, DRUCE; Lake of Menteith, Miss TODD.

2326. *O. INCARNATA* L., var. (white flowered). Redgrave Fen, Suffolk; Blo Norton Bog, Norfolk, DRUCE.

2327. *O. MACULATA* L., vera. [Loeso Dania, C. H. Ostenfeld]; Stow Bedon, W. Norfolk; Banghurst, Berks, TRETHERWY; Poolewe, Gairloch, W. ROSS; Cnochan, W. Sutherland, DRUCE; Lake of Menteith, Aberfoyle, W. Perth, Miss TODD. Var. *LEUCANTHA* Druce. Histon Common, Dorset, MONCKTON; Dundonnell, W. ROSS, DRUCE; Langley Hilden, Herts, LITTLE.

2327 (2). *O. FUCHSII* Druce. Alconbury, Stibbington, Hunts, July 1925, DRUCE; a singularly-bracteate form, Petersfield, Hants, DRUCE. \times *O. TRANSIENS* Druce (*O. FUCHSII* \times *MACULATA*). Strensall, York, H. BRITTEN.

2327 (3). *O. O'KELLYI* Druce. Surrey, FRASER; Melkinthorpe, Westmoreland, H. BRITTEN.

*2329. *O. MASCULA* L. West Linton, Peebles, BALFOUR.

2331. *O. HIRCINA* Sw. Found by a school girl near Stockbridge, Hants, ex Mrs GUY BARING; also from Shaldon, near Alton, ex RAYNER.

2335. *OPHRYS TROLLII* Heg. Near Seaton, Devon, BARR in *Devon and Exeter Gazette*; Winchester, 1925, H. SMITH.

2337. *HERMINIUM MONORCHIS* Br. Coddendam, Suffolk, 1925. Hon. EVELYN WOOD.

2340. *HABENARIA VIRIDIS* Br. Nantwy-Ffrith, Denbigh, D. A. JONES.

2342. *H. VIRESCENS* Druce. Shaftesbury, Dorset, Lady MACKINNON; Upton, Hunts, DRUCE.

†2357. *CROCUS ALBIFLORUS* Kit. Fairy Hill, Gower, Glamorgan, WEBB.

†2360. *SISYRINCHIUM ANGUSTIFOLIUM* Mill. In a moist portion of wet heath, Chobham Common, Surrey, M. J. THOMAS, ex Miss BLACKWELL; near Milngavie, Dumbarton, K. W. BRAID, one plant in a strawberry field.

†2372. *NARCISSUS BIFLORUS* Curt. Wood at Oxwich, Glamorgan, HYDE.

†2378. *LEUCOJUM VERNUM* L. Damp wood, Caswell, Glamorgan. Dr S. P. ROWLANDS & WEBB.

†2382. *RUSCUS ACULEATUS* L. In a covert, Cum, near Dyserth, Flint, B. ALLEN. ? planted.

2383. *ASPARAGUS OFFICINALIS* L. On the cliffs low down at Corbière, Guernsey, Mrs HICHENS.

†2390. *ASPHODELUS FISTULOSUS* L. Fowey, Cornwall, TRESSIDER.

2395. *ALLIUM SCORODOPRASUM* L. Warton Crag, W. Lancs. WHELDON & WILSON.

†2402. *A. CARINATUM* L. Church Stretton, Salop, 1925, ALICE C. O. JAUDE.

2408. *HYACINTHUS COMOSUS* L. Par, Cornwall, MEDLIN.

†2411 (2). *SCILLA HISPANICA* Mill. Completely naturalised at Penrhos, Anglesey, DRUCE & Lady K. STANLEY; Oxwich Dunes, Glamorgan, WEBB.

†2413. *ORNITHOGALUM UMBELLATUM* L. Wood at Oxwich, Glamorgan, HYDE.

†2416. *LILIUM MARTAGON* L. About Luppitts, Devon, not planted, HARRIS in *Trans. Dev. Ass.*

†2419. *TULIPA SYLVESTRIS* L. Alton, Staffs, Mrs DAWSON, ex BOYDON RIDGE.

*2422. *COLCHICUM AUTUMNALE* L. St Michael's-on-Wyne, W. Lancs, J. MOSS, ex WHELDON & WILSON.

2431. *JUNCUS BALTICUS* Willd. On the Culbin Sands, Elgin, July 1925. Not included in Stewart and Patton's paper in *Rep. B.E.C.* 267, 1923, but locally plentiful, DRUCE.

2432. *J. FILIFORMIS* L. Crummoch Water, Cumberland, HAINES.

2436. *J. ALPINUS* Vill. Mail Gruaidh, Miss TODD; Aberfeldy, M. Perth, Hon. Mrs CAMPBELL. I think these specimens, though young, may go to the above. It is strange that so abundant and widely distributed as this plant is in Norway and Sweden it should be so scarce and untypical in Scotland.

2437. *J. BULBOSUS* L. Schiehallion, W. Perth, Hon. Mrs CAMPBELL.

2439. *J. COMPRESSUS* Jacq. Rocmaine Bay, Guernsey, Miss M. COBBE, given in Marquand's Flora for that Island.

✓ +2441. *J. TENUIS* Willd. Margin of Adams Pond, Richmond Park, 1925, H. W. KEW; West Kent, St J. MARRIOTT; Woking Common, Surrey, J. R. TOMLIN; Cardew, Cornwall, HOSKING.

2442. *J. BUFONIUS* L. A tall slender plant, near *giganteus* A. & G. Guernsey, Miss M. COBBE.

2443. *J. MUTABILIS* Lam. With large bracts at Chyvean, Cornwall, 1925, Major ORME.

2444. *J. CAPITATUS* Weig. Still in Anglesey, 1925, Lady K. STANLEY.

2454. *JUNCOIDES MULTIFLORUM* Druce. Dundonnell. W. Ross, with dark fruit, Wood Walton, Hunts, DRUCE. Var. *CONGESTUM* Druce. Wood Walton, Hunts; Aqualate, Stafford, DRUCE.

2455. *J. PALLESCENS* (Bess.) Druce. Still at Wood Walton but very scarce, DRUCE.

*2461. *TYPHA ANGUSTIFOLIA* L. Cheviot, HESLOP-HARRISON.

*2462. *SPARGANIUM NEGLECTUM* Beeby. E. Donyland, N. Essex [2324], G. C. BROWN.

*2464. *S. SIMPLEX* Huds. Peebles, BALFOUR.

2466. *S. MINIMUM* Fr. Strathpeffer, E. Ross; Norton Bog, Staffs, DRUCE; Tubber Bog, Co. Galway, O'KELLY.

*2468. *ARUM MACULATUM* L. Kings Meadow, Peebles, BALFOUR.

2478. *ELISMA NATANS* Buch. In quantity in shallow water, Norton Bog, Staffs, Sir ROGER CURTIS!

2479. *SAGITTARIA SAGITTIFOLIA* L. Perhaps native at Keens of Gowerton, Glamorgan, WEBB.

2488. *POTAMOGETON COLORATUS* Horn. Tubber Bog, Galway, O'KELLY; *Leighton Beck, W. Lancs, WILSON.

*2497. *P. ANGUSTIFOLIUS* Presl. Malham Tarn, Yorks, Dr W. H. PEARSALL, ex W. A. SLEDGE.

2504. *P. COMPRESSUS* L. Aqualate, Salop, DRUCE & Sir R. CURTIS.

2511. *P. INTERRUPTUS* Kit. Canal at Neath, Glamorgan, WEBB & MARKS.

2508 (2). *P. PANORMITANUS* Biv., var. *MINOR* Biv. In quantity in the dykes near Lewes, Sussex, DRUCE, Lady ALETHEA BUXTON & Mr JUSTICE TALBOT; the type at Loch Scarmclell, Caithness, LITTLE, ex A. BENNETT.

2527. *CYPERUS LONGUS* L. Water meadow, north of Winton, N. Hants, R. W. BUTCHER; † Margam Lake, Glamorgan, probably planted there, WEBB.

2535. *SCIRPUS TABERNAEMONTANI* Gmel. Aqualate, Stafford with *S. SETACEUS* L., DRUCE.

2542. *S. SETACEUS* L., var. *PEDICELLATUS* Druce. On peat, Walton-in-Gordano, N. Somerset; by the river Rawthey, Sedbergh, Yorks, TRAPNELL.

2546. *S. RUFUS* Schrad. Grimsby, N. Lincoln, G. W. ALLISON.

2556. *MARISCUS MARISCUS* (L.), comb nov. (*Cladium Mariscus*).

Very fine at Holme, Hunts, July 1925, DRUCE; *Newton Abböt, Devon, 1868, R. M. LINGWOOD in *Hb. Ex. Mus.*, teste W. D'URBAN. First Devon record. The parish of Hawkchurch, which yields *Mariscus*, has been transferred from Dorset to Devon which therefore has now two localities for the plant.

*2547. *ERIOPHORUM PANICULATUM* Druce. Dolphinton, Peebles, BALFOUR.

2560. *CAREX ACUTIFORMIS* Ehrh. Ffrith, Flint, D. A. JONES.

*2561. *C. VESICARIA* L. Bitch Crog, Peebles, BALFOUR.

2564. *C. INFLATA* Huds., var. A large fruited form with shorter beaks near Ballyvaghan, Co. Clare, O'KELLY; a plant with much smaller, less round, and longer beaked fruits at Callander, W. Perth, where a hybrid with *vesicaria* also grows. Here, too, is a form with short female spikelets subtended by a male spikelet 25-36 mm. long.

*2569. *C. STRIGOSA* Huds. Lamellen, St Judy, Cornwall, THURSTON.

2574. *C. PUNCTATA* Gaud. Moulin Huet, Guernsey, Miss COBBE.

2576. *C. FLAVA* L., var. *OEDOCARPA* And. Cnochan, W. Ross and West Sutherland. A curious form perhaps comes under this with a solitary female spikelet of rather long beaked fruits at Strathpeffer, E. Ross, DRUCE.

2576 (2). *C. LEPIDOCARPA* Tausch. Cnochan, W. Ross and W. Sutherland; Strathpeffer, E. Ross, DRUCE; Wastwater, Cumberland, Miss COBBE.

2577. *C. OEDERI* Retz. Culbin Sands, Elgin; Ranworth, E. Norfolk, Miss D. CATOR.

2578. *C. EXTENSA* Good., var. *PUMILA* Anders. Culbin Sands,

Elgin, DRUCE. Not included in Stewart and Patton's paper in *Rep. B.E.C.* 267, 1923; Scolt Head, E. Norfolk, H. K. A. SHAW.

2581. *C. ORNITHOPODA* Willd. In the grounds at Flass, Westmoreland, Miss DENT.

2587. *C. PILULIFERA* L., var. *LONGIBRACTEATA* Lange. Ben Lawers, M. Perth, Miss TODD.

2589. *C. PALLESCENS* L. Silk Wood, Gloster, Lady HOLFORD.

2591. *C. PANICEA* L. Mr W. D. MILLER sent a form from Shapwick peat-moor in which the small female spikelets are often reduced to a single fruit, and the male spikelets are extremely slender—forma *DEPAUPERATA*.

2592. *C. MAGELLANICA* Lam. Flanders Moss, ? Perth or Stirling, Miss TODD, teste N. SANDWICH.

*2602. *C. AQUATILIS* Wahl. Between Sillioth and Bowness, Cumberland, Miss BACON. V. sp.

2613. *C. VULPINA* L., var. *NEMOROSA* Lej. Bradford-on-Avon, Miss TODD.

*2614. *C. MURICATA* L. Dolphinton, Peebles, BALFOUR.

2616. *C. DIVULSA* Stokes. Salcombe, Devon, 1925, W. D. MILLER.

2617. *C. BOENNINGHAUSIANA* Weihe. Bank of canal, one mile from Bude, Cornwall, Major ORME.

*2620. *C. DISTICHA* Huds. Dolphinton, Peebles, BALFOUR.

2627. *C. PAUCIFLORA* Light f. Dalnaspidal, Perth, in abundance, DRUCE.

2628. *C. PULICARIS* L., var. *MONTANA* (Pugs.). Cnochan, W. Ross and W. Sutherland, DRUCE.

†2632. *PANICUM CRUS-GALLI* L. Fowey, Cornwall, TRESSIDER; Noirmont, Rocquand, Jersey, Miss M. COBBE.

- †2636. *P. MILIACEUM* L. St Martin's, Jersey, Miss A. B. COBBE.
- †2636. *P. LAEVIFOLIUM*, var. *AMBOENSE* Hackel. Bitterne, Portsmouth and Millbrook, S. Hants, Miss A. B. COBBE.
- †2639. *SETARIA VIRIDIS* Beauv., var. *MAJUS* Gaud. Colchester [2308], BROWN.
- †2650. *PHALARIS AQUATICA* L. (*caerulea*). Airdrie, Lanark, GRIERSON.
- †2653. *P. MINOR* Retz. Gweak, Cornwall, Major ORME.
- †2654. *P. PARADOXA* L. Gweak, Cornwall, Major ORME.
2655. *P. ARUNDINACEA* L. Goosepen Marsh, Beaumont. See *Fl. Jersey*, p. 38, 1903. Corroborates Piquet's record for Jersey. Not observed by Lester-Garland. L. ARSENE.
2662. *ALOPECURUS PRATENSIS* × *GENICULATUS*. Sandy bank. Acle, Norfolk, Miss TODD.
2673. *PHLEUM PRATENSE* L., var. *LONGIARISTATUM* Parn. Gt. Orme's Head, Carnarvon, May 1925, DRUCE.
- †2674. *P. ALPINUM* L. Alien. Condorrat, Dumbartonshire, GRIERSON.
2678. *P. ARENARIUM* L. Inland in field at Berechurch, N. Essex, 1924, DRUCE; Port William, Wigtown, Miss BANCROFT.
- †2683. *AGROSTIS VERTICILLATA* Vill. Kings Mill, Guernsey. Miss M. COBBE.
2685. *A. NIGRA* With. Newport, Salop, July 1925, DRUCE; Ford, Sussex, B. REYNOLDS.
2685. *A. CAPILLARIS* L., var. *ARISTATA* (Parn.) Druce. Ford, Sussex, B. REYNOLDS.
2687. *A. CANINA* L. Holme, Hunts, DRUCE.
2690. *POLYPOGON MONSPELIENSE* L. Hornsey Island, Sussex.

H. W. KEW; an extraordinary, viviparous form occurred at Cardiff, where the plants were partly submerged, DRUCE.

2693. *CALAMAGROSTIS EPIGÆIOS* Roth. Withington, Gloucester, GREENWOOD; with very open panicles at Holme, Hunts, DRUCE.

2694. *C. CALAMAGROSTIS* (L.) comb. nov. Miss D. CATOR noticed the albino form at Woodbastwick, E. Norfolk.

*2697. *DEYEUXIA NEGLECTA* Kunth, var. *BOREALIS* (Laest.). Shore of Scawdy Island, Lough Neagh, Tyrone, 1870, S. A. STEWART; Lough Neagh, Derry, 1909, DRUCE.

2698. *GASTRIDIVM VENTRICOSUM* S. & T. Budleigh Salterton, Devon, Major ORME.

†2699. *APERA SPICA-VENTI* Beauv. Bridge of Allan, by roadside to Stirling, July 1925, DRUCE.

2719. *AVENA FATUA* L. Cardiff, Glamorgan; Godmanchester, Hunts; foreshore, Ullapool (as *intermedia*), with *A. SATIVA* L., DRUCE; *Peebles, BALFOUR.

*2722. *A. PUBESCENS* Huds. Walkerburn, Peebles, BALFOUR.

†2727. *CAPRIOLA* (CYNODON) DACTYLON O.K. Near the river-bridge, Hampton Court, Middlesex, Miss BACON; Shore, Eling, S. Hants, RAYNER; Bath, Kingsbridge, MILLER.

†2737. *CYNOSURUS ECHINATUS* L. Near St Albans, Herts, in a wood, DRUCE; sandhills at Mablethorpe, Lincoln; Leicester, BEMROSE; East Sheen, Surrey, H. W. KEW.

2739. *KOBLERIA GRACILIS* Pers. Port William, Wigtown, Miss BANCROFT. Var. *BRITANNICA* (Domin). Bradbury Rings, Dorset, MONCKTON.

*2742. *K. ALBESCENS* DC. Sands of Barry, Forfar, Lady DAVY.

2757. *BRIZA MINOR* L. Bel Royal, Jersey, Miss A. B. COBBE.

†1758. *POA CHAIXII* Vill. Eddington, Peebles, BALFOUR.

2759. *P. PRATENSIS* L., var. *LATIFOLIA* Weihe. Elton, Hunts, DRUCE.

*2759 (2). *P. IRRIGATA* Lindm. By Loch Ard, W. Perth, Miss TODD.

†2760. *P. PALUSTRIS* L. Barry, Glamorgan [CC. 20], DRUCE.

2765. *P. COMPRESSA* L. Elton, Hunts, DRUCE.

2768. *P. BULBOSA* L. Rye Golf Links and Camber Sands, E. Sussex, 1925, A. O. HARRISON.

†2774. *GLYCERIA DISTANS* Wahl. Leith, 1925, DRUCE.

2776. *G. MARITIMA* Wahl. Ullapool, W. Ross, July 1925, DRUCE.

(The *Festucæ* have been named by Mr W. O. Howarth.)

2781. *FESTUCA ARUNDINACEA* Schreb. Duddon Estuary, Lake Lancs, W. H. PEARSALL.

2782. *F. ELATIOR* × *LOLIUM PERENNE*. Witterslack, Westmoreland, H. W. KEW. As one of the specimens has awned glumes can *italicum* be present? EDITOR.

2783. *F. SYLVATICA* Vill. Ecnon Gam and Gwladys Falls, Glamorgan, 1925, WEBB.

2785. *F. RUBRA* L., var. *FALLAX* (Thuill.). Ayleston, Leics, HORWOOD; Llandough, Cardiff, Glamorgan, WADE. Var. *JUNCEA* (Hack.). Ainsdale, etc., S. Lancs; Fleetwood, W. Lancs, WHELDON. Var. *TENUIFOLIA* Howarth. Rumney, Monmouth, WADE. Var. *BARBATA* (Hack.). Canal, Narborough, Leics, WADE; Wallasey, Cheshire, LEWIS; Hall Road, S. Lancs, WHELDON. Var. *ARENARIA* (Hack.). Llantwit Major, Glamorgan, WADE. Var. *GRANDIFLORA* (Hack.). Canal near Dane's Camp, Northants; Woodhouse, Leicesters; Rumney, Monmouth, WADE; Merton, W. Norfolk, ROBINSON; Walton, S. Lancs, WHELDON; Southampton, RAYNER; an extraordinary looking plant by the river Test near Stockbridge, Hants, Miss G. BACON, a remarkably robust plant 5 to 6 feet high with a beautiful pale-green panicle; Southwick, Sussex, a smaller and less

characteristic plant, DRUCE. Var. *GLAUDESCENS* (Hack.). Ullapool, W. Ross, 1925, DRUCE; Sully Isle, Glamorgan, WADE.

2787. *F. OVINA* L., var. *HISPIDULA* Hack. Nant Dhu, Brecon; Llyn Faur, Glamorgan, WADE; a viviparous form on Cnochan rocks, W. Ross and W. Sutherland, DRUCE.

2787. *F. CAPILLATA* Lam. Queen's College Grounds, Kew; St Martin's Graveyard, Jersey, L. ARSENE; Inchnadamph, W. Sutherland, DRUCE.

2787 (2). *F. JUNCIFOLIA* St Am., teste Howarth. Exmouth, Devon, BARTON; Poole, Dorset, *Hb. Kew*; Felixstowe, Southwold, Suffolk, *Hb. Wales*; Carstor, BAILEY; Hunstanton, Norfolk, ADAMSON; Skegness, Lincs, DRUCE, BAILEY, etc.; Hartlepool, Durham, BAILEY; Fife, BOSWELL; Carnoustie, Forfar, SHOOLBRED.

2790. *F. DANTHONII* A. & G. (*ciliata*). At Christchurch Hospital railway station, Sussex, for two years, B. REYNOLDS.

†2794. *BROMUS RIGENS* L. Christchurch, S. Hants, Mrs S. A. ROOKE.

2795. *B. RIGIDUS* Roth. Beauport, Jersey, Miss A. B. COBBE.

†2797. *B. TECTORUM* L. Thetford, where it has been established for over 30 years, distributed this year, DRUCE; Gweak, Cornwall, Major ORME.

†2803. *B. UNILOIDES* H.B.K. Bordeaux, Guernsey, Miss A. B. COBBE.

†2806. *B. SECALINUS* L. A pretty form with short spikelets, Godmanchester, Hunts; Nuneham, Oxon, DRUCE; gravel pits, Surrey, H. W. KEW.

†2809. *B. ARVENSIS* L. Moulin Huet, Guernsey, Miss A. B. COBBE.

†2810. *B. BRACHYSTACHYS* Hornem. Donaghadee, Co. Down. C. D. CHASE. Named at Kew.

2811. *B. HORDEACEUS* L., var. *PSEUDO-RACEMOSUS* A. & G. Donaghadee, Co. Down, C. A. CHASE.

2819. *BRACHYPODIUM PINNATUM* Beauv. Aconbury, Hunts, glabrous and slightly hairy forms occur, DRUCE; *Kenmore, Perth, new to Scotland, DRUCE. ? native. Thellung passes it.

†2821. *LOLIUM TEMULENTUM* L. St Brelade's, Jersey, Miss A. B. COBBE.

2824. *L. PERENNE* L., var. *SPHAEROSTACHYS* Mast. Aberfoyle, M. Perth, Miss TODD; between Great House and Seaton, Northumberland, 1877, Rev. H. E. FOX.

2828. *AGROPYRON PUNGENS* R. & S. Emsworth, W. Sussex, H. W. KEW; Vaizon, Guernsey, Miss COBBE.

2830. *A. REPENS* Beauv., var. *LEERSIANUM* Gray. Ullapool, W. Ross, DRUCE. Var. *LASIORACHIS* Hack. Glasgow, Lanark, GRIERSON. × *JUNCEUM* = *A. HACKELII* Druce. Arne, Dorset, SANDWITH.

2831. *A. CANINUM* Beauv. Robust specimens, with very long inflorescences, Melvich, W. Sutherland, DRUCE.

†2854. *HORDEUM BREVISUBULATUM* Trin. Bitterne, S. Hants, Miss A. B. COBBE.

†2857. *ELYMUS SIBIRICUS* L. Coatbridge, Lanark, GRIERSON. Named at Kew

2860. *JUNIPERUS COMMUNIS* L. Ystradfellte, Brecon, WEBB; *Langshaugh, Peebles, BALFOUR.

2869. *EQUISETUM PALUSTRE* L., var. *LONGIRAMOSUM* Klinge. Redgrave Fen, Suffolk, DRUCE; Wood Bastwick, E. Norfolk, Miss D. CATOR.

2870. *E. LIMOSUM* L., var. *FLUVIATILE* (L.). The Wilderness, Gwersyllt, Denbigh, D. A. JONES.

2877. *ADIANTUM CAPILLUS-VENERIS* L. Herm, Channel Isles, 1923, TEMPLEMAN.

*2879. *PHYLLITIS SCOLOPENDRIUM* Greene. Glen, Peebles, BALFOUR.

2880. *ASPLENium MARINUM* L. At 200 ft. alt., Bolt Head, Devon, W. D. MILLER.

*2882. *A. VIRIDE* Huds. Glen, Peebles, BALFOUR.

*2892. *POLYSTICHUM ANGULARE* Presl. Glen, Peebles, BALFOUR.
Not seen by EDITOR.

2893. *P. LOBATUM* Huds. Cnochan, W. Ross, July 1925, DRUCE.

*2898. *DRYOPTERIS SPINULOSA* O.K. Peebles, BALFOUR.

2899. *D. ARISTATA* Druce, var. *ALPINA* (Moore) Druce. Loch na Chat, M. Perth, Miss TODD.

2906. *CYSTOPTERIS FRAGILIS* Bernh. Near Farley, N. Staffs, PICKARD.

2919. *BOTRYCHium LUNARIA* Sw. Llandrindod, Radner, ex Miss OWEN; Billingham, Durham, at 30 ft. alt., J. E. NOWERS.

2930. *LYCOPODIUM INUNDATUM* L. In some quantity, Culbin Sands, Elgin, DRUCE.

*2931. *L. SELAGO* L. Dollar Law, Peebles, BALFOUR.

✓
2923 (2). *AZOLLA FILICULOIDES* Lam. Flats, E.N.E. of Sandwich, E. Kent, 1925, Miss A. STONE. Det. J. E. LITTLE. The glochidia (should not this be glochinia, by the etymology?) appear, under $\frac{1}{4}$ in. power, to be some aseptate, but some with one septum. The septa in *A. caroliniana* are at least three in number as figured in Von Martius *Fl. Brazil.* i., part 2, p. 658 and plate. The Sandwich Entomological Laboratory (See *Journ. Bot.* 1920) has been experimenting on "the possible use of *Azolla filiculoides* as a deterrent to Anopheles breeding." This may account for the appearance of the plant on Sandwich Flats, J. E. LITTLE; near Worcester, Rev. Dr PAUL.

NOTES ON THE BRITISH EUPHRASIAE.

By WILLIAM HARRISON PEARSALL.

The publication of a new edition of the London Catalogue seems an appropriate occasion for reviewing our present knowledge of the British Euphrasiae, and estimating our progress toward a stable opinion of the distinctions between the various species the list includes. Looking back over the past ten years one notes quite a number of definite phases in our conflicting views. We can remember the time when *E. curta*, var. *glabrescens* was all the rage, and every subglabrous plant, which presented any difficulty, was promptly referred to this variety. It would be edifying to overhaul many herbaria specimens and see what could be discovered under this label! We recollect, too, the temporary bias toward *E. stricta* and *E. brevipila*, followed more recently by the meteoric appearance and disappearance of *E. Tatarica* and *E. fennica*. On the whole, perhaps, though progress has been slow, some real advance has been made. Taking the species in L.C. order, we are generally agreed that, although many strict forms of *E. nemorosa* have been wrongly referred to *E. stricta*, the latter species may, occasionally, be found in Britain. The most typical examples in my own possession were gathered by Mr Charles Bailey at Llanberis, 15/8/88, and named by Townsend. They make a nearer approach to continental specimens than is usual with British examples and possess not only the strict, erect, and robust stems—22-27 cm.—but also the more erect (“stroked-up”) bracts of the species and numerous mature narrow, truncate capsules (relatively small for the size of the plants) and always shorter than the calyx-teeth. The teeth of the bracts are aristate, and the arista is transparent under the microscope.

I am strongly of opinion, however, that much of the present confusion in regard to the Euphrasiae results from our futile attempts to get them to “match” continental specimens, or to perfectly agree with descriptions based, in the main, upon such specimens. The British Isles lie further west than other parts of Europe, and, moreover, possess a more insular and equable climate than that of any other European country in the same latitude. The influ-

ence of these climatic conditions upon plants must be very considerable, and is bound to result in differences between British plants and continental "types" grown under dissimilar climatic conditions. So far—it appears to me—we have not made sufficient allowance for these inevitable differences.

E. suecica Murb. and Wettst., a parallel and earlier-flowering form of *E. stricta*, is unknown to me as being authentically British.

E. borealis Towns. has been the cause of considerable divergence of opinion during recent years, and this may possibly be due to over-emphasis by both Townsend and Bucknall of the obtuse leaves and their generally obtuse teeth. At any rate, this character should not be too much relied on in separating this species from *E. brevipila*. Far more confusing, however, is the fact that undoubted specimens of *E. borealis* may occasionally be found possessing a few short-stalked glandular hairs. I have seen these in Scottish specimens, and further, am now quite convinced that my plants from Greenscoe, Dalton-in-Furness, June 28, 1918, labelled *E. brevipila*, var. *subglandulosa*, are *E. borealis*, notwithstanding the fact that some of the plants possessed sparse glandular hairs. This species varies greatly in size—as may readily be seen by comparing plants from the North of Scotland with those from the Mendips—and the Scottish examples often greatly resemble *E. brevipila*.

E. brevipila is the first "glandular" plant on the L.C. list, and has been often wrongly named simply through the inability of members to see its glandular hairs. These are relatively short—compared with those of *E. Rostkoviana* and *E. hirtella*—usually consisting of one straight cell, topped by an amber-coloured gland. Those of *E. Rostkoviana* are much longer—3, 4 or 5 celled—therefore obviously "jointed," flexuose or even curly. The short straight glandular hairs of *E. brevipila* are most readily found on the bases of the bracts and calyces. They occur also on the teeth of the calyx, the surfaces of the leaves and bracts, and may frequently be found on the stem, too, by diligent search. Examination for these glandular hairs should be carried out under the microscope, and in daylight. Artificial light—being often yellow—masks the colour of the gland to a large extent, and subsequent use of good light during the day often reveals unsuspected glands. An ordinary pocket-lens is quite useless for the purpose in question, but a

microscope having a good one inch objective and low eye-piece gives excellent results. The use of higher powers limits the field of view and requires more continuous focussing. As the presence or absence of glands—and the nature of those glands—is such an important diagnostic factor in the cumulative evidence upon which ultimate determination is based, it is imperative that we should adopt reliable means of ascertaining the facts.

E. nemorosa Pers. calls for little comment, as its general characters are now well established. Possibly, however, its extreme variability is insufficiently recognised by some of our members. At the one extreme we may find huge bush-like plants—each capable of covering a sheet—and at the other short, stubby plants consisting of a congested mass of interwoven branches and densely imbricated bracts. Between these extremes, we find on poor pastures in shallow soil with underlying siliceous rocks, slender, sub-simple or little-branched forms—often with relatively larger flowers—which have so often been referred to other species. The clothing, however, is much less variable; all these forms come under var. *ciliata* Drabble. I have never yet seen a specimen of *E. nemorosa*—or, indeed, of any other British Euphrasia—with glabrous foliage. (Singularly enough, Wettstein describes the calyx as glabrous and figures it as hairy!) On the other hand, undoubted *E. nemorosa* may occasionally be found with a few short glandular hairs. This species, in common with *E. Kernerii*, has a marked tendency to produce basal, filiform and adventitious branches when growing among moist herbage—most frequently near the foot of a damp slope.

E. confusa I can only accept with considerable mental reservations. The species was originally described as possessing characteristic yellow flowers; later the description was amended to include *alba*; and in last year's Watson B.E.C. Report, plants having neither of these colours—but the normal Euphrasia markings—were included under the name. This, at any rate, does not suggest stability, and supports my opinion that the yellow corolla is a mere colour-form. The Carpathian *E. Tatrae* shows the same tendency, and occasionally produces an entirely yellow corolla. *E. minima* Jacq. produces—in addition to the f. *flava* Gremlí, with yellow corolla—a f. *bicolor* Gremlí, with yellow flower, and violet or reddish upper lip; a f. *pallida* Gr. with white flower, and bluish-violet

upper lip, and a f. *alba* Favr. with entirely white flowers. The Pansies, too, have the same tendency to produce a yellow corolla.

The flexuous stem of this species may well be induced by habitat conditions, and is frequently seen in other species. All the examples of this species that have so far passed through my hands from various districts appear to me to be either *E. minima* Jacq. or *E. Kernerii*.

The occasionally protruding style, so far from being evidence to the contrary, strengthens my opinion. Mr Lumb pointed out to me years ago that in discriminating between *E. nemorosa* and *E. Kernerii*, the protruding style in some specimens of a gathering, pointed to *E. Kernerii*. Not all the plants will show it, but *E. nemorosa* never does. This character, therefore, adds weight to the balance of evidence in favour of *E. Kernerii*.

As between *E. confusa* and *E. minima* Jacq., the branching of the former is not at all distinctive, in my view. While readily admitting that continental *E. minima* Jacq. is frequently simple, I take strong exception to the view that it is "never more than sparingly branched." Among my own Swiss examples are authentic plants that cannot be so described, and Wettstein states (p. 160) "On lower situations—or among the Southern Alps—becoming often considerably longer (up to 25 cm.), more copiously branched, the leaves more acute and the flowers more numerous," and again, "In shady situations among the relatively lower Northern Alps, this variety (var. *minor* Jord.) is often very large and robust, much-branched and often with large and broad leaves."

Among plants collected by Dr Druce in Sweden last year—and which I have before me at the moment—is an undoubted specimen of *E. minima* Jacq. which is 16 cm. high, and possesses 13 long sub-equal branches, several of them being compound. I agree with Mr Pugsley that the plant in question is markedly luxuriant *E. minima*, and only use it as an example of what this species may become in a congenial environment. It was evidently not without reason that Jacquin took as his original example of this species, a well-branched plant.

Leaving the question of branching, and coming to plants with simple or little-branched stems, what becomes of *E. minima* Jacq.? What of all the erect and simple-stemmed British plants so labelled

in our herbaria? Are we to conclude that none of these is rightly named?

E. curta presents little difficulty in its typical form, but its var. *glabrescens* has been responsible for much misunderstanding. We cannot too often emphasise the fact—previously pointed out by Dr Drabble—that the plant is glabrescent *E. curta*, and not *E. nemorosa*.

E. occidentalis has a somewhat restricted range, and characteristic habit. It varies greatly in the quantity and character of its clothing. Here and there one may find the surface of a leaf or bract with only 1 or 2 long hairs; some hairs are short, others awl-shaped or flat. Are the hairs of this, or other, species deciduous? The glandular hairs are usually longer than those of *E. brevipila*; frequently best seen on the midrib of the bract near its apex, but often sparse or absent. The bract-teeth are not infrequently separated by round-based—rather than acute—sinuses, and may be few and obtuse, although usually described as being acute. The capsule is commonly larger and broader than that of *E. curta*.

E. latifolia is still more limited in area and (like the preceding species) may be glandular or eglandular. The statement that “the British plant is generally eglandular” is not confirmed by an examination of the plants. In my experience by far the greater number are glandular. The bracts of this species are very distinctive in being usually cuneate-attenuate at the base, which is without teeth.

E. foulaensis cannot well be confused with any other species. The relatively few coarse teeth of its bracts (usually more *obtusae* than those of *E. latifolia*), its very scanty clothing, robust capsules often with a deep sinus (sometimes, however, long but not markedly notched) and frequently found only high up the stem, distinguish it.

E. gracilis (*E. micrantha* Rchb. is an earlier name) is a very distinctive species, although sometimes mistaken for *E. scotica*. The most reliable distinction between the two species is, perhaps, the relative length of the calyx and its subtending bract. In *E. scotica* the bract is usually very long, equalling or even exceeding the length of the calyx: with *E. gracilis* the bract is commonly much shorter than the calyx. The flowers of both are very small but in the case of *E. scotica* the lower lip is sub-equal to the upper, there

is little or no "gape" between them, and they frequently show a primrose tint when dry. In *E. gracilis* the lower lip usually exceeds the upper.

E. septentrionalis is as yet little known except from the North of Scotland, and Cornwall. Plants from these widely-separated districts naturally vary considerably, as indeed do those from the same area. This is especially noticeable in the branching; several of my specimens from the former locality have branches from the base to within an inch of the top of the stem. The adequate published description of the species should result in its being identified elsewhere. I have not yet seen British specimens of *E. hirtella*, which is another interesting addition to our list.

E. fennica Kihl. In my judgment, much of the confusion which has arisen in connection with this species is due to some inaccuracy of detail in the description of it given by Mr Bucknall in *British Euphrasiae*. That of Mr Pugsley (*Journ. Bot.* 1919, 174) is much more correct in regard to the points I wish to raise. The stem is normally simple with "a tendency to branch about the middle"—as Mr Pugsley points out. When the plant is branched it is most often so, at or near the middle (often above only, often above and below, the middle) but never "at the base," in the plants I have examined. Further, in *Brit. Euph.* the dimensions given for the corolla—and also for the leaves—are too small; at any rate, for continental plants. Some years ago the late Mr. Charles Bailey lent me his Euphrasiae sheets for examination, among them being a fine series of *E. fennica*, including an authentic sheet "Leg. A. Osw. Kihlman." On the latter, the corollas were 8 mm., and the stem-leaves 7-8 mm. On other large continental plants the stem-leaves often reach 10 mm., and in extreme cases—at the nodes—12 mm. As a general rule they are narrowly elliptical or (more broadly) oval in outline, obtuse at the apex, with obtuse or subacute teeth. The bracts are normally very broad-based, generally cuneate and often quite suddenly narrowed into the attachment. A striking feature of the species is the length of the spike (which extends for the greater part of the stem) and the uniformly decreasing lengths—upwards—of its internodes. Mr Bucknall's description of this character is excellent.

I agree with Mr Pugsley (*l.c.*) that the 1917-18 *B.E.C.* sheets

sent out under this name, were small forms of *E. Rostkoviana*. I have examined the original Exmoor specimens of Dr Druce and in my judgment they are unquestionably *E. fennica* Kihl. They possess the strict, erect, rather slender habit of that species, and show capsules almost to the base of the stem. The internodes are long below, and regularly decreasing in length upward—visible in most cases to the top of the stem. The bracts, therefore, are regularly disposed, smaller than those of well-developed *E. Rostkoviana*, and much more erect. The plants were evidently gathered late in the season and show abundant fruits but few flowers. The latter are small—about 5 mm.—a feature noted by Dr Lindman in his determination which was confirmed by Dr R. v. Wettstein. *E. Rostkoviana*, similarly, frequently produces quite small flowers and so does *E. hirtella*. As to the status of the plant under notice, I agree that it is intermediate between *E. Rostkoviana* and *E. hirtella* but should be inclined to give it specific rank, for while it possesses several characters of each of these species it does not exhibit many of the chief features of either and has, on the contrary, definite characters peculiar to itself. Both *E. Rostkoviana* and *E. hirtella* when branched usually have the branches well below the middle of the stem; neither species normally shows the central branching of *E. fennica*, although in *E. Rostkoviana* it occasionally happens that the topmost branches (of several pairs) are at the middle of the stem. This latter species also quite frequently produces flowers and fruits down the greater part of the stem—especially when simple. On the whole, I should regard *E. fennica* as being rather nearer to *E. Rostkoviana*—both in its characters and range of distribution—than it is to *E. hirtella*, and this is an added reason for my suggested separation of it from the latter species.

E. Rostkoviana is readily recognised when robust and large-flowered, but in sub-alpine habitats it is often relatively slender and small-flowered. The latter forms have sometimes caused difficulty—and may yet do so—but the published descriptions of *E. hirtella* and *E. fennica*, the most nearly related species, should now make determination more easy. Occasionally, *E. Rostkoviana* is found only slightly glandular, and if, in addition, the stem is simple, may possibly then be taken for *E. montana* Jord., which so far has not been found in Britain. (See over.)

E. Vigursii is a distinctive species apparently confined to Cornwall and Devon.

E. campestris Jord. The only British examples of this species I have yet seen which seem undoubtedly authentic, came from Derbyshire, and were sent me by Dr E. Drabble.

E. Kernerii has a wide distribution, mainly but not exclusively, on limestone. It is sometimes confused with *E. nemorosa*, but possesses much larger and more brightly coloured flowers, an occasional protruding style, bracts of very different shape, a larger capsule, and foliage of much thinner texture. As in the case of *E. Rostkoviana*, the lengthening tube of the corolla cannot be relied upon for diagnosis.

E. salisburgensis can be readily distinguished from other British species by its long leaves—excluding the teeth, from 2.5 times as long as broad—having very few, distant and patent teeth, and by its long capsule, quite commonly without the usual “beard” at the top.

Among species we may possibly yet discover in Britain may be mentioned:—

E. montana Jord. somewhat resembling simple-stemmed forms of *E. Rostkoviana*. If branches are present they are usually above the middle, few and short. Its foliage—especially at the bases of the bracts—possesses the long, curly, glandular hairs of *E. Rostkoviana*, but often sparsely; all the internodes are very long and the flowers very large with a corolla-tube longer than the calyx.

E. Tatarica Fisch. is usually a robust plant with an erect, simple or little-branched stem, foliage very hairy and capsules much longer and narrower than those with which we are familiar, truncate and not emarginate.

E. tenuis Brenner resembles a small and slender form of *E. brevipila*, and possesses remote stem-leaves with blunt teeth, long internodes and fewer flowers or fruits than that species. Its glandular hairs are similar but often more scanty.

As regards any future revision of the British Euphrasiae I am of opinion that a considerable reduction in the number of species would be justified. So far, we have only an imperfect knowledge of the distribution of many of the species, and an altogether inadequate idea of the ecological conditions under which any of them

grow. Members would be rendering a great service to science generally, and to referees in particular, if they would add notes on the nature of the habitat—soil, underlying rocks, moisture, exposure, etc.—and a short list of the adjacent plants. Any mosses growing round the stems of the Euphrasiae would also afford valuable indications as to soil conditions, and could easily be dried with the species they accompany. Much work remains to be done in ascertaining the name of the host upon which the Euphrasia flourishes, and in investigating the function of the glandular hairs. Is their function that of protection, of attraction, or have they any physiological use? When we have obtained adequate data upon habitat conditions and the other points raised we shall be in a position to understand the reason for many of the very slight differences which now separate some of the species, and the work of revision will be greatly facilitated.

Finally, may I say that I have long deplored the unfortunate divorce between systematic and other branches of botanical study, and feel that we systematists are not “pulling our weight.” Many of us are merely collectors—rather than investigators—and few of us are entirely free from obsessions. As Huxley long ago pointed out, unless we are prepared to study Nature with an open mind—free from preconceptions—we shall learn nothing.

NEWBRED PLANT SPECIES.

By E. ALMQUIST, Stockholm.

In nature we frequently find new forms, hybrids or mutants, but new forms, with power to spread, are rare: I mean forms bred in the country and not imported. I have made observations on Swedish hybrids and I have grouped most of them in five different classes. It is remarkable that in many genera, with numerous species, we scarcely know hybrids, *i. e.*, *Geranium*, *Lamium*, *Campanula*, *Orobus*, *Prunus*, *Trifolium*, *Melampyrum*, *Plantago*, *Saxifraga*, *Chenopodium*, *Arabis*, *Capsella*, *Silene*, *Allium*, *Gagea*, etc.

The causes are, of course, very different and in many cases have not been investigated.

1. Imported species frequently produce hybrids, *i.e.*, *Galium Mollugo*, *Medicago sativa*, *Thymus Chamaedrys*, *Tragopogon porrifolius*, *Papaver Rhoeas*, *Senecio viscosus*, *Potentilla recta*, *Linaria repens*, *Centaurea nigra*, *Lolium temulentum*, etc.

2. Swedish species, with different habitat, cross accidentally by meeting, *i.e.*, *Geum rivale* × *urbanum*, *Lychnis dioica* × *alba*, *Valeriana officinalis* × *excelsa*, *Mentha aquatica* × *arvensis*, *Calamagrostis silvatica* × *epigeios*, etc.

3. The hybrids of water plants are strikingly common, *i.e.*, *Potamogeton*, *Sparganium*, *Batrachium*, *Epilobium*, *Rumex*, *Radi-cula*, *Veronica*, *Carex*, etc.

4. Several trees are constant in most of our countries, but in some provinces, where they meet new species, they cross, *i.e.*, *Quercus Robur* × *sessiliflora*, *Tilia parvifolia* × *platyphylla*, *Ulmus montanus* × *campestris*, etc.

5. In some genera the hybrids prevail, in some they cross and segregate continually, *i.e.*, *Salix*, *Rubus* and *Rosa*.

A great many other genera also breed hybrids, *i.e.*, *Cirsium* and *Poa*. Nevertheless in our day the results both from crossing and mutation are very poor. New constant species are rare. It seems that nature at present is standing rather still. I have made a list of newbred, fertile, Swedish species, that partly seem to have reached constancy, but the list is poor:—*Lychnis dioica* × *alba*, *Galium Mollugo* × *verum*, *Geum intermedium*, *Valeriana baltica*, *Plantago major rosea* f., *Verbascum nigrum gymnandrum*. De Vries did not reach much further. If we exclude the forms of *Oenothera* his list includes *Capsella Heegeri* (Lindau), *Lychnis vespertina glabra* (Hilversum), *Ranunculus arvensis inermis*, *Fagus silvatica asplenifolia* (Lippe Detmold) (Mutat. Theorie I.S. 476). Gerbauld discovered in Sarthe the constant *Viola eburnea*. These examples prove the insignificant movement.

If the habitat changes, the vegetation also must change. Small variations in the milieu we often meet, and observers discover on the spot plants imported from the neighbourhood, some hybrids, etc. But greater revolutions and the small changes continued for centuries we are not able to follow. In our days the flora is rather im-

mutable. The import of higher plants and of small parasites from other countries is of course often striking, but most of the imported forms that spread quickly disappear. The former vegetation is not much altered by them. For studies of the species spreading I would like very much to recommend to the reader the very important work of Iltis on G. F. Mendel (Berlin, 1924). It exposes a splendid biological tragedy—the struggle between the discoverer and the ruling schools, between facts and doctrines. No one cared about the solitary man. He finished his investigations and science has suffered immensely from his loss.

A NOTE ON NOMENCLATURE.

By G. CLARIDGE DRUCE.

A word or two may be given on this thorny subject. By some young botanists Linnaeus is thought to have invented botany, and that it began with him, but it is trusted that the succeeding pages will correct that impression. He did not even invent the binomial system, but he had the high merit of being the first botanist to consistently apply it. Previously a plant had one, two, or more words to designate it as *Buxus*, the Box, or *Aquifolium*, the Holly, used by Gerard. Bauhin designated the Privet *Ligustrum*. Parkinson called the Ash *Fraxinus vulgaris*, and Bauhin called it *F. elatior*, the latter being adopted by Linnaeus. Bauhin called the Daisy *Bellis sylvestris minor*, which Linnaeus altered to the binomial *B. perennis*, as contrasted with another annual species which he shortened from the lengthy *Bellis minime pratensis caule folioso* of Boccone to *B. annua*, although he might have taken Dodoens' name of *B. sylvestris* for the English perennial Daisy. Ray used *Cerasus sylvestris septentrionalis fructu parvo serotina* for the Bird Cherry which Linnaeus condensed to *Prunus Padus*. The plan now adopted by all botanists is to use a binomial such as *Bellis perennis* L., the letter at the end signifying Linnaeus. The method of abbreviating authors' names is to take the first syllable and the first letter of the next syllable if a consonant, *e.g.*, Gren. & Godr. are the abbreviations respectively of Grenier and Godron, the authors of *Flore de*

France. In the cases of a few well-known botanists, such as Linnaeus, the single letter L. is enough. De Candolle is usually written DC. In all cases the generic name is written with a capital letter, the specific name with a small letter, e.g., *Viola odorata* L., but there are exceptions with regard to the species names. These are written with a capital (1) if it is an old generic name or an old appellative, as *Hieracium Pilosella* L., which was the *Pilosella major* of Camerarius; *Hypericum Androsaemum* L., which was the *Androsaemum* of Dodoens; *Croton Cascarilla* L., the latter being an old medicinal name, and *Sterculia Balanghas* L., the specific being a vernacular name; (2) when the specific name is derived from a person, i.e., *Lepidium Smithii* Hook., named after Sir J. E. Smith by Sir W. Hooker; *Orchis Fuchsii*, named after Fuchs, in whose *Historia Stirpium* of 1542 it is figured. (A modern tendency is to use one *i* only in such names.) If a botanist has not accurately named a plant, the specific name is written adjectivally with a capital, as *Salix Smithiana* Willdenow, so named because Smith (*Fl. Brit.* iii., 1070) recorded *S. mollissima* Ehrh. by error from Bury, the plant being really a hybrid which Willdenow then named *S. Smithiana*. Some botanists write names of the latter class with a small letter, and there are others who use no capital letters for specific names—an easier method for people with short memories, but which ignores much of the historic charm of botany. Formerly plants with names derived from places were written with a capital, and that seems common sense, but the modern practice adopted from continental practice, where adjectives derived from proper nouns are written with small letters, not capitals, is to ignore it, as *Tilia europaea*, not *T. Europaea*; also specific names ending in “oides” were written with a capital, e.g., *Picris Hieracioides*, and *P. Echioides*. Linnaeus, in the majority of instances, followed that plan, but he was by no means consistent, for we find that a species written with a capital in one edition has a small letter in the next, and vice versa. On the whole it seems wiser to keep to one plan and to write them all with a capital. It makes less ridiculous such names as *Cerastium Ceras-tioides*. So, too, at one time, when an adjective or a name in the genitive case was used specifically it was written with a capital as *Rosa Sepium*, *Vicia Sepium*, and *V. Dumetorum*. Now, it is more usual to write these and similar names with a small

letter. The specific name must agree with the generic name, *e.g.*, *Hyoscyamus niger*, *Solanum nigrum*, and *Populus nigra*. Varieties must follow the same rule. The law that governs botanic citation is the "Law of Priority" of publication. The first author who correctly describes a genus, species, or variety, is entitled to have his name appended as the author. If, however, he describes a species under a wrong genus, or a variety under a wrong species, he loses the right, and the author who puts the plant in the proper genus is to be cited, *e.g.*, Linnaeus described a genus of grasses under the name *Aira*, one of its species being *praecox*. It is therefore correct to write *Aira praecox* L. He, however, also put in this genus a common British species which he called *Aira caespitosa*, and so long as it is kept in that genus it must be so cited. Palisot de Beauvois showed that it was generically distinct, and gave the name *Deschampsia* to the restricted genus; therefore it must be written *Deschampsia caespitosa* Beauv., not *D. caespitosa* L., because Linnaeus was not aware of the later genus. Certain botanists, however, write *D. caespitosa* (L.) Beauv., which has the advantage of showing that Linnaeus gave it the first trivial name, and that Beauvois is the author of the present binomial. The disadvantage of the method is that it takes space in citation. So, too, with varieties; if a plant is named by one author as a variety, *e.g.*, *Evonymus europaeus* L., var. *latifolius* L., and another author correctly thinks it deserves specific rank, that author has to be cited for it. Therefore we do not write *Evonymus latifolius* L., but *E. latifolius* Miller, for the author of the Gardeners' Dictionary in 1768 raised it to a species. Again some authors write *E. latifolius* (L.) Mill. to show that a preceding botanist was the founder of the trivial. If an author has described as a species a plant which a subsequent botanist considers to be only of varietal value the latter author is to be cited, *e.g.*, *Poa angustifolia* L. has been considered to be only a narrow-leaved variety of *P. pratensis* L. It is therefore written *P. pratensis* (L.), var. *angustifolia* Gaudin, assuming that Gaudin was the first author to reduce it to its proper status. This instance is complicated by another difficulty. In the "Species Plantarum" *P. angustifolia* comes before *P. pratensis* and has what the American School of Botanists term "priority of place." Therefore Richter (*Pl. Europ.* 87) writes *P. angustifolia* L., var. *pratensis* (L.) when the authority is Richter.

Hundreds of mistakes from not following these rules are to be found in a recent work on British Plants.

A proper system of Nomenclature must have a definite starting point. For many years this date was fixed by a Congress of Botanists presided over by De Candolle at Paris, in which the date of 1737 was fixed, that being the date of the publication of Linnaeus' "Genera Plantarum." This date, however, allowed many works which had not followed the Linnean methods to be available for citation of genera and Kuntze (*Rev. Gen. Pl.*) showed that the date was arbitrary, and should have been taken from the first published work of Linnaeus, the "Systema" of 1735. Taking that date over 10,000 plant names might be changed. The writer (*Pharm. Journ.* 1892) showed that the starting point should be neither of these dates, but that the starting point of citation should be the first edition of the "Species Plantarum" of 1753, when the combination of both genera and species, under a binomial, was for the first time in Botanical History consistently applied, and therefore was the logical and correct date to adopt. This was also independently urged by Professor Ascherson and, after much discussion, was eventually carried nearly unanimously at the Vienna Congress in 1906. Unfortunately at that Congress, which was dominated by Engler, the German botanist, who was perhaps influenced by the prospect of changes that might have to be made in his published works, induced the botanists present to accept a list of names, *Nomina Conservanda*, which were to be retained notwithstanding they did not comply with the Law they had just framed. The eminent authority, A. von Kerner, urged on the contrary "that it seems highly impolitic to admit the possibility of exceptions to the application of the principle. If the possibility of such exceptions is once allowed, individuals will almost certainly consider themselves justified in increasing the number of the exceptions. On the other hand, such a list of genera is unnecessary for the reason that the number of necessary changes of name is considerably reduced by fixing the year 1753 as the starting point. Finally, one should not shrink from changing a name which has become untenable through the principle of priority, because it only requires the intelligent co-operation of all experts, especially of the compilers of text-books and descriptive botanical works, to make the new ones at once current, at least with the younger men who take part in the

building up of the science in the next few decades." This reasonable suggestion, however, fell upon deaf ears, and the Brussels Congress, at which the German school was in the majority, did nothing to rectify the injustice and illogicality of its previous action. Fortunately there are not many generic names in the British Floras which are affected by this Viennese innovation. Yet the application of the Viennese rules, modified as they are, is not fully followed out in our text-books. For example, some botanists still write *Rubus suberectus* And., which is most clearly and unmistakably antedated by *Rubus nessensis* Hall. The author of the later date only (but unjustifiably) changed the name because this Bramble had been found elsewhere than by Loch Ness, a reason which might induce other people to change *Cornus suecica* because the plant is not limited to Sweden. It must be understood that the earliest trivial applies to a species despite its transference to other genera. Here again, at Vienna, exceptions were made; that is, if there were already an existing binomial in the genus, the earlier trivial of the same name could not be applied, e.g., a grass originally named *Aira splendens* was found to be a *Koeleria*. Yet one cannot (by the rules) write *K. splendens* because in the meantime Presl had given that name to a Sicilian grass, nor can here be a duplication of the specific name, e.g., one must not write *Glaucium Glaucium* (L.), although the yellow poppy is a *Glaucium*, and was originally described as *Chelidonium Glaucium* by Linnaeus, and the earliest trivial is therefore *Glaucium*. The ornithologists have no such rule, and write *Turdus Turdus* and no one seems any the worse. It has great advantages and we adopt it.

Another extraordinary inconsistency in the Vienna rules is that, while the trivial is to be retained when transferred as a species from one *genus* to another, it does not insist that it should be retained when the *grade* is changed. We must, according to the Rules, write *Sinapis alba* L. and *Brassica alba* Boiss. when we transfer it, but if someone considered *Brassica alba* to be a *variety* of another species he might write var. *nigra*, *purpurea*, or whatever name might please him. Again, if the grade were lowered to a sub-var (whatever that is) it might be sub-var. *violacea*, or if a forma—forma *viridis*, or a *lusus*—*lusus alba*. As nothing is more varied than the opinions botanists have of grades it follows that there is here the source of

endless confusion, since one botanist lumps many species under one, another splits one into many. It has until recently been held improper to change the spelling of the original trivial. Linnaeus wrote *Arenaria trinervia*, Smith wrongly altered it to *A. trinervis*. It was invalid. In many instances the Latinised name does not well represent the vernacular, for instance, Linnaeus wrote *Bartsia*, intending to commemorate Johann Bartsch. Now it is (by the German school chiefly) written *Bartschia*. This practice seems objectionable, especially when the initial letter itself is changed. Linnaeus, in error, wrote *Prunella*, a genus previously written *Brunella* by Tournefort. Now the older spelling is restored by some botanists, but the alteration is very confusing and without compensating advantage. It is well to avoid making a man say what he has not said and in writing *Brunella* L. or *Bartschia* L. one is making an incorrect citation. Smith wrote *Goodenia* to commemorate Goodenough. Are we to change it to *Goodenoughia* Sm.?

In Britain the standard for Genera until recently has been the monumental "Genera Plantarum" by Bentham and Hooker, and this is still followed by the majority of British writers. Unfortunately there seems to be, on the part of younger botanists, a tendency to adopt the German system of Engler in the "Pflanzenreich." Bentham and Hooker's work begins with the Ranunculaceae and ends with the Grasses, in Engler's work the Grasses come first and it ends with Compositae. For Bentham and Hooker's *Genera* Durand has issued a valuable and useful *Index*, in which there are some modifications, especially in the genera of the Grasses, and a similar excellently compiled work has been prepared by Dalla Torre, the "Genera Siphonogamarum," which adopts the sequence of Engler. New views of generic or specific values will always involve changes in the nomenclature, and quite inavoidably so, but a great safeguard is retained by making permanent the earliest trivial under whatever grade a plant may be placed from time to time.

The multiplication of small genera is to be deprecated on account of the confusion that arises and the name-changing it involves. All the practical advantages could be retained by making them sections, e.g., *Scirpus* with sections *Eleocharis*, *Schoenoplectus*, *Fimbristylis*, *Eleogiton*, *Holoschoenus*, *Blysmus*, and *Scirpus* proper.

THE NOMENCLATURE AND ORTHOGRAPHY OF THE
LONDON CATALOGUE, Ed. 11.

By T. A. SPRAGUE, B.Sc., F.L.S.

The London Catalogue has hitherto been regarded as an authoritative list of the names of the higher British plants. The nomenclature of the tenth edition, for which the late W. A. Clarke and the late E. S. Marshall were jointly responsible, was worked out "with the view of a strict compliance" with the International Rules of Nomenclature, and this object was very largely attained, although naturally a few errors crept in owing to misinterpretation of some of the Rules. Reference to Marshall's "Notes on the London Catalogue, ed. 10" (Journ. Bot. 1908, pp. 281-289, 313-319) shows how very carefully the work was done.

Unfortunately those ultimately responsible for the eleventh edition do not appear to have paid adequate attention to nomenclature, for the work contains numerous nomenclatural errors and orthographic blemishes which might have been rectified had it been submitted to an expert before publication. From internal evidence it would appear as though the Editors, instead of attempting to determine the correct name of each genus and species according to the Rules, had taken a few recent works such as the seventh edition of Bentham and Hooker's Handbook of the British Flora and the tenth edition of Babington's Manual of British Botany, and collated them with the tenth edition of the Catalogue, and in cases where different names were adopted in the various works consulted had chosen the name which was most familiar to them. Such a method is bound to prove unsatisfactory for the simple reason that neither the seventh edition of the Handbook nor the tenth edition of the Manual was in strict accordance with the Rules. The name *Erythraea* is a case in point. It was retained in the Handbook presumably with the desire of avoiding name-change in a book of a popular character—in the prefatory note to ed. 7, it was not stated that the nomenclature had been brought into strict accordance with the International Rules, but merely that it was more in accord with modern views. *Erythraea* was retained in the Manual because Mr Wilmott, as he

expressly stated in the preface, ignored generic names whose authors did not employ the binomial system, although such names are recognised under the Rules. The International name of the genus is of course *Centaurium*, as given in the tenth edition of the Catalogue. *Erythraea* was proposed for conservation by Janchen in 1909, but was rejected by the Brussels Congress. *Centaurium* is nevertheless replaced by *Erythraea* in the eleventh edition of the London Catalogue.

Those who realise that the advancement of botany is seriously retarded by want of uniformity in nomenclature cannot but deplore the presence of such breaches of the International Rules in a standard work, whether these breaches are inadvertent or deliberate. The only eventuality in which departure from the strict letter of the Rules appears to be justifiable is where new facts come to light in the interval between two successive International Botanical Congresses, entailing the displacement of a well-known generic name by an earlier little-known one. It was with the express object of avoiding such disadvantageous name-changes that a list of "nomina generica conservanda" was authorised by Art. 20 of the Rules. Hence to reject, as Fernald has done, an old-established name such as *Nuphar* (late 1808 or early 1809) in favour of *Nymphozanthus* (May 1808) before* it has been decided whether *Nuphar* is to be conserved or not, is to follow the strict letter of the Rules while ignoring their spirit. If the next International Congress decides to conserve *Nuphar*, the 19 new combinations recently made under *Nymphozanthus* by Fernald in 1919 will become superfluous, just as the new combinations under *Psedera* made between 1905 and 1910 became superfluous through the conservation of *Parthenocissus* in the latter year, and the creation of such new combinations is therefore directly contrary to Art. 4, which enjoins "the avoidance of all useless creation of names."

Apart from this eventuality, strict observance of the Rules is incumbent on all who have the progress of botany at heart. "For many years prior to the Vienna Congress tremendous effort was

*It is true that the name *Nuphar* was struck off the list of new nomina conservanda adopted at Brussels, but this was because it was anticipated that the name could be retained under the unaltered operation of the International Rules. A new situation has since arisen owing to the discovery that *Nuphar* is antedated by *Nymphozanthus*.

expended by those who sincerely wished to bring uniformity out of the very diverse usages of local groups of botanists. The effective foundation work laid at Paris was subsequently carried forward with unlimited self sacrifice and far-seeing skill by Briquet, Flahault, Rendle and others;" and international agreement on nomenclature was at length attained at Vienna owing to "the sportsmanlike or statesmanlike spirit with which the vast majority of delegates, representing all sorts of pet views abandoned their private wishes" (Fernald in Journ. Bot. 1921, 234).

If it becomes a usual thing for botanists of repute to follow the Rules only in so far as the latter reflect their own personal views, the results obtained at Vienna will have been thrown away, and nomenclature may relapse into its former chaotic condition. It may be hoped that the example set by the Editors of the eleventh edition of the London Catalogue will not be followed.

The following notes are arranged according to the running numbers of the families, genera and species in the Catalogue, and are in two series, the first dealing with nomenclature, the second with orthography. Synonyms and erroneous identifications are printed in italics, and the correct names in small capitals. Only a few examples are given, no attempt having been made to detect all the mistakes in nomenclature. Many others will doubtless come to light when the list is scrutinised species by species.

I.—NOMENCLATURE.

12 *Adonis autumnalis* L. : A. ANNUA L.—*vide* Journ. Bot. 1907, 99; International Rules, Art. 44.

NUPHAR Sm. 18.—Antedated by *Nymphozanthus* Rich., as pointed out by Fernald (Rhodora, 1919, xxi. 183). The retention of *Nuphar* in the Catalogue is, however, justifiable for the reasons given on p. 926.

NASTURTIIUM R.Br. 29.—The retention of *Nasturtium* seems justified (*vide* Journ. Bot. 1924, 225-8). The question hinges on the interpretation of Art. 20.

90 *Nasturtium palustre* DC. : N. ISLANDICUM (Oeder), comb. nov.—Schinz & Thellung have shown that *Sisymbrium islandicum* Oeder (1768) is the earliest binary name for this species, and call it

Roripa islandica (Vierteljahrsschr. Nat. Ges. Zürich, liii. 538, 1909).

129 *Sisymbrium pannonicum* Jacq.: S. ALTISSIMUM L.—*vide* Schulz in Engl. Pflanzenr. Crucif.-Sisymb. 116 (1924).

130 *Sisymbrium Columnae* Jacq.: S. ORIENTALE L.—*vide* Schulz, l.c. 122.

135 *Erysimum orientale* Mill. E. ORIENTALE Crantz.—As pointed out in Journ. Bot. 1925, 183, *Erysimum orientale* Mill. is *Barbarea Barbareae* (L.) Sprague (*B. plantaginea* DC.).

223 *Silene Cucubalus* Wibel: S. ANGUSTIFOLIA (Mill.) Guss.—*Vide* Briquet, Prodr. Fl. Corse, i. 543 (1910); Rendle in Journ. Bot. 1911, 277. Schinz and Thellung contend that *Cucubalus angustifolius* Mill. is a "nomen abortivum," and hence call the species *Silene vulgaris* (Moench) Garcke, but their conception of "nomina abortiva" is not accepted by most other botanists.

258 *Sagina Linnaei* Presl: S. SAGINOIDES (L.) Dalla Torre.—*Vide* Journ. Bot. 1907, 100.

Anthriscus Bernh. 168: CHAEREFOLIUM Haller.—*vide* Schinz et Thellung in Vierteljahrsschr. Nat. Ges. Zürich, liii. 552 (1909). Janchen in 1909 proposed that the name *Anthriscus* should be conserved (Rec. Doc. Congr. Bot. Brux. 54: 1910), but it was struck off the list of new "nomina conservanda" by a committee composed of Briquet, Engler, Harms, Prain, Rendle, Schinz and Stapf, and this decision was confirmed by the Brussels Congress (Act. Congr. Bot. Brux. 1910, i. 80-83: 1912). Personally I consider that this decision was unfortunate, but it should be obvious that the list of nomina conservanda would soon cease to carry weight if a name definitely rejected at one Congress were conserved at a succeeding Congress, unless *new facts* bearing on the question had come to light in the meantime.

Silaus Bernh. 175: SILAUM Mill.—*vide* Druce in Rep. Bot. Exch. Cl. Brit. Isles 1913, iii. 435; Schinz et Thellung in Vierteljahrsschr. Nat. Ges. Zürich, lx. 359 (1915).

829 *Silaus flavescens* Bernh.: SILAUM SILAUS (L.) Schinz et Thell.—*vide* Schinz et Thell. l.c.

921 *Inula squarrosa* Bernh.: INULA SQUARROSA (L.) Schinz et Thell.—*vide* Journ. Bot. 1924, 46.

Petasites Hill 225: PETASITES Mill.—*vide* Druce in Rep. Bot. Exch. Cl. Brit. Isles, 1913, iii. 434. Various other generic names, e.g., *Fagopyrum*, *Alnus* and *Castanea* should be attributed to Miller instead of Hill.

952 *Petasites ovatus* Hill: P. HYBRIDUS (L.) Gaertn. Mey. et Schreb.—*vide* Journ. Bot. 1907, 439.

Cnicus L. 231: CIRSIUM Adans.—The Editors seem to have overlooked the fact that *Cnicus* L. emend. Gaertn. is included in the list of "nomina conservanda," *Carbenia* Adans. being cited as a "nomen rejiciendum," i.e., the name *Cnicus* is conserved for *C. benedictus*. Consequently, as explained in International Rules, ed. 2, 103, footnote. the name *Cirsium* should be used for the genus commonly called *Cnicus* in British floras.

1274 *Taraxacum vulgare* Schrank: T. OFFICINALE Weber.—*vide* Act. Congr. Bot. Brux. 1910, i. 52 (1912), where it is clearly demonstrated that *T. officinale* is the correct name for the species.

Azalea L. 263: LOISELEURIA Desv.—*Loiseleuria* is a "nomen conservandum" and, as such, should of course be retained. The fact that *Azalea* L. is not cited as a "nomen rejiciendum" is immaterial. The crux of the whole matter is: with what species was the conserved name *Loiseleuria* associated? This was of course *Azalea procumbens* L., and the conservation of *Loiseleuria* therefore precludes the use of the name *Azalea* for the monotypic genus based on that species. In 1907 there was some misconception on this point, but there should be none nowadays. The case is dealt with by Schinz and Thellung in Vierteljahrsschr. Nat. Ges. Zürich, liii. 582 (1909).

Armeria Willd. 271: STATICE L.—*vide* Journ. Bot. 1924, 267. It is now too late to conserve *Armeria*. *Armeria* was proposed for conservation in 1909 by Janchen (Rec. Doc. Congr. Bot. Brux. 1910, 54) but was definitely rejected at the Brussels Congress. The reason given for rejecting *Armeria* in 1910 was that the change to *Statice* under the International Rules had already been made by British and Swiss botanists, and that it was too late to reverse it (Act. Congr. Bot. Brux. 1910, i. 83). Obviously this argument has become even more cogent by the lapse of another fifteen years.

Erythraea Neck. 286: CENTAURIUM Hill.—The case of *Erythraea* is similar to that of *Armeria*. *Erythraea* was proposed for

conservation in 1909 by Janchen, but rejected by the Brussels Congress. The decisions as to new "nomina conservanda" then reached were the result of a compromise between two schools of thought, and should not be upset (Act. Congr. Bot. Brux. 1910, i. 83).

1405 *Myosotis palustris* Hill.: *M. SCORPIOIDES* L. em. Hill.—*vide* Journ. Bot. 1907, 440: Vierteljahrsschr. Nat. Ges. Zürich, liii. 585.

Cladium P.Br. 474: *MARISCUS* Zinn.—*vide* Fernald in Rhodora 1923, xxv. 49.

2015 *Cladium Mariscus* R.Br.: *MARISCUS SERRATUS* Gilib.—*vide* Fernald, *l.c.*, 51.

2131 *Calamagrostis lanceolata* Roth: *C. CANESCENS* (Weber) Gmel.—*vide* Journ. Bot. 1924, 43. Schinz and Thellung consider that *Arundo canescens* Weber (1780) is a "nomen abortivum" because they do not appreciate the difference between taxonomic and nomenclatural validity, (*vide* Rehder in Journ. Arn. Arb. i. 45: Journ. Bot. 1921, 290). Weber considered that *A. canescens* was specifically distinct from *A. Calamagrostis*. Under Art. 27 two species of the same genus cannot bear the same specific name, so that Weber was perfectly justified under the Rules, in giving a new name to his species. Had he recognised two distinct species and called them both *Arundo Calamagrostis*, he *would* have been breaking the Rules. The *species*, *Arundo canescens*, is now considered taxonomically invalid, but the *name*, *Arundo canescens*, was nevertheless given in accordance with the Rules, that is to say, it is nomenclaturally valid, and can therefore be made the basis of the combination *Calamagrostis canescens* (Weber) Gmel.

Pteris L. 530: *EUPTERIS* Newman.—*vide* Schinz et Thell. in Vierteljahrsschr. Nat. Ges. Zürich, lxi. 415 (1916). "The name *Pteris* is usually applied to a world-wide assemblage of perhaps 150 pteridoid species having a single indusium, and the name *Pteridium* to the segregate genus of a few species with double indusia, with *P. aquilinum* as type" (Maxon in Journ. Bot. 1923, 8). But Schinz and Thellung, *l.c.*, have shown that *Pteridium* Scop. is a "nomen abortivum." Scopoli did *not* (as stated by Maxon *l.c.* 9) segregate *P. aquilina* as a new genus *Pteridium*: what he did was to *replace* the name *Pteris* L. by *Pteridium* Gled., thus contraven-

ing Art. 51, 1^o. That Scopoli did not retain any part of *Pteris* L. under that name is evident from the fact that he adopted *Pteris* Gled. for a genus including *Polypodium Filix-mas* L. and *P. Lonchitis* L.

II. ORTHOGRAPHY.

32 *Ranunculus acris*: R. ACER. Any Latin grammar will give the nom. masc. of the adjective as "acer." The fact that a masculine form "acris" is once recorded from Ennius is hardly sufficient justification for retaining the mirth-arousing combination *Ranunculus acris*.

55 *Berberis aquifolium*: B. AQUIFOLIUM. The trivial takes a capital because it is an old generic name (Rec. X.).

434 *Onobrychis viciaefolia*: O. VICHIFOLIA.—*vide* International Rules, Rec. XIII. This Recommendation is disregarded in numerous other instances, e.g., Nos. 1348, 1456, 2192, 2304.

693, 694 *Cotoneaster integerrima* and *microphylla*: C. INTEGERIMUS and MICROPHYLLUS.—*Cotoneaster* should be masculine, like *Oleaster*.

811 *Chaerophyllum temulum*: C. TEMULENTUM.—*vide* Journ. Bot. 1921, 159. There is no Latin word "temulus." Linné obviously meant to write *C. temulentum* (cf. *Lolium temulentum*) and he corrected the spelling in *Flora Suecica*, ed. 2, 94 (1755), although he omitted to do so in *Sp. Pl.* ed. 2.

901 *Aster Novi-Belgii*: A. NOVI-BELGII.—*vide* International Rules, Rec. X., where this very name is given as one of the examples.

904, 905 *Erigeron canadense* and *acre*: E. CANADENSIS and ACER. The generic name is of course masculine. The Catalogue is not even consistent, the third species being "*borealis*," instead of "*boreale*."

923 *Inula britannica*: I. BRITANNICA. The trivial name does not mean "British," but refers to the celebrated herb "Britannica:" βρεταννική Diosc. (Lib. IV. cap. ii.; Sprengel's Dioscorides, i. 505; Wellmann's Dioscorides, ii. 169); *Britannica* Pliny (Hist. Nat. ed. Harduin. ii. 361, l. 28; 375, l. 12); Anguillara, *Semplici* 247 (1561); Corda, *Annot.* 61, verso (1561); Gesn. *Hort. Germ.* ed. Corda 254, verso. The Herb "Britannica" was identified with several species belonging to different genera and families.

Linné used the name as a trivial also for a North American species, *Rumex Britannica*, which had been erroneously identified as the "Britannica" of antiquity (Amoen. Acad. i. 416; Sp. Pl. 334).

1272, 1273 *Leontodon hispidum* and *autumnale*: L. HISPIDUS and AUTUMNALIS. The generic name is masculine, not neuter, the basic word being ὁ ὄδων.

1288, 1289, 1290 *Tragopogon pratense*, *minus* and *porrifolium*: T. PRATENSIS, MINOR and PORRIFOLIUS. The generic name is masculine, the basic word being ὁ πῶγων.

1310 *Oxycoccus quadripetala*: O. QUADRIPETALUS. *Oxycoccus* should be masculine, the basic word being ὁ κόκκος, but it is in any case desirable that the variety should agree in gender with its species (Rec. XV.).

1710 *Euphorbia coralloides*: E. CORALLIODES.—As the trivial was formed from κοράλλιον, the spelling "coralloides" given by Linné is correct.

1744 *Quercus ilex*: Q. ILEX.—The trivial, being the name of the genus to which *Q. Ilex* was formerly referred, takes a capital initial (Rec. X.).

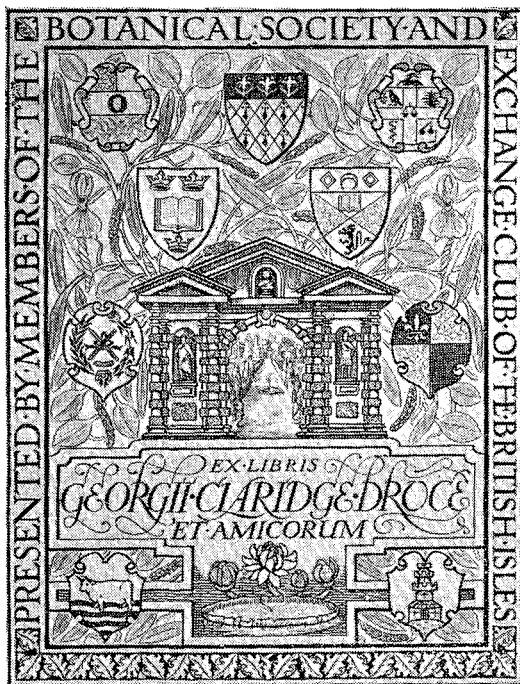
1745 *Quercus cerris*: Q. CERRIS.—The trivial was a former generic name (Lobel, Ic. ii. 156), and therefore commences with a capital.

1828 *Cypripedium calceolus*: C. CALCEOLUS.—The species was referred by pre-Linnean writers to the genus *Calceolus*, hence the capital initial letter.

Amaranthus 356: AMARANTUS.—There seems to be little doubt that the name was derived from ἀ—not, and μάραντος—fading, and that the spelling *Amaranthus* is corrupt. Briquet (Prodr. Fl. Corse, i. 470), however, considers that the Linnean spelling *Amaranthus* should be retained. Until a definite ruling can be obtained from a judicial committee both spellings will doubtless continue in use.

TAMUS 426.—Linné adopted *Tamnus* from Tournefort (Inst. t. 28), and at first retained the correct classical spelling (Syst. ed. 1; Virid. Cliff.), but changed it to *Tamus* in 1737 (Gen. Pl. ed. i. 305), citing *Tamnus* Tourn. as a synonym. The case of *Tamnus* is on a different footing from that of *Amarantus*: since Linné *deliberately* altered the spelling, *Tamus* cannot be treated as a typographic or orthographic error (Art. 57), but is a new and arbitrarily com-





THESE FRIENDS GAVE GEORGE CLARIDGE DRUCE HIS BOOKPLATE 1925

Gilbert Adair
 Mrs Isabd Adams
 Rev. J. H. Adams
 Hon. Mrs H. Aclane
 F. Allchin
 Miss Barbara Allen
 S. Allen
 A. Alston
 Rev. Frank S. Alston
 J. L. Amey
 Mrs Assheton
 Miss Gertrude Bacon
 E. Gilbert Baker
 Right Hon. H. Trevor Baker
 Hon. Mrs Guy Baring
 Miss Olivia Baring
 Simon Baring
 Simon Baring
 Giles Baring
 Aubrey Baring
 Esmond Baring
 W. C. Barton
 F. Bedford
 Rev. F. Bennett
 S. H. Bickham
 E. B. Bishop
 J. Bates How
 F. W. Branson
 Dr. Robert Bridges
 Miss Ruth Bright
 C. E. Britton
 G. C. Brown
 Mrs John Buchan
 Rev. Archbishop R. J. Bunden
 The Countess Duxton
 The Countess of Carlisle
 Mrs Gadbury
 Miss Diana Eaton
 Miss Hilda Chamberlain
 W. Horswood Chaceman
 Fred Clarke
 Sir J. Colman
 Miss Colville
 J. Comber
 Mr & Mrs R. H. Corston-Phine
 Reginald Cory
 Miss A. Cotter
 Professor W. Craib
 R. S. Creed
 Rev. E. C. Crutwell
 J. Croyer
 L. Gunning
 Sir Roger Curtis
 H. W. Daltry
 W. Davidson
 Miss Aileen David
 Lady Davy
 Mrs Debenham
 Mrs Dent
 J. H. Dixon
 Lady Douie
 G. Downes
 Dr. Eric Drabble
 E. Druce
 Mrs Drummond
 Miss M. Drummond
 H. H. Prince F. Dulcey Singh
 W. D. Lertan
 Miss Dorothy Egerton
 The Lady Elphinstone
 A. H. Evans
 Mrs F. Ewing
 J. Wheeler Falkner
 E. H. Farr
 Lord & Lady Dartmouth
 Mrs Fleming
 R. H. Flintoff
 T. J. Foggett
 The Countess Fortescue
 Rev. Prebendary H. E. Fox
 Sir T. Mansel Franklyn
 J. Fraser
 Miss Fry
 T. R. Gumbier-Barry
 Professor P. Ruggles Grafes
 Miss Gibbings
 Hon. Mrs Majid Glyn
 H. J. Goddard
 Mrs Godden
 Colonel. M. J. Godfrey
 Captain G. Balfour Gourlay
 Mrs Graham
 A. W. Gravson
 Dr. Henry Gray
 W. G. Greenwood
 W. G. Greenwood
 Mrs Gregory
 R. Grierson
 Miss Majid Grayell
 Viscount & Viscountess Gray
 Professor Griffiths
 J. F. Griffith
 C. H. Grirling
 James Groves
 Major R. L. Gwynne
 H. P. Guppy
 Patrick M. Hall
 Mrs Macalister Hall
 E. J. Hanbury
 The Viscountess Harcourt
 In Memory of W. A. Harford
 Rev. G. H. Harris
 Rev. H. H. Harvey
 Miss Haynes
 Miss J. M. Haswood
 Hon. F. R. Henley
 Gweller Hills
 C. E. Hickkin
 Sir George & Lady Holford
 D. Lloyd Howard
 C. F. Hurst
 P. R. Hutchinson
 B. Danson Jackson
 The Countess of Jersey
 E. Marsden Jones
 Colonel H. H. Johnston
 Professor Sir F. Keeble
 Bolton King
 Mrs Knowling
 F. F. Lazzala
 F. F. Lazzala
 Miss Landon
 J. H. Leach
 Hon. Mrs Alex Leith
 Lady Joan Legge
 J. E. Little
 J. L. Liddington
 D. Lumb
 J. F. M. O'Call
 Mrs Rosemaid O'Keena
 St. John Marriot
 Lady Evelyn Mason
 Rev. G. Wright Mason
 J. Cosmo Melville
 The Countess of Moxborough
 Miss Dorothy Mignall
 R. H. Miller
 J. Fairweather Milne
 Right Hon. Sir Alfred Mond
 The Misses Coombe
 Dr. George Morgan
 Miss A. M. Neild
 Mrs Newman
 C. Nicholson
 W. A. Nicholson
 W. E. Nicholson
 Mrs O'Callaghan
 Major Robert Orme
 Lady Oster
 Dr. John Martin
 Donald Patten
 Mrs H. Perrin
 Professor J. Percival
 Miss Elizabeth Post
 Sir D. Prier
 Professor J. H. Priestley
 F. Ransom
 J. F. Raper
 Rev. F. Reynolds
 Alex. F. Roberts
 Miss Lucy Richards
 Right Rev. Bishop Robertson
 Miss Rosa Rover
 Lady Rose
 The Lord Rothchild
 Lady Victoria Russell
 Sir E. J. Russell
 E. Ridsdale
 The Viscountess St. Cyrus
 C. E. Salmon
 Dr. Dunkerfield H. Scott
 C. H. Scott
 W. A. Schoolbred
 Professor J. Small
 R. Snow
 Professor W. Somerville
 Rev. T. Stephenson
 J. H. Stephens
 W. St. Quentin
 C. B. Tahourdin
 Andrew Templeman
 Sir Gerard Im Thurn
 Edgar Thurston
 Mrs Thatcher
 Mrs Thompson
 Miss Agnes Thompson
 Miss Todd
 A. G. Trotter
 Miss Alice Trower
 Miss C. G. Trower
 Rev. Francis Turreff
 Mrs Louise Urquhart
 Miss Vachell
 Dr. Vines
 Miss Vivian
 H. Walker
 T. J. Wall
 Miss Elsie Waterhorn
 Charles Waterfall
 Lady Margaret Watney
 Mrs Wedgwood
 Professor F. E. Weiss
 Alfred Webster
 Major Baltes Van de Weyer
 William Van de Weyer
 Walter J. White
 Miss Aestha Wilkinson
 E. B. Wilkinson
 Miss Lavender Williams
 R. H. Williamson
 A. Wilson
 Lieut. Col. A. H. Wolley-Dod
 Professor T. D. Woodhead
 Mr. Justice Talbot

posed name, and the Editors of the Catalogue are therefore justified in retaining it (Art. 24).

1941, 1942 *Triglochin palustre* and *maritimum*: T. PALUSTRIS and MARITIMA. The generic name is feminine, the basic word being ἡ γλωχίν.

Even the names of families are not given correctly in all cases: *Portulacaceae*, *Dipsacaceae* and *Hydrocharideaceae* should of course be *Portulacaceae*, *Dipsacaceae* and *Hydrocharidaceae* (or, better, *Hydrocharitaceae*) respectively, the forms given in the Catalogue being those appropriate to tribes, not families. *Thymeleaceae* should be *Thymelaeaceae*, the type genus being *Thymelaea*. As pointed out in Journ. Bot. 1922, 73, the correct name for the Holly family is *Ilicaceae*, not *Aquifoliaceae*.

PRESENTATION TO THE HON. SECRETARY,
G. CLARIDGE DRUCE.

It had long been felt by the members that recognition should be made of Dr Druce's unwearied service to the Society during the past 23 years, in which period he had so largely increased its membership and had annually prepared the lengthy and valuable Reports. He was therefore approached but expressed his aversion to a large monetary subscription. It was then suggested that the presentation might consist of a book-plate, an idea which he cordially welcomed, and it was arranged that the Hon. Mrs H. Adeane and the Hon. Mrs Guy Baring should make an appeal to the members. There was at once a most warm and cordial response, the many letters received showing how highly Dr Druce's services were esteemed, and the only objection raised was that the subscription was to be limited in amount.

The well-known artist, Mr Emery Walker, was entrusted with the design. A replica is attached with a description, as well as the subscribers' names, which have been engrossed by Miss Tempest. It may be added that the list of members written to was incomplete

and, of course, comprised no Institutions, so that many well-known names are, unfortunately, omitted.

The presentation took place on Friday, June 26, 1925, with the kind permission of Sir George and Lady Holford, at their palatial mansion, Dorchester House, Park Lane, which contains a wonderful collection of paintings, a unique set of Shakespearian folios, of rare and costly illuminated MSS., and other treasures. Sir George and Lady Holford entertained to luncheon a party which included the Duke of Argyll, the Earl and Countess Buxton, Viscount Grey of Falledon, K.G., the Hon. Mrs H. Adeane, the Hon. Mrs Guy Baring, Mrs Lawrence Drummond, Mr R. Benson of Buckhurst, and Dr Druce. The presentation, which included the engraved plate and 4000 impressions, a framed address and coloured copies of Maw's Genus *Crocus* and Fryer's British Potamogetons, was made in the magnificent ballroom, where a large number of members were assembled who had come from many parts of Britain for the occasion. The acceptances, in addition to the names already mentioned, included members of the staff of the Royal Botanic Gardens and Herbarium at Kew (as representing the Director, Dr A. Hill, F.R.S.), Messrs D. Cotton, F. Alston, R. W. Butcher, and Noel Sandwith. There were also the Rev. F. S. Alston, Scrivelsby, Lincoln; Mr G. S. Allen, Chislehurst; the Right Hon. H. Baker; Mr E. G. Baker of Kew, the son of an old Secretary; Sir Thomas and Lady Butler of Bury Lodge, Hants; Mr F. W. Branson, F.I.C., of Leeds, a fellow apprentice of Dr Druce at Northampton; Mr T. Bates Blow of Welwyn, one of the oldest members; Sir Roger Curtis, Bt., of Lichfield; Lady Davy of Byfleet, Miss David of Llandaff, the Hon. Mrs Maurice Glyn, Miss Haynes; the Hon. F. R. Henley of Arkiston Castle, Cumberland; the Hon. Mrs Ivo Fiennes, Mr J. Fraser of Kew, Mrs H. Graham, Mrs Knowling; Mr J. E. Little, Hitchin; Mr and Mrs T. H. Leach, Northampton; Mr J. L. Ludington, Wallington Hall, Norfolk; the Countess of Mexborough; Mr F. Ransom, F.C.S., Herts; Lady Victoria and Miss Russell, Shere, Surrey; Miss I. M. Roper, F.L.S., Bristol; Lady Cynthia Slessor, Middleton Park, Oxon; Dr H. Dukinfield Scott, F.R.S., Hants; Mrs and Miss Stebbing, Essex; the Misses Trower, Stansteadbury, Herts; Mr C. E. Salmon, F.L.S., Reigate; Miss Vachell, Cardiff; Mrs Wedgwood; Mr and Mrs R. H. Williamson, Seascale;

Mr Emery Walker, Mr S. J. Warry-Stone, Mr E. Wilkinson; Prof. Dr T. W. Woodhead, Huddersfield; Mrs Walkett. Illness prevented the attendance of the Viscountess Grey of Fallodon. Sir Everard Im Thurn of East Lothian, the discoverer of Roraima, the oldest member, sent his hearty good wishes; Countess Fortescue of Castle Hill, Devon; Lady Margaret Watney of Cornbury Park; Mr and Mrs Corstorphine of Arbroath, Mr F. Allchin of Fowey were unable to attend, and absence from England prevented Sir James and Lady Douie, the Rev. F. Bennett, and others from being present. A telegram from the Earl and Countess of Dartmouth and Lady Joan Legge conveyed "Love from all at Patshull, with many regrets at not being present."

Viscount Grey, in making the presentation on behalf of the members, gave a most delightful speech, teeming with kindly expressions. Speaking of Dr Druce, he alluded to the very thorough knowledge of the British flora which he possessed, but he considered it even more wonderful that he had in a very high degree not only the power but the willingness to impart it to others. He had that particular charm and sympathy which had endeared him to a very large circle of friends throughout the British Isles who held him in the highest regard. It was a personal pleasure to hand over to one whom he had known for so many years and for whom he had a real affection this presentation from his friends and fellow botanists.

In response, Dr Druce said he supposed the stereotyped expression would be to say that it was the proudest moment of his life. On the contrary, he experienced a feeling of profound humility, since the very gracious and touching remarks of Lord Grey, whom he had known since his undergraduate days, made him feel how little he deserved such kindness. Beautiful as the Book-plate was (and he thanked Mr Emery Walker for giving it so much of his skill), it was enhanced by the fact that it was handed to him by such an eminent lover of nature as Lord Grey. He also thanked their kind hosts for allowing it to be given in such beautiful surroundings, not the least of a long succession of kindnesses he had received at their hands. To the two ladies (Mrs Adeane and Mrs Baring) who had so successfully organised the gift, he was a hopelessly insolvent debtor. To a Secretary such a widespread recognition of his en-

deavours to help his fellow-members was most stimulating and helpful. From his earliest years he had a keen interest in botany. "And Nature, the dear old nurse, took the child upon her knee . . . And whenever the way seemed long and his heart began to fail, she would sing a more wonderful song, or tell a more marvellous tale." And from those days onward the love had continued and grown. It had led him over a large part of the earth's surface, into very beautiful scenery, and had brought him into contact with a large circle of fellow workers, many of whom, he was delighted to see, were present that day. He reminded them that the Society was established in 1836, with Dr J. E. Gray of the British Museum as President, and that Mr H. C. Watson, the author of *Cybele Britannica* and of *Topographical Botany*, acted as Secretary. He was followed by Dr Boswell Syme, the author of the third and best edition of *English Botany*, then by Mr J. Gilbert Baker, F.R.S., of Kew, whose son he was glad to see present. Afterwards came Mr C. Bailey, M.Sc., whose enormous Herbarium was a princely gift to Manchester University. In 1902 he took over the management of the Society, then having thirty subscribing members. The membership had now increased to nearly six hundred, and the last yearly Report exceeded 400 pages. Botany, comprising as it did ninety per cent. of the world's organic matter, was necessarily an enormous subject, segregated into Physiology, Histology, Cytology, Ecology, Plant Paleontology and Pathology, Genetics, Agriculture, Horticulture, Taxonomy and Field Botany, the last, the Cinderella of the sister sciences, being the branch to which most of those present belonged. All these sections were represented in the Society, because each could learn from the other, and however segregated Botany might become its devotees were all bound by a silver chain of a mutual love for the flowers of the field, a desire to see them in their place of growth, to delineate their beauties, and to know their structure, their history and characters. In the pursuit of this knowledge, arduous though the search might be, there came a great reward, and one which left no bitter after-taste. One of their members, a Yorkshire botanist, "with knowledge at one entrance quite shut out," for he early lost his eyesight, had by educating his sense of touch, taste, and smell, been able to identify over 500 species of plants, and in doing so had given himself intense pleasure. Another mem-

ber, only recently taken from them, notwithstanding that she was crippled with arthritis, from the narrow horizon a bath-chair afforded had been able to detect several additional plants to Hayling Island, and at the same time was able to divert to some extent her attention from the almost ceaseless suffering she endured.

During his term of office, Dr Druce said, something like 140,000 specimens had been distributed by the very capable editors of the Exchange Club section. These in the main were critical varieties of common species, as their members were fully alive to the responsibility entailed on them to preserve as far as possible and to hand down to others the flowers which bound all these diverse sections and individuals of varying tastes together by a common love.

Dr Dukinfield Scott, F.R.S., who paid a warm tribute to the long years of botanical work of Dr Druce, said that if Field Botany were the Cinderella, it would remain even if all the other sister branches disappeared. He moved a hearty vote of thanks to Sir George and Lady Holford for so kindly allowing them to meet in their magnificent house, which was carried by acclamation.

Sir George Holford, K.C.V.O., briefly replied, and said that anything he could do for Dr Druce, for whom he had so much respect, affection, and admiration, was a real pleasure. The meeting, which throughout was marked by much enthusiasm and cordiality, then terminated.

The names on the Address, a copy of which is here given, were engrossed by Miss Tempest. There are three misprints: "Sir D. Prian" should read "Sir David Prain, F.R.S.," for "Dr Dukinfield H. Scott" should be substituted "Dr Dukinfield H. Scott, F.R.S.," and "W. A. Schoolbred" should be "W. A. Shoolbred."

At the request of many members, an explanation of Mr Emery Walker's design is appended. The arms in the right-hand corner are those of the Pharmaceutical Society of Great Britain, of which for ten years Dr Druce acted as Examiner in *Materia Medica* and Dispensing. In the centre are the arms of Magdalen College, Oxford, to which he is affiliated, and the left-hand are arms of the Linnean Society. Below these (dexter) are the Arms of the University of St Andrews, of which he is Hon. LL.D., (sinister) the University of Oxford, of which he is M.A. by decree, and D.Sc. Below, in the centre is the Gateway of the Oxford Botanic Garden (designed by Inigo

Jones and erected in 1632). Of this Dr Druce is an Hon. Curator and has been Fielding Curator of the Herbarium since 1890. On the dexter side are the Arms of the Ashmolean Natural History Society of Oxfordshire, of which he has been an officer since 1880 and repeatedly President. On the sinister side is the Grand Lodge of England, of which he is Assistant Director of Ceremonies; he is also the Charity Representative and P.G. Warden of the Provincial Grand Lodge of Oxfordshire. Below the inscription in the centre is the emblem of the Botanical Society of London and represents the *Victoria Regia*, which was first described and exhibited at its meeting on September 7, 1837. "It was sent from New Amsterdam on May 11 of that year. The plant was therefore named by Mr R. H. Schomburgk, by permission of her Majesty, *Victoria Regia*, and the Society has adopted this plant as its emblem." The plant was discovered in the river Berbice on the first of January 1837. On the right-hand are the Arms of the Borough of Northampton, where Dr Druce was apprenticed, and in which town he prepared the Flora of that county. On the left-hand are the arms of the city of Oxford, of which he has been Sheriff and Mayor, and is an Alderman and Magistrate, having been for thirty years Chairman of the Committee of Public Health; of this county too he has published a Flora. The background is ornamented with the Loddon Pondweed, which he discovered there in 1893, and which Fryer named *Potamogeton Drucei*; the Orchid flower is that of *Orchis praetermissa*, which he described from plants found in Berkshire and Oxfordshire. The Oak leaves in the lower frame have reference to "Dru" the oak and Druids and Druce.

FROM JOHN O' GROATS TO LAND'S END.

By Lady DAVY.

It has been suggested to me that I should write a short account of my botanical wanderings this season. I left here with Mr Foggitt in his car on June 10 and went through Sussex, getting *Pyrus torminalis* near Heathfield, and then on to Pevensey, where, after some searching, we found *Crepis foetida*, which was particularly wanted by some of the party. It was only just coming out, but when seen like that it cannot be mistaken for any other plant, as it has drooping buds arranged in a loose umbel. The foetid smell was not very noticeable. We spent that night at Lewes where our party was augmented by Mr Butcher. The following day we motored to Crewkerne. We had not meant to go quite so far, but it was difficult to get rooms. The next day we drove to Dulverton for *Valeriana pyrenaica*, which was abundant and at its best. We then went on to Molland for *Lilium pyrenaicum*, which we found in hundreds looking perfectly beautiful in full flower hanging over from high grass roadside banks. Then on through Simonsbath to Lynmouth, where we got nice specimens of *Euphorbia hibernica* and *Quercus sessiliflora*, and after staying the night at Porlock we drove to the Cheddar Gorge where we saw *Dianthus caesus* in nice condition, besides many other interesting plants. We drove on to Catcombe wood near Calne, where we got *Lonicera caprifolium*, but already in seed. We then parted and on June 19th I went to Yorks with Mrs Knowling and met Miss Vachell, and we all went to Thirsk. The following day we were joined by Miss Vivian and drove to a spot to look for *Cypripedium*, but it was not to be found. The next day we spent in Teesdale seeing many delightful things. We had hoped to find *Viola arenaria* in flower, but it was too late for it, and we only saw fruits. On the 30th, the same party met to go to Ireland. We crossed from Fishguard to Roslare, arriving at 5 a.m., and took train to Kenmare, where we arrived early enough to go for a walk, hoping to get something new to us. In this we were successful, as Mrs Knowling soon spotted a lovely specimen of *Sisyrinchium angustifolium*. It is the most lovely colour imaginable. Soon after finding it we got another beautiful plant, *Pinguicula grandiflora*.

It is impossible to describe what a fascinating thing this is, a totally different shape to the common butterwort, very big and a gorgeous deep purple colour with some white. The following day we hired a motor and drove to Derrynane, where we found plenty of *Simethis bicolor* in perfect flower in two places. We had a lovely drive again next day, going to Beerhaven and then through Glengarriff. It was here we had our first sight of *Arbutus Unedo*. No one who has only seen this growing in English gardens can have any idea of what a beautiful tree it is. Some we saw afterwards near Killarney must have been immensely old, with thick stems of a lovely reddish brown. The trees were covered with bunches of the little strawberry-like fruits just beginning to turn red, though not yet grown to their full size. On the same day among damp shady rocks we got *Saxifraga Geum* and *S. hirsuta*. It is incredible that if Bentham had ever seen these two plants in a fresh state he could have thought them the same plant. The next two days we spent at Killarney but were not fortunate in finding the plants we were looking for, though we have found both since then. From there we went to Athenry and after dinner had time for a short walk. We got to a place that reminded us of a bit of Teesdale, as *Gentiana verna* was abundant there and many delightful orchises were in beautiful flower. We started early next morning for Loch Derg to hunt for the rare *Inula salicina* and we had found it before lunch time! It was not quite out and we only found two clumps, but we felt well rewarded. We then decided to go on another 30 miles or so to the little lake at Crusheen to see if we could find *Equisetum trachyodon*, as we had read in an Irish Flora that it was to be found there. Miss Vivian found it nearly at once to our great delight, and it is a very distinct plant. We found it again a few days afterwards quite unexpectedly. Another early start next day and off to Ballyvaughan and Blackhead. At the former place we got *Habenaria intacta*, but the intense heat of the previous weeks had burnt it up very much. At Blackhead, growing among curious limestone rocks, we saw several interesting varieties of Saxifrages, including *Sternbergii*, also *Adiantum Capillus-veneris*, growing in tufts with very large pinnae looking very different to the specimens I have seen in Wales and Jersey. Next day we left Athenry and took train to Clifden and encountered our first rainy day. However, quite undeterred,

as soon as we had finished tea we went out to find something new to us, and were rewarded by getting lovely specimens of *Daboecia cantabrica*. It is a very much more handsome plant than it ever is in English gardens, with larger and much more brilliantly coloured flowers. We took a car next day to Roundstone, where we went to look for *Arabis ciliata* on the Sandhills. We had soon found plenty of it, and we then walked across a 1000 ft. high mountain to get *Erica mediterranea* on the other side. We found it without much trouble, but the flowers were, of course, faded. After a rest we took off our shoes and stockings and waded about in a small lake looking for *Najas flexilis* which we did not get. We found *Utricularia intermedia*, of course not flowering, but the leaf is very distinct and very beautiful, looking like a green feather. The next day we had a long railway journey to Roslare and crossed again to Fishguard, and so our Irish trip came to an end after a most successful time. I then stayed in London for a few days and had a day's trip with friends to Essex, where I showed them *Lathyrus tuberosus*, *Melampyrum cristatum*, *Trifolium ochroleucum* and *Bupleurum falcatum*, and a day or two afterwards we went to Burnham Beeches and saw *Danaa cornubiense* in countless thousands. Our next trip started on July 22nd, when we left Thirsk in Mr Foggitt's car and reached Bridge of Allan the first day. We went on next day via Glenfarg to Clova, and at Glenfarg got *Lychnis viscaria* very much burnt up from the heat of the sun. We found several interesting things en route, and I saw for the first time *Rumex alpinus*, which is not supposed to be native, but it was grown in the old days to use the big leaves for wrapping up butter. On the 24th we went up Corrie Fee to find *Carex Grahmi*. After very long searching Mr Butcher found it, and I scrambled up to look at it. On the 26th we motored from Clova to Crathie, where we met the rest of our party, and we arranged to start early the next morning to again climb Lochnagar. It proved to be a most perfectly lovely day, with a gorgeous view of all the mountains, and patches of snow were still glistening on some of the higher parts and shady spots. We got to the North Corrie in good time and started our search for the various things we wanted. Miss Vivian found *Poa laxa*, which she specially needed, and then with Mr Butcher climbed the chimney and got to the other side to find *Carex lagopina* in beautiful condition. Mr Foggitt

and I returned the same way as we came, but not till Mr Foggitt had found the plant he had come to look for, the rare *Gnaphalium norvegicum*, of which he found several plants at their best, and we all climbed up to look at and admire it. The next day Mr Foggitt and Mr Butcher went part of the way up Ben McDhui to look for Hieracia and I was left on the river bank to search for anything of interest that might be there. I found *Arabis petraea* in masses growing amongst shingle and sand. There were two very distinct forms—one quite glabrous with very finely cut leaves, the other almost grey from a hairy down on the leaves, and both varieties had very large flowers. The following day we drove to Inchnadamph and found the various plants wanted by the different members of the party—*Carex rupestris*, *Arenaria norvegica*, *Helleborine atropurpurea* and *Arctostaphylos alpinus* were some of these that we got, also *Salix Myrsinites*. We left Inchnadamph on the 31st and motored to Altnaharra to get *Carex chordorrhiza*, which we found in plenty in an extraordinary wet bog. We reached Bettyhill that evening. We were out quite early next morning to hunt for the rarities that grow there and found first *Oxytropis wralensis* growing in short turf on a projecting sandhill, also the charming little *Primula scotica*, a much more beautiful plant than *P. farinosa*. We then walked along the sand towards the seashore and there found *Carex incurva* in thousands. It grows nearly buried in the sand with just its little black heads showing and a few little spikey leaves. But if one digs away the loose sand with one's fingers one finds that it grows much like *C. arenaria*, with long roots from which at short intervals tufts of leaves and one or two flowering stems emerge. We also found *Ajuga pyramidalis*, but though the flowering spikes were there, the flowers were quite over. Bettyhill is really a lovely place, with a beautiful white sandy bay, very blue sea, and the vegetation down to the water's edge, composed almost entirely of *Dryas octopetala*. Of course, that was nearly over flowering, but the feathery seed-heads were fascinating. That night we spent at Wick. The following day we went to look for *Calamagrostis stricta*, which we got, and another *Calamagrostis* which, I suppose, is the one Bentham figured as *C. strigosa*, and which Dr Druce named *C. scotica*. After lunch we drove to John o' Groats and on walking along the shore we found masses of *Pneumaria (Mertensia) maritima*

looking absolutely lovely with its leaves covered with a bloom like grapes have and its heavenly blue flowers, the most perfect blue I have ever seen. After our return we walked along the bank of the river and found *Carex salina* and *C. aquatilis*. We were now turning south, and next day we stopped for a time to look at *Moneses uniflora* at Golspie and stayed the night at Carr Bridge, where we got some interesting Hieracia, and next day motored to Galashiels, on our way getting *Nuphar pumila*. Left Galashiels early on August 5th and drove through the Lake district, and at Stock Ghyll I got *Impatiens Noli-me-tangere*, which I had never found before, and got back to London on the 7th. My next trip started on September 1st from Luton, where we took Mr Foggitt to see *Helleborine purpurata*, and that day we reached Lyndhurst and spent the next morning looking for flowers, and were lucky enough to find one specimen of *Spiranthes aestivalis*, which some of the party were most anxious to see. That night we spent in Exeter, leaving early next day and going via Bodmin moor—which was looking perfectly lovely—to Mullion, where we spent the night, first finding masses of *Polygonum maritimum* and *P. Raii*. It was very instructive seeing them growing together, and noticing what very different plants they are. The next day we went to the Lizard, where we got *Gentiana baltica*. *Erica vagans* was looking gorgeous in every range of colour from nearly white to dark purple. We then made for the Land's End, and the splendid little car and Mr Foggitt had completed the journey from John o' Groats to Land's End! Botanically, John o' Groats is the most interesting. On our way back we found *Hypericum undulatum*, which I had long wished to find, and I think it is the most beautiful one of all the family. We also found interesting Fumarias. We went to Camborne for the night, and the following night stayed at South Molton, and the next day the rest of the party left me at Lyndhurst, where I met other botanical friends. There we saw *Utricularia intermedia* again, though not in flower, and found various interesting things, though it was getting late in the year and the trees and bracken had already turned to wonderful copper and gold. We finished our botanical year by a trip to Coniston, where we wished to find *Naias flexilis*, which up till then had evaded us, and we also wanted to get *Hydrilla*. This, however, was not to be found (it was quite over), but we got the

Naias in splendid condition with the help of a kind friend who came with us to fish it up from the bottom of the lake. We also got beautiful specimens of *Callitriche autumnalis* in perfect seed, but we had already seen this in Loch Leven. And so ends a wonderful botanical season in which I personally got 18 Benthamites new to me, leaving me only 25 still to find. Had I had more space I could have gone into fuller details, but it shows what can be done when one has a kind friend and a car!

NATIONAL MUSEUM OF WALES—DEPARTMENT OF BOTANY.
THE WELSH NATIONAL HERBARIUM.

This Herbarium, which is housed in the Department of Botany of the National Museum of Wales, Cardiff, had its origin in the herbarium of the Cardiff Municipal Museum which was taken over by the National Museum. Starting with about 3500 sheets just before the war (during which little progress was made), the Herbarium has now grown rapidly until at the present time it numbers considerably more than 90,000 specimens, by far the greater portion of which, in the form of organised collections, are available for instant reference. It is hoped that some account of an Herbarium of such recent and rapid growth may be of interest.

In the formation of the Welsh National Herbarium certain very definite aims are being pursued. The first aim is the study and exposition of the flora of the Principality. It is well known that of the thirteen vice-counties in Wales and Monmouthshire only three possess county floras which have been published, namely, Carnarvon and Anglesey (by J. E. Griffith), and Glamorgan ("The Flora of Glamorgan," edited by A. H. Trow, and "A Flora of Glamorgan," by H. J. Riddelsdell). A county list for Carmarthenshire has also been published (in Barker: Natural History of Carmarthenshire). Of floras known to be in a more or less advanced state of preparation there are two, namely, "The Flora of Flint and Denbigh" (A. A. Dallman) and that of Monmouthshire by A. E. Wade of the Department of Botany, National Museum of Wales. A

county list for Pembrokeshire is also being compiled by Mr Arnett. Many vice-counties thus appear to have been, in a botanical sense, only partially explored: it is the aim of the Department of Botany therefore to acquire a geographical series of flowering plants and ferns, at least, drawn from every part of Wales. It should then be possible on the basis of material in the National Herbarium to compile at least a species list for each vice-county in Wales.

With this end in view the co-operation of field botanists throughout Wales was invited in 1923 and every year since a steady stream of material has flowed into the Department. It should be added, however, that at the present rate of advance it will be many years before the geographical series is reasonably complete and the aid of yet more collectors will be welcome. In addition field work is undertaken by the staff of the Department at all favourable seasons of the year. Thus in 1925 expeditions were made into six counties with the result that two thousand specimens were added to the Herbarium by this means alone.

It is realised that the flora of Wales can only be understood in the light of the comparison of its constituent forms with those occurring in Britain and elsewhere. In particular access to a wide range among the "critical" genera and species is a *sine qua non* of close study of the flora of any part of Britain. The development of a comprehensive collection of British plants has therefore been prosecuted vigorously of recent years. Among other collections which have been acquired may be mentioned a large number of duplicates given by the late Charles Bailey and the entire collections of A. R. Horwood and the late J. A. Wheldon. In all, the British flowering plants now number over 40,000 sheets. Students of critical genera all know, again, the difficulty of correlating British and Continental work, a difficulty which can only be overcome satisfactorily by referring to actual specimens of the different varieties vouched for by their authors. For this reason, among others, a collection of foreign flowering plants is being formed. To date it numbers some 10,000 sheets.

Before leaving the flowering plants it will be as well to allude to a third aim which is being pursued in forming these collections, namely, the illustration of what may be called the "cultivated flora" of Wales. Specimens of crop plants, hardy ornamental

plants and trees and shrubs in cultivation are therefore being collected.

In addition to the herbarium collection of flowering plants there is a collection of seeds of plants native to or cultivated in Britain.

Passing by the ferns and fern allies, we come to the bryophytes, in which this Herbarium is specially rich. The collection of mosses and liverworts is based on that of D. A. Jones, which was purchased in 1920. It has recently been more than doubled by the addition of the collections of the late J. A. Wheldon. The last-named botanist was well known, specially as an authority on the Sphagnaceae and the Harpidioid Hypna and his collection is probably unrivalled in its representation of these two groups. The Museum collections of British bryophytes contain in all 23,600 packets of mosses and 5100 of liverworts and there are also smaller collections of foreign bryophytes.

Among the lower plants the most notable collections are those of British Lichens (5000 specimens), and marine Algae (Mrs E. M. Holmes' collection of 1500 sheets).

As has already been stated, the collections in the Welsh National Herbarium are for the most part systematically arranged and available for reference. That they are not consulted more often by botanists is due probably in part to the fact that their existence has not yet become very widely known. It is hoped that workers desirous of consulting the collections, but unable to visit Cardiff, will not hesitate to communicate with the Keeper of the Department of Botany, National Museum of Wales, Cardiff, who will be pleased to answer any enquiries.

I should like, in conclusion, to thank the Editor, who has recently accepted nomination as a Correspondent of the National Museum of Wales, for so kindly placing these pages at my disposal.

H. AUGUSTUS HYDE.

ON COLLECTING FOR EXCHANGE CLUBS.

By Lt.-Col. A. H. WOLLEY-DOD, F.L.S.

When I was first advised to join the Botanical Exchange Club by the late Mr F. Townsend in the early nineties I demurred, since I was then only a beginner and was somewhat alarmed by the List of Desiderata, never having to my knowledge seen a single one of them growing. I was not much reassured by being told that I would soon find specimens, though while on a visit to Mr Townsend he showed me two or three at Honington. However, I joined, and though of recent years I have not been an active contributor, I have always endeavoured to send only species and varieties which were asked for. I sent in a list of my own Desiderata regularly, but found that I received very few things which I asked for, and what was worse, much that I did not want, and which was not in the Club's List of Desiderata.

There has been in recent years an increasing tendency to send in all sorts of more or less common plants. I have always maintained that specimens of almost any British plants, if only they are carefully selected and well dried, should be acceptable in most herbaria, but, unfortunately, these conditions are not always fulfilled.

There is another occasional source of superfluous supply of specimens. If a name is found for any variety new to Britain, but not to science, and really a common form, it is seized upon as an opportunity for members to flood the Club with it, often for more than one year. Aliens also, though they have some interest, should be sent in more sparingly. Their numbers are almost limitless.

I have no doubt that many members besides myself still feel my initial difficulty in finding the Clubs' Desiderata, and equally, no doubt, rather than be left out of the distribution, they collect anything which appears to them to be uncommon, and indeed may be so locally, but which is not wanted by the Club.

This flooding of the Club with undesirable plants has more than one objection. Firstly and chiefly, it throws a lot of unnecessary work on the Distributor. Secondly, it greatly prolongs the Report and, therefore, the expenses of the Club. Thirdly, at least in my

own case, it leads members to refrain from the trouble of making a list of their own Desiderata, knowing that they will get few or none of the plants they ask for. Thus the Distributor is kept without information whereby to draw up a list of next year's Desiderata.

The sending in of examples of critical genera, such as *Hieracium*, *Salix*, *Rubus*, *Rosa*, etc., is more difficult to legislate for. In *Rosa*, at any rate, nearly all except about a dozen varieties are probably acceptable to those who collect them. Critics of other large genera are best capable of saying which varieties of those genera should appear in the Desiderata List. It should be borne in mind that the mere naming of forms for members is not one of the Clubs' primary functions.

The remedy lies in members' own hands. So long as some send in undersirable plants, others are sure to do the same, and some such drastic remedy would be required as authority given to the Distributor to destroy such contributions.

Could not the work of the Clubs be restricted more to their original function, namely, the exchange of rare plants, the definition of "rare" being such plants as are in the Clubs' Desiderata Lists?

[The Secretary would like to point out that if members receive plants they do not want they may give them away or destroy them. What is one man's meat is another man's poison. The formation of a Desiderata List is a great expense and trouble, and it is out of date as soon as printed. Some members will not have *Rosa*, *Rubi*, or *Hieracia*; others want only those genera. It appears to the Secretary that the Regulations for Exchange Members, already printed, cover our needs—in that the fullest criticism is invited in order that the majority of members may get what they want. In his own case this year, there were only two or three plants out of the great lot sent that he desired, but he was glad to put in the other specimens as varieties or representing some different condition. Mr Fryer said there was no such thing as a duplicate. The space these names take up is small—a dozen of them take much less space than the criticisms (often mutually contradictory) upon some micro-species. It must be remembered, too, that fresh members are coming in yearly and that what is caviare to an old member may be quite a bon bouche to them.]

HUNTINGDONSHIRE PLANTS.

By G. CLARIDGE DRUCE.

The following plants are not (unless so stated) included in *Top. Bot.* Unless otherwise marked they are the writer's discoveries from the years 1876-1925.

- RANUNCULUS DROUETII F. Sch. Hod Fen, Miss POWELL; near Stilton.
- R. BAUDOTII Godr. Graffham brick-pit, HUNNYBUN.
- R. HEDERACEUS L. Hemingford, HUNNYBUN.
- †CAMMARUM HYEMALIS Green. Orton, HUNTLY.
- AQUILEGIA VULGARIS L. Stibbington.
- BERBERIS VULGARIS L. Orton, HUNTLY; Brampton, RAYNOR.
- †CAPNOIDES LUTEA Gaertn. Huntingdon, DIX; Alwalton.
- †C. SOLIDA Moench. Huntingdon, HUNNYBUN.
- †CHEIRANTHUS CHEIRI L. Elton; Buckden.
- †BARBAREA VERNA Asch. Buckden, W. R. LINTON.
- †B. INTERMEDIA Bor. Wood Alton Fen, HUNNYBUN.
- CARDAMINE FLEXUOSA With. Wood Walton.
- †ALYSSUM ALYSSOIDES Jacq. Ramsey St Mary, 1905, HUNNYBUN.
- †SISYMBRIUM ALTISSIMUM L. Fletton, 1890.
- S. OFFICINALE L., var. LEIOCARPON (DC.). Godmanchester.
- †S. ORIENTALE L. Godmanchester.
- †CAMELINA SATIVA Cr. Orton, HUNTLY; Farcet, BIRD.
- †BRASSICA RAPA L. Stukeley, etc.
- †B. NAPUS L. Yaxley, HUNTLY.
- †B. RUTABAGA DC. Elton.
- †B. ALBA Boiss. Yaxley, BIRD; Godmanchester.
- BURSA ANGLICA (At.). Fletton, etc.
- B. DRUCEANA (At.). Ramsey; Wood Walton.
- B. PATAGONICA (At.). Fletton.
- B. TURONIENSIS (At.). Wood Walton.
- B. BATAVORUM (At.). Fletton.
- †LEPIDIUM DRABA L. Fletton, etc.
- †L. RUDERALE L. Fletton, 1904.
- †L. SATIVUM L. Fletton, 1904.

- †*L. VIRGINICUM* L. Godmanchester, 1925.
TEESDALEA NUDICAULIS Ait. Holme Fen, Mrs BIRD.
RESEDA LUTEA L. Fletton.
VIOLA MONTANA L. Wood Walton, 1925. "Exactly the same as the original gathering," says Mrs Gregory. With it grew hybrids of *canina*.
V. AGRESTIS Jord. Elton.
V. RURALIS Jord. Orton.
V. SEGETALIS Jord. Stibbington.
†*SAPONARIA OFFICINALIS* L. Brampton, Mrs KING.
†*S. VACCARIA* L. Yaxley, Mrs BIRD.
†*SILENE ANGLICA* L. Farcet, Mrs BIRD.
LYCHNIS DIOICA L. Orton Watermills, HUNTLY.
STELLARIA MEDIA Vill., var. *BORAEANA* Jord. Elton.
S. NEGLECTA Weihe. Huntingdon, HUNNYBUN.
S. DILLENIANA Moench. Wood Walton.
[The var. *PALUSTRIS* is in *Top. Bot.* as *S. GLAUCA*.]
†*CERASTIUM TOMENTOSUM* L. Elton.
SPERGULA SATIVA Boenn. Somersham, FRYER.
†*CLAYTONIA PERFOLIATA* L. Yaxley, BIRD.
†*HYPERICUM CALYGINUM* L. Alwalton (!), HUNTLY.
†*TILIA EUROPAEA* L. Elton, etc.
†*T. GRANDIFOLIA* Ehrh. Ramsey.
T. CORDATA Mill. Stibbington.
†*IMPATIENS PARVIFLORA* DC. Paxton, HUNTLY.
†*OXALIS CORNICULATA* L. Farcet, BIRD.
O. ACETOSELLA L. Rare, Brampton, RAYNOR; Alconbury, NEWTON.
†*ACER PSEUDO-PLATANUS* L. Alwalton, etc.
A. CAMPESTRE L., var. *LEIOCARPON* Wallr. Ramsey; Upton. Var. *DISSECTUM* Druce. Upton.
†*MEDICAGO SATIVA* L. Chesterton; St Neots, etc.
†*MELILOTUS INDICA* All. Buckden, HUNNYBUN.
†*M. ALBA* Desf. Oton, 1878, HUNTLY.
TRIFOLIUM PRATENSE L., var. *PARVIFLORUM* Bab. Huntingdon, HUNNYBUN. Var. *ALBUM*. Holme Fen, 1889, HUNTLY.
T. ARVENSE L. Near Wansford.
†*T. INCARNATUM* L. Buckden, 1901, HUNNYBUN.
†*T. RESUPINATUM* L. Huntingdon, DIX.

- [*T. FILIFORME* L. in *Journ. Bot.* from Holme Fen, Fryer, is probably an error. There is no specimen of it in his herbarium. The same holds true of Mr Newbould's *Ornithopus*. Both need confirmation.]
- †*ONOBRYCHIS ONOBRYCHIS* (L.). Warboys, FRYER; Wansford.
- †*VICIA DASYCARPA* Ten. Farcet, BIRD.
- †*V. SATIVA* L. Chesterton, HUNTLY; etc.
- LATHYRUS NISSOLIA* L. Already recorded, but new locality at Godmanchester, HUNNYBUN; Stibbington.
- PRUNUS INSITITIA* L. Thurning, 1878.
- P. SPINOSA* L., var. *MACROCARPA* Wallr. Buckden, HUNNYBUN.
- †*P. DOMESTICA* L. Buckden, HUNNYBUN; Ramsey, etc.
- SPIRAEA ULMARIA* L., var. *DENUDATA* Boenn. Wood Walton.
- RUBUS COLEMANNI* Blox. Wood Walton, HUNNYBUN and DRUCE.
- R. ECHINATUS* Lindl. Monks Wood.
- R. ANGLICANUS* Rogers. Monks Wood, 1925.
- R. CARPINIFOLIUS* Weihe. Holme, 1925.
- R. DUMETORUM* W. & N. Ripton Wood, 1925.
- POTENTILLA ANSERINA* L., var. *NUDA* Gray. Port Holme; Earith.
- P. PROCUMBENS* Sibth. Monks Wood, 1908; Ripton.
- †*P. NORVEGICA* L. Holme Fen, 1899, HUNNYBUN; Wood Walton.
- †*POTERIUM POLYGAMUM* W. & K. St Neots railway, 1912.
- ROSA ARVENSIENSIS* Huds., var. *GALLICOIDES* Baker. Archers Wood, HUNNYBUN; Winnington.
- R. SYSTYLA* Bast. Already recorded. Upton Wood. Var. *GARROUETHI* (P. & R.). Buckden, 1910, HUNNYBUN.
- R. DUMALIS* Bechst., var. *INSIGNIS* (Rouy). Winnington.
- R. DUMETORUM* Thuill. Luton, 1911. Var. *CALOPHYLLA* Rouy. Near this at Upton.
- [*R. FRONDOSA*, *R. MARGINATA* and *R. ARVATICA* of the Lintons' list need verification.]
- PYRUS MALUS* L., var. *MITIS* Wallr. Brampton Wood, 1907, HUNNYBUN.
- †*P. COMMUNIS* L., var. *PYRASTER* (Bor.). Brampton Wood, HUNNYBUN.
- †*P. ARIA* Ehrh. Planted at Alwalton.
- P. TORMINALIS* Ehrh. Paxton & Monks Wood, HUNNYBUN.
- †*P. AUCUPARIA* Ehrh. Doubtless planted. Brampton, RAYNOR.

CRATAEGUS MONOGYNA Jacq., var. LACINIATA Wallr., var. INCISIFOLIA Druce, var. QUERCIFOLIA Loud., and var. SPLENDENS Druce. Ramsey. × OXYACANTHOIDES. Ramsey; Monks Wood.

†RIBES UVA-CRISPA L. Stibbington.

†R. RUBRUM L. Water Newton.

SEDUM ALBUM L. Elton.

CALLITRICHE STAGNALIS Scop. Wood Newton, 1876. Var. PLATYCARPA (Kuetz). Paxton.

C. INTERMEDIA Hoffm. Oakley Dyke.

EPILOBIUM ANGUSTIFOLIUM L. An increasing species, Monks Wood, 1898, HUNNYBUN; King's Ripton, etc.

†OENOTHERA BIENNIS L. Yaxley, DIX.

CARUM SEGETUM Benth. Millbank, Godmanchester, 1901, HUNNYBUN. Newbould's record he afterwards thought to be wrong.

†C. PETROSELINUM B. & H. Elton.

PIMPINELLA SAXIFRAGA L., var. POTERIIFOLIA Wallr. Orton, HUNTLY. Var. DISSECTA With. Orton, HUNTLY.

†PETROSELINUM SATIVUM B. & H. Elton.

OENANTHE CROCATI L. Brampton, RAYNOR; Yaxley, BIRD. I have seen neither specimen.

†FOENICULUM FOENICULUM (L.) Karst. Relic of culture, Yaxley, HUNTLY.

ANGELICA SYLVESTRIS L., var. DECURRENS Wallr. Water Newton.

ADOXA MOSCHATELLINA L. Brampton, Rev. G. H. RAYNOR.

SAMBUCUS NIGRA L., var. LACINIATA L. Earith; Crossfield.

GALIUM ERECTUM Huds. Wood Walton. With it the hybrid with VERUM. See *Rep. B.E.C.* 332, 1908. It remains constant in cultivation.

VALERIANA OFFICINALIS L. Upton Wood.

†ERIGERON CANADENSE L. Godmanchester, 1900, HUNNYBUN.

ACHILLEA MILLEFOLIUM L., var. CONSPICUA Druce. Orton.

†CHRYSANTHEMUM PARTHENIUM Bernh. Elton.

†MATRICARIA SUAVEOLENS Buch. Fletton.

SENECIO AQUATICUS Hill, var. PENNATIFIDUS Gren. & Godr. Earith.

S. SYLVATICUS L., var. AURICULATUS Mey. Holme Fen, HUNNYBUN.

S. VULGARIS L., var. MULTICAULIS (Trow) and var. PRAECOX (Trow). Godmanchester, 1900, HUNNYBUN. Var. ERECTUS (Trow). Ramsey.

- [*S. PALUDOSUS* was planted at Wood Walton with *Sonchus palustris* by the Hon. N. C. Rothschild. The latter has spread rapidly.]
- ARCTIUM NEMOROSUM* Lej. Wood Walton, etc.
- CARDUS NUTANS* × *ACANTHOIDES*. Alconbury.
- CIRSIUM ARVENSE* × *LANCEOLATUM*. Orton, HUNTLY.
- C. ARVENSE* Scop., var. *MITE* Koch. Wood Walton. †Var. *SETOSUM* (Meyer). Offord Mills, 1902, HUNNYBUN.
- †*MARIANA MARIANA* Hill. Godmanchester.
- CENTAUREA NIGRA* L., var. *NEMORALIS* (Jord.). Home; St Neots.
Var. *OBSCURA* (Jord.). Lufford.
- †*C. JACEA* L. Abbott's Ripton railway, 1903.
- †*C. CALCITRAPA* L. Brickyard, Farcet, BIRD.
- †*C. SOLSTITIALIS* L. Godmanchester, 1897, HUNNYBUN.
- CREPIS BIENNIS* L. Wansford, 1878.
- C. CAPILLARIS* Wallr., var. *ANGLICA* Druce & Thell. Earith; Fletton.
- HIERACIUM BOREALE* L. Huntingdon, Dix. Var. *CALVATUM* F. J. H. Brampton, 1901, HUNNYBUN.
- H. UMBELLATUM* L. Yaxley, 1888, HUNTLY.
- LEONTODON AUTUMNALIS* L., var. *SORDIDA* Bab. Water Newton.
- TARAXACUM FASCIATUM* Dahlst. St Neots.
- T. TENEBRICANS* Dahlst. Fletton.
- T. LACISTOPHYLLUM* Dahlst. St Neots.
- T. NAEVOSUM* Dahlst. Godmanchester.
- T. ANGLICUM* Dahlst. Port Holme.
- SONCHUS ASPER* Hill, var. *INTEGRIFOLIUS* Lej. Orton, etc. Var. *PUNGENS* Bisch. St Neots.
- S. OLERACEUS* L., var. *TRIANGULARIS* Dum. Alwalton, etc. Var. *CILIATUS* Lam. Stranground, etc.
- †*TRAGOPOGON PORRIFOLIUS* L. Completely naturalised and abundant, Fletton brickyards.
- CAMPANULA RAPUNCULOIDES* L. In some quantity in arable soil, Wood Walton.
- PRIMULA ELATIOR* Jacq. Gransden Wood, RAYNOR. See Miller Christy in *Journ. Linn. Soc.* 185, 1897.
- LYSIMACHIA VULGARIS* L., var. *MACULATA* Druce. Alwalton.
- L. NEMORUM* L. Yaxley, BIRD; Alwalton, NEWTON. But it needs confirmation as a native plant of the county.

†VINCA MAJOR L. Charleston.

[GENTIANA CAMPESTRIS L. is given from Alconbury, in Mrs Newton's list, but confirmatory evidence is needed.]

MENYANTHES TRIFOLIATA L. Alconbury, Mrs NEWTON.

†SYMPHYTUM PEREGRINUM Ledeb. St Neots.

†BORAGO OFFICINALIS L. Somersham, NEWBOULD.

†LAPPULA LAPPULA (L.) Druce. Yaxley, BIRD.

LYCOPSIS ARVENSIS L. Orton, HUNTLY.

†CUSCUTA TRIFOLII Bab. Thurning, 1877.

†ATROPA BELLADONNA L. Elton Churchyard, PEIRCE.

†DATURA STRAMONIUM L. Orton, HUNTLY.

†LYCIUM CHINENSE Mill. Chesterton.

†FRAXINUS EXCELSIOR L., var. HETEROPHYLLA. Eynesbury, 1873,
S. H. PAYNE.

VERBASCUM NIGRUM L. Stibbington, native.

LINARIA MINOR Desf. St Neots railway, 1908.

†L. REPENS Mill. St Neots, 1908.

†L. PURPUREA Mill. Elton.

†L. CYMBALARIA Mill. Ramsey, etc.

†ANTIRRHINUM MAJUS L. Ramsey Abbey.

VERONICA AQUATICA Bern. Ramsey; Wansford.

EUPHRASIA STRICTA Host. Wood Walton. So named by Lindman.

E. NEMOROSA Pers. Holme.

BARTSIA ODONTITES Huds., var. VERNA. Buckden, HUNNYBUN.

RHINANTHUS STENOPHYLLUS Schur. Holme Fen, 1879, FRYER.

OROBANCHE MAJOR L. (ELATIOR). Alconbury, Mrs NEWTON. Sp.
non vidi.

UTRICULARIA MAJOR Sch. Godmanchester, 1911, HUNNYBUN.

MENTHA VERTICILLATA L., var. RIVALIS (Baker). Wansford.

SATUREIA NEPETA Scheele. Orton, 1851, HUNTLY.

PRUNELLA VULGARIS L., var. NEMOROSA Beg. Upton.

†STACHYS ARVENSIS L. and †S. ANNUA L. Chamber's Dole, BIRD.

PLANTAGO MAJOR L., var. INTERMEDIA (Gil.) Syme. Fletton; Wood
Walton, etc.

CHENOPODIUM RUBRUM L., var. BLITOIDES Wallr. Huntingdon,
HUNNYBUN.

†C. OPULIFOLIUM Schrad. Fletton.

†C. VULGARIS L. Huntingdon, HUNNYBUN.

- ATRIPLEX DELTOIDES Bab. Water Newton, 1876.
 POLYGONUM PETECTICALE (Stokes) Druce. Ramsey, 1908.
 P. MINUS Huds. Huntingdon.
 P. AEGUALE Lindm. St Neots, 1912.
 × RUMEX WEBERI Fisch.-Benz. Earith.
 × R. ACUTUS L. Earith; Fletton.
 †FAGOPYRUM FAGOPYRUM (L.) Karst. Orton, 1857.
 EUPHORBIA AMYGDALOIDES L. Alconbury, NEWTON; Brampton.
 HUNNYBUN.
 †E. CYPARISSIAS L. Yaxley railway, HUNNYBUN. This may be *vir-
gata*.
 †BUXUS SEMPERVIRENS L. Alwalton.
 †MERCURIALIS ANNUA L. Yaxley, BIRD.
 ULMUS GLABRA Huds. Stibbington.
 × U. VEGETA Lindl. Ramsey, 1908.
 × U. MAJOR Sm. Stilton, etc.
 †U. WHEATLEYI = *U. minor* Mill., var. *sarniensis*. Connington.
 U. CARPINIFOLIA Bord. (NITENS). Godmanchester, HUNNYBUN; El-
ton, 1908. Var. HUNNYBUNI Moss. Huntingdon, HUNNYBUN.
 U. PLOTII Druce (*U. MINOR* Henry, not of Miller. *U. SATIVA* Moss,
not of Miller). Norman Cross, etc.
 PARIETARIA RAMIFLORA Moench, var. FALLAX Gurke. Huntingdon,
HUNNYBUN.
 BETULA ALBA L. Holme Fen, 1899, HUNNYBUN.
 B. PUBESCENS Ehrh. Wood Walton, HUNNYBUN.
 †CASTANEA CASTANEA (L.) Karst. Alwalton.
 †QUERCUS CERRIS L. Large planted trees near Elton.
 †FAGUS SYLVATICA L. Planted at Alwalton.
 SALIX FRAGILIS L., var. DECIPIENS (Hoffm.). Wood Newton.
 S. ALBA L., var. CAERULEA (Sm.). Elton, etc.
 × S. VIRIDIS Fries. Ramsey, etc.
 †S. DAPHNOIDES Vill. Brampton, HUNNYBUN.
 S. PURPUREA L., var. LAMBERTIANA (Sm.). Godmanchester, HUNNY-
BUN.
 S. VIMINALIS L., var. LINEARIFOLIA Wimm. Wood Walton.
 × S. SMITHIANA Willd. Water Newton, 1877.
 S. CAPREA × CINEREA. Huntingdon, HUNNYBUN.
 S. CINEREA L., var. OLEIFOLIA (Sm.). Huntingdon, HUNNYBUN.

- S. AURITA* × *CINEREA* × *CAPREA*. Ufton.
S. AURITA × *CINEREA*. Holme.
S. AURITA L. × *VIMINALIS* L. Holme, LINTON.
 †*POPULUS NIGRA* L., var. *BETULIFOLIA* Torrey. Huntingdon, HUNNYBUN.
 †*P. SEROTINA* Hartig. Common, Wood Walton, etc.
 †*P. CANADENSIS* Moench. Huntingdon.
 †*P. TACAMAHACCA* Mill. Huntingdon, HUNNYBUN.
 †*P. ITALICA* Moench. Ramsey, etc.
HELLEBORINE PALUSTRIS Schrank. Holme Fen, HUNNYBUN.
ORCHIS INCARNATA L. Wood Walton, 1908.
O. FUCHSII Druce. Stibbington; Alconbury, etc.
O. PRAETERMISSA Druce. Wood Walton.
IRIS FOETIDISSIMA L. Washingley; Folkswood, 1873.
 †*NARCISSUS MAJOR* Curt. Between Norman Cross and Stilton, HUNTLY.
 †*LILIUM MARTAGON* L. Plantation, Buckden, HUNNYBUN.
 †*FRITILLARIA MELEAGRIS* L. Brampton, Mrs KING.
COLCHICUM AUTUMNALE L. Monks Wood.
ACORUS CALAMUS L. Nene side.
ALISMA PLANTAGO-AQ. L., var. *LANCEOLATUM* (With.). Oakley Dyke.
 Var. *LATIFOLIUM* Kunth. Ramsey.
POTAMOGETON PANORMITANUS Biv. Near Ramsey.
P. TRICHOIDES C. & S. Ramsey. × *PUSILLUS* = *P. FRANCONICUS* Fisch. Near Peterborough.
CAREX ACUTIFORMIS Ehrh., var. *SPADICEA* (Roth). Wansford.
C. DISTANS L. Near Elton. A second locality for the county.
C. OEDERI Retz., var. *ELATIOR* And. Wood Walton.
C. VULPINA L., var. *NEMOROSA* Lej. Water Newton.
 †*SETARIA VIRIDIS* Beauv. Huntingdon, HUNNYBUN.
 †*PHALARIS CANARIENSIS* L. Orton, HUNTLY.
ALOPECURUS PRATENSIS L., var. *CAESIA* Richt. Upwood.
PHLEBUM PRATENSE L., var. *INTERMEDIUM* (Jord.). Wood Walton.
AGROSTIS PALUSTRIS Huds., var. *PROREPENS* (Koch). Earith.
 †*APERA SPICA-VENTI* Beauv. Huntingdon, DIX.
HOLCUS MOLLIS L. Holme, etc.
 †*AVENA STRIGOSA* Schreb. Wood Walton.
ARRHENATHERUM TUBEROSUM (Gilib.) Druce, Orton, 1878.

- PHRAGMITES PHRAGMITES (L.) Karst., var. EFFUSA (A. & G.). Piddle-
ley. Var. FLAVESCENS (Cust.) Druce. Ramsey.
- †CYNOSURUS ECHINATUS L. Godmanchester.
- KOELERIA GRACILIS Pers. Orton, HUNTLY.
- POA PRATENSIS L., var. SUBCAERULEA (Sm.). Stibbington, etc.
- GLYCERIA FLUITANS Br., var. PEDICELLATA (TOWNS.). Oakley Dyke.
- †G. DISTANS Wahl. Godmanchester.
- †BROMUS LEPTOSTACHYS Pers. St Neots.
- AGROPYRON REPENS Beauv., var. LEERSIANUM Gray. St Neots.
- †PINUS SYLVESTRIS L., †P. NIGRA Ait., †TAXUS BACCATA L., and
†LARIX LARIX Karst. are all planted at Alwalton.
- EQUISETUM PALUSTRE L. Oakley Dyke, etc.
- DRYOPTERIS ARISTATA Druce. Holme.
- CHARA HISPIDA L. Wood Walton.
- C. ASPERA Willd. Oakley Dyke.
- C. DESMACANTHA Gr. & B.-W. Ramsey.
- C. FRAGILIS Desv. Oakley Dyke.

NOTES ON SOME OF THE SEGREGATES OF ERODIUM
CICUTARIUM L'HÉRIT.

By E. GILBERT BAKER.

These notes deal only with forms occurring inland, the coast forms having been dealt with in a paper in the *Journal of Botany* in 1920, by C. E. Salmon and E. G. Baker.

- I. ERODIUM CICUTARIUM L'HÉRIT in Aiton Hort. Kew., ed. 1, vol. 2, p. 414, is founded on the *Geranium cicutarium* L. There is a specimen of this in the Linnean Herbarium and also in the Hortus Cliffortianus at South Kensington.

Linnaeus diagnoses it as follows:—*Geranium pedunculis multifloris, calycibus pentaphyllis, floribus pentandris, foliis pinnatis incisis obtusis.* Hort. Cliff. 314; Fl. Suec. 579; Mat. Med. 337; Roy. Lugdb. 352; Hall. Helv. 369; Dalib. Paris 208.

Geranium cicutae-folio, minus et supinum Bauh. Pin. 319.

Geranium supinum Dod. Pempt. 63.

Habitat: in Europae sterilibus cultis.

The type is a plant, therefore, with many-flowered peduncles, petals not spotted, longer than the calyx, and leaflets not incised to the midrib.

There are a number of plants which might be quoted as fairly presenting the type such as, for instance, Herb. J. E. Little, Hitchin, Herts, No. 497.

- II. The true *ERODIUM CHAEROPHYLLUM* Steud. (*Erodium dissectum* Rouy) is founded on *Geranium chaerophyllum* Cavanilles. Cavanilles gives a figure and description from which we gather the stem is erecto decumbent; leaves with long petioles, bipinnate, with pinnules acute; stipules ovate-acuminate; flowers umbellate, many-flowered; petals slightly longer than the calyx, orbicular, blue; beak of fruit 30-35 mm. long. The type comes from the neighbourhood of Paris. The great majority of the material so named does not conform with the character of the petals. Some of it more nearly resembles *Boraeonium* Jord.
- III. The true *ERODIUM TRIVIALE* Jord., of which there is material from Jordan at South Kensington, is a plant with stems erecto-decumbent; leaves with finely cut narrow acute segments; flowers many, pedunculate, 6-9 together; petals rose-purple, very unequal, unspotted; beak of fruit 35-40 mm. long. This is a not uncommon form.
- IV. *ERODIUM PALLIDIFLORUM* Jord., of which there are also specimens from Jordan at South Kensington, is a plant with many-flowered peduncles; leaves not incised to the middle; petals pale, longer than the calyx; beak of the fruit 35-45 mm. long.
- V. *ERODIUM PIMPINELLAEFOLIUM* Sibth. Fl. Oxon. 211 has many-flowered peduncles; leaves pinnate; leaflets pinnatifid; upper petals bimaculate.

It has been recorded from several English counties. Perhaps *E. praetermissum* Jordan is hardly distinct.

- VI. *ERODIUM PRAETERMISSUM* Jordan has diffuse stems; leaflets incised, pinnatifid; lobes oblong, not contiguous, nearly obtuse; peduncle 2-8 flowered; petals unequal, two upper spotted; stigmas deep purple-violet; carpels hairy with a nearly circular depression.

- VII. *ERODIUM BORAEANUM* Jordan has hairy, diffuse or ascending stems; leaflets oval-oblong, incised, pinnatifid, with obtuse lobes nearly contiguous; petals pale rose or whitish only, slightly longer than the calyx; stigmas pale.
- VIII. *ERODIUM COMMIXTUM* Jordan has diffuse stems with short white hairs; leaflets oval-oblong, incised, pinnatifid, with oblong not contiguous lobes; peduncle 4-6 flowered; petals of a beautiful red, unequal, oblong, longer than the calyx, two upper spotted; beak of fruit with fine hairs. The pedicels are rather long.

In the Herbarium these plants are very difficult of discrimination, and for their determination careful notes should be made of the colour and length of the petals, whether spotted or not, and also the colour of the stigmas in a fresh state.

ERODIUM CICUTARIUM.

Knuth in Pflanzenreich 53, heft. iv., 129, p. 271.

- (A) Pit of carpel not surrounded by a furrow. Fertile stamens with filament subdentate or suddenly enlarged at base.
- (a) Peduncles few flowered (2-3), more or less shorter than leaves.
 1. Very glutinous. Beak of carpel 15-20 mm. long.
E. glutinosum Dum.
 2. Slightly glandular or glutinous. Beak of carpel 25-29 mm. long.
E. dentatum Dum.
 - (b) 3. Peduncles many flowered (3-5), more or less longer than leaves.
E. neglectum Salm. & Bak.
- (B) Pit of carpel surrounded by a furrow. Fertile stamen with filament gradually enlarged at base.
4. Glandular Peduncles many flowered, leaflets broad.
E. Lebelii Jord.
 5. Eglandular Peduncles few flowered, leaflets narrow.
E. Ballii Jord.
- (C) Pit of carpel not surrounded by a furrow. Fertile filament subdentate or suddenly enlarged at base.
- (c) Peduncles (2-3) flowered, short.

CLAVIS TO FORMS OF CENTAUREA NIGRA.

By C. E. BRITTON.

Involucre not spinous.

†Capituli usually radiant and fruit not pappose.

1. *C. Jacea*, L.

Phyllary appendages entire or irregularly torn.

- a eu-jacea* (Gugl.).
Branches few, short; leaves elliptical-lanceolate.
- b jungens* (Gugl.).
Branches numerous, longer; appendages usually appressed, closely imbricate, laciniate or fimbriate.
- c angustifolia* Briq.
Branches as in *b*; leaves narrow; capitulum small; appendages entire or irregularly torn.
- d nemophila* (Jord.).
Differs from preceding in its globular capitulum; appendages appressed, fimbriate; leaves long and narrow.
- e subjacea* (Beck).
Leaves ovate-lanceolate or oblanceolate; capitulum ovoid-globular; appendages dark-brown, upper roundish, lower triangular, pectinate.
- f viretorum* (Jord.).
Leaves linear-lanceolate, capitulum globular; appendages with pale or silvery margins, fimbriate, and darker centres.
- g pratensis* Briq.
Appendages brown, lower pectinate with oval or lanceolate disks, upper laciniate with broader disks.

††Capituli usually not radiant and fruit usually pappose.

2. *C. nigra* L.

Phyllary appendages pectinate.

- a obscura* (Jord.).
Capitulum large, roundish; appendages black or blackish-brown.
- b surrejana* (C. E. B.).
Capitulum smaller, roundish, sessile or shortly stalked; stem leaves elongated, subequal.
- c Drucei* (C. E. B.).
Capitulum roundish; appendages brown, disks oval, teeth small, less filiform; leaves with small stipule-like lobes at base.
- d nemoralis* Gremli.
Capitulum ovoid, small; appendages brownish, teeth much longer than width of lanceolate disks.
- e microptilon* (C. E. B.).
Capitulum ovoid or ovoid-elongate, small; appendages linear-lanceolate, spreading or recurved.
- f Debeauxii* (C. E. B.).
Capitulum small; appendages with linear-lanceolate disks, appressed, not wholly covering phyllaries,

NOTE ON *SORBUS ARSENI* BRITTON.

By LOUIS ARSENE.

When residing at Saint-Pierre, one of the Miquelon Islands, South of Newfoundland, I collected in the Grande Miquelon, at the foot of a small isolated mount called Chapeau de Miquelon, a curious *Sorbus* related to *Sorbus fennica* Fries, native in Northern Europe, and to *Sorbus spuria* Pers., of garden origin, a supposed hybrid between *Sorbus aucuparia* and *Aronia melanocarpa*.

Mr Nathaniel Lord Britton, Director-in-Chief of the New York Botanical Garden, to whom the Miquelon plant was submitted, treated it as a new species, and named it *Sorbus Arsenii*. It is clearly an intermediate between *Sorbus americana* Marsh and *Aronia atropurpurea* Britton (*Aronia arbutifolia* Ell., var. *atropurpurea* Robinson), and is perhaps a hybrid of these two plants, which are common at Miquelon and very often grow together.

The leaves of *S. Arsenii* are usually pinnate below with 1-3 pairs of leaflets; some of the leaflets are decurrent as in *S. fennica* and some are quite free and of the same shape as those of *S. americana*; there are leaves that have an odd leaflet as is often the case in *S. spuria*, and the small, superior leaves are sometimes quite entire. The floral cymes are much smaller than in *S. americana*, and about the same size or a little larger than in *A. atropurpurea*, but the pedicels and calyx are not so tomentose as in the last-named plant. The Miquelon plant was, when I saw it, about six feet high. *Sorbus americana* is not, in Miquelon, higher than twelve feet, and rarely exceeds eight feet, and *Aronia atropurpurea*, though attaining, on the American continent, from twelve to fifteen feet, is usually in Miquelon a very small shrub, often prostrate, and when erect not more than one or two feet high.

As I had to leave the French colony unexpectedly, I could not study properly that *Sorbus* and see, for instance, if it gives fruit and reproduces itself from seed. My specimen was collected on the 25th of July 1902, and I left Saint-Pierre on the 17th July in the following year, without having had time to go back to Miquelon and see the locality again. Our steamer stopped for one hour at Chaleur Bay, Newfoundland, fifty miles North of Miquelon, on the

19th of July 1903, and I saw, about half a mile from the whale oil factory, two or three specimens of *Sorbus Arsenii*, but I did not see if the supposed parents grew in the vicinity as was the case at the Chapeau de Miquelon. In the last place, there were four or five individual plants of *S. Arsenii* not far from a bush of *S. americana*, and *Aronia atropurpurea* was growing in quantity in the swamps near by.

Since my departure from Saint-Pierre and Miquelon, twenty-two years ago, I tried several times, unsuccessfully, to find a correspondent willing and able to examine scientifically *Sorbus Arsenii*, particularly with regard to its relation with its supposed parents. There were no botanists in the Islands. I have just written to a friend who, I hope, will be able to settle the question of fructification of the plant, and to send me either seeds or living specimens.

Did ever an experimenter try to hybridise *Sorbus americana* and *Aronia atropurpurea*, and succeed in producing an intermediate plant? The experiment is worth trying. There are a good number of garden hybrids between plants of the different classes of *Pyrus*, *Aria*, *Sorbus*, *Aronia*, etc.

I wonder if *Aronia atropurpurea*—the plant growing in Newfoundland—is known in England. It is not recorded in the Kew List of Trees and Shrubs, and is not described in Bean's "Trees and Shrubs." Perhaps it is included in *Aronia arbutifolia*, which is represented, on this side of the Atlantic, by several forms or varieties, and, according to Mr Bean, is known under several names in gardens, and is often confused with *Aronia melanocarpa*, with which it has hybridised. The Miquelon plant seems to resemble the var. *pumila* (of *A. arbutifolia*) described by Loudon.

Dr Britton (*Ill. Flora*, ed. 2, 1913, ii., p. 290) considers *Aronia atropurpurea* as quite distinct specifically from *Aronia arbutifolia* proper. Its fruit is oval to globose and purplish black, whereas that of *A. arbutifolia* is pyriform and bright red. *Aronia atropurpurea* grows further north than *Aronia arbutifolia*, which does not reach Canada and whose northern limit is Massachusetts. It differs also very much from *Aronia melanocarpa* by the far greater pubescence of its cymes and leaves. I have specimens of *A. melanocarpa* collected by me near Montreal in 1905, and the leaves and the calyx and pedicels of flowers are glabrous or nearly so.

OBSERVATIONS ON *NYMPHOIDES PELTATUM*, *HYDROCHARIS MORSUS-RANAE*, AND *ELODEA CANADENSIS*
IN SUSSEX.

By J. GORDON DALGLEISH.

All these plants are to be met with in Sussex, occasionally growing in the same situation. *Nymphoides peltatum* is one of the rarest of British aquatic angiosperms. In West Sussex it has completely disappeared from its former haunt on Duncton Common, and is now only found on the lower pond in Petworth Park, where it may have been introduced. In East Sussex it grows sparingly in a few localities where marsh lands, intersected with numerous ditches, form the principal feature of the landscape. Once established and allowed to grow unmolested the growth is vigorous, covering in some places quite a large area of water. This luxuriant growth was noticed by the writer in the Thames Valley, also in India, where two closely allied species, *Nymphoides indicum* and *Nymphoides cristatum*, covered many tanks and ponds almost entirely. Here in Sussex, owing to constant ditch clearing operations during the winter months, *Nymphoides* has its growth considerably checked, and in some places, it is to be feared, it is only a question of time before this beautiful plant will be completely exterminated. It is unfortunate that, according to the rules of priority, the specific name of *peltatum* must stand instead of the much more appropriate one of *nymphoides*. For *Nymphoides*, so far as habits are concerned, is a water lily in miniature. Moreover, it agrees with the Nymphaeaceae in possessing the stellate idioblasts in the intercellular spaces of the petiole so characteristic of that order. Goebel found, in studying the allied species of *N. indicum*, that the long stalk given off from the rhizome appeared to bear both laminae and flowers. He showed, however, that this long stalk is the axis of the inflorescence, the short segment of leaf-stalk above the inflorescence being the petiole. (*Ann. du Jardin Bot. de Buitenzorg*, vol. ix., 1891, pp. 41-126.) The flowers appear well above the water and do not last for very long. To-day one blossom is out, but this will fade during the hours of darkness to be replaced next morning by another, and so on from day to day. During observations, carried out in the

late summer of 1925, the writer found the flowers visited by minute Dipterous flies, and the small dragon-fly, *Agrion puella*, frequently rested on them. The floating leaves have a somewhat crinkled appearance at the edges and occasionally turn upwards, forming a saucer shape. The fading leaves change to a reddish hue before final decay.

Hydrocharis Morsus-ranae, the Frog-bit, is sporadic in Sussex, being met with much more frequently in the eastern parts of the county than in the western. Flowering is not general and possibly depends a good deal on weather conditions. It was noticed that during the hot summer of 1925 the plant flowered freely in many places with that freedom so common with some of the Batrachian Ranunculi. The growth is always luxuriant, in certain places choking the ditches and forcing individual plants almost right out of the water. *Hydrocharis* in Britain, at any rate, would appear no longer to require sexual reproduction, depending entirely on vegetative reproduction. In some localities it remains, season after season, flowerless. This would also appear to be the case when grown under artificial conditions. The writer had, for some years, a sunk tub in the garden into which was introduced *Hydrocharis*. The plants never produced a single flower during the course of some years, though such vigorous vegetative reproduction took place as to make it necessary to thin out the plants very considerably. During the summer of 1925 no insects were observed to visit the flowers. The flower is extremely delicate, and at the end of a day's ramble suffers from confinement in the vasculum. Flowers with six petals are occasionally found, and Ray mentions having found double flowers, very sweet-scented, in the Isle of Ely. But this does not appear to have been noticed since his time. (Deaken, *Florigraphia Britannica*.) In the ditches, where the Frog-bit grew rampant, quite a considerable amount of heat was generated, and the water registered at 3 p.m. on a day when there had not been much sunshine, about 90 degs. Fahr. Plants brought home and placed in a vessel of water on August 9th, 1925, developed turions or "winter buds" on the 29th. Microscopic sections of these showed well-developed starch grains. The turions remained clinging to the stolons until early in October, when they became detached owing to the decay of the stolon, and sank to the bottom of the water. The

turions are of a dark green colour and resemble the leaf-buds, only, instead of rising above the water, remain submerged. With its vigorous growth it might be expected that *Hydrocharis* would be more widely spread than it is, for it cannot be called a common plant anywhere. The cleaning of ditches—its favourite haunt—destroys quantities of turions, and anyone who has seen how thoroughly some of the ditches in Sussex are cleared out will realise that under such conditions the Frog-bit has little or no chance of surviving in these places. There was one locality in West Sussex where the plant formerly grew abundantly, but not one can now be found as the result of the ditches being cleared. The water in which *Hydrocharis* grows is still, with practically no flow, and the turions have no opportunity of being carried to fresh situations except, perhaps, in times of severe floods.

Elodea canadensis, unlike *Hydrocharis*, is frequently found in waters with a considerable flow. The plant possesses such rapid powers of reproduction that the smallest piece is capable of sending out roots in the mud, wherever it may happen to rest. *Elodea* has not, as is the case with *Hydrocharis*, to depend alone on turions for perpetuation. In some ditches in West Sussex, where cleaning is rigorously resorted to, this does not appear to have any appreciable effect in checking the growth, and it is well nigh impossible to exterminate the plant. So far as observations in Sussex go, *Elodea* is very erratic in flowering, and hitherto only female flowers have been found. At Henfield, in West Sussex, *Elodea* was observed to flower freely during June 1922, the blossoms literally covering the surface of a still-water ditch. During 1923 and 1924 no flowers were found. Free flowering took place again in 1925 in a ditch in East Sussex.

EGYPT AND PALESTINE.

BY G. CLARIDGE DRUCE.

It did not appear unseemly that a botanist should celebrate his fifty-second "collecting" year and his seventy-fifth of actual age by making an expedition to the Holy Land, so, after paying a delightful visit in January to Stansteadbury to witness the phenomenally early flowering of *Conium*, and to see the beautiful Crocuses at Middleton in the garden of Mr T. A. Bowles, and to Westonbirt to enjoy once again the charming hospitality, and be dazzled by the wonderful display of Orchids in March, in company with my young friend, Mr T. Churchill, I set out for the East, travelling in a most comfortable wagon-lit compartment from Calais to Trieste. Then after a night's rest we got on board the luxurious Lloyd Triestino boat, Tevere, and in halcyon quiet and weather we set out for Alexandria, having on our way pleasant views of the Dalmatian coast, of the Albanian mountains, glimpses of Corfu, the Grecian coast, and Crete. We were so close to the latter that I was able to recognise some plants with the aid of a glass. The landing at Alexandria was not unduly troublesome, and we reached Cairo in time to have lunch at Shepheard's Hotel. In Cairo we saw the wonders from Tutankhamen's tomb, some most elegant alabaster vases even outvying in beauty the golden chariot and jewels. We saw honey over 3000 years old, and the dried wine-lees of the same date. We are indebted to Mr Denham for so kindly acting as cicerone to the Museum.

I had time to run out to Heliopolis and the desert country and to collect about a hundred species, seeing a hyena on the prowl and sand grouse on the wing. Among the plants noted were *Chrysanthemum Coronarium*, *Peganum Harmala*, *Sonchus oleraceus*. var. *triangularis* Dum., *Trifolium alexandrinum*, *Argemone mexicana*, *Carthamus tinctorius*, and *Chenopodium murale* as a very small leaved form. We then went up the Nile to Luxor in order to see the Temples of Karnac, Luxor, the Ramesium, and the Valley of the Kings and Thebes. Space, however, does not allow of a description of the Temples—already amply done. The pleasure of the visit

was greatly enhanced by the luxurious accommodation at the Winter Palace with its large and delightful garden. A couple of hoopoes perched on my balcony.

One of the features of the country on the Theban side of the Nile was the fields of *Papaver somniferum* which is cultivated for Opium. We saw it being collected by women and children. Several transverse incisions are made one day, and the next the exuded and partially inspissated juice is scraped off with a blunt knife. A strikingly beautiful grass is *Imperata cylindrica* with its large silvery spikes, but vegetation in this area is sparse. The barley fields were newly cut, and the sugar canes were being gathered, so it was an arid country at the entrance to the Valley of the Kings. The heat was so intense that we were glad to go into the subterranean regions to see the tomb of Amenophus II. of the 16th dynasty, which was opened in 1898. The colour paintings were brilliant, and his mummy was quite dignified and in excellent condition of preservation. The tomb of Seti I. (19th dynasty), which was opened by the Italian Balzanai in 1820, we also explored, but it had been despoiled of its treasures long before 1820. The tomb of Rameses VI. (12th dynasty) was also, with some others, inspected. After lunch, the temple of Der el Bahri (built by Queen Hatshepi) proved especially interesting owing to its vivid representations of plants. We had tea with the Egyptologist, Mr Davis, and saw tombs of less exalted people, that of a gardener among the rest. The sky, which had hitherto been cloudless, took on a duller tint, but there was no cloud. There were howling noises in the air as a sand-storm blew up, its gusts coming like blasts from a furnace, covering and blinding us with dust, so we had ignominiously to turn our backs to it and seek refuge in our carriage. The horses had a bad time as we crawled through the storm to the Nile. Fortunately the blasts came on our backs or we might have had to pass the night on the Theban plain. Indeed, some other travellers behind us did not reach Luxor till after midnight. Even the journey across the Nile was sensational. To our parched throats the iced lemon squash was a nectarial beverage. By the morning the storm had passed so we again crossed the Nile to visit the statues of Memnon, representing Amenhotep III., at the entrance to the great burying ground, which was an imposing feature in the scene. My friend, Canon Sayce, once

climbed up an all too short ladder on to the lap of the god and, on trying to descend, found himself in a queer fix, as he had to drop from the slippery knee on to the rung of the ladder. Had he missed it, the result must have been disastrous, as the distance to the earth is considerable. The Ramesium was most impressive, especially the gigantic fallen figure of granite, 70 feet high, now broken, which had been hewn out of the quarries near Assouan. It had been conveyed to the Nile, brought down the river, with all the difficulties of its navigation, and then dragged about seven miles to this place. One shuddered at the thoughts of the suffering of the slaves who had to do the manual labour involved in such a journey.

We also made an expedition to the Pyramids and the Sphinx ere we entrained in the evening for Kantara on the Suez Canal. Crossing it we got into our wagon-lit for Jerusalem. At Ludd, however, about six in the morning we had to change trains, but we were in Palestine and eagerly noting every plant we could see from the train. We entered Jerusalem by the Jaffa gate, being met there by our dragoman, who in the morning went with us to see the motor car we had engaged for our Palestine and Syrian expedition. I was so anxious to see the plants that we drove out to Bethlehem where, having seen the Church of the Nativity, the oldest church in the world, the site of the manger having been known for more than 18 centuries, and the spot, now occupied by a Franciscan Church, whence the Holy Family started on their flight to Egypt, many interesting species rewarded us.

The country round Jerusalem is arid and stony, almost grassless, but there are olive groves still existing, and a rampant growth of prickly pear on the slopes from the city walls, with *Hyoscyamus albus* and *avreus*, and a great variety of Crucifers, Boraginaceae Leguminosae, Compositae, and Labiatae. We had with us that excellent Flora by the Rev. G. E. Post, which contains the descriptions of 850 genera and 3500 species as compared with the British 560 genera and 2000 species. The area involved is, however, the most wonderful in the world, taking its historical associations, and its botanical, geological, and geographical features into account. The highest point of the Lebanon is 10,220 above, and the Dead Sea 1300 feet below, the Mediterranean. It comprises only about 50,000

square miles, or less than half that of the British Isles (England, 50,823; Wales, 7,362; Scotland, 29,819; Ireland, 31,760=119,764) which is evidence of the much greater richness of its flora, especially when one remembers that the plants have not been so intensively studied as those of the British Isles. The standard of species, too, is of a higher grade. Again the comparative paucity of the Gramineae, Cyperaceae and Juncaceae, which are so numerous in Britain, as against the brightly coloured families which are dominant in Palestine give to the country a glorious effect of colour which alas is too fleeting for the lack of humidity causes their flowering time to be short. During the greater portion of the year aridity and barrenness reign supreme. However, we were there when the flowers were in their glory. Around Bethlehem we noticed *Adonis* in variety, as also *Papaver Rhoeas*, but differing from British species, *Fumaria micrantha*, *Vogelia paniculata*, *Asperula arvensis*, *Odontospermum aquaticum*, *Veronica Cymbalaria*, *Podonosma syriacum*, *Bromus tectorum*, *Poa bulbosa*, *Capriola* and *Panicum sanguinale*.

Returning by Rachel's Tomb we had time to see the Church of the Holy Sepulchre, which indeed during our stay we daily visited and were present at the Easter Sunday Service. On Saturday I went to the Installation of the W.M. into the Chair of King Solomon—a very impressive ceremony performed in the Chapel of the Knights of St John, and at the banquet had the honour of responding to the toast of the Grand Lodge of England. The W.M. was Mr Mavrogodarto, and the I.P.M., the very popular Sir Gilbert Clayton. The building which most attracted us in Jerusalem was the magnificent Mosque of the Dome of the Rock, surely one of the six most striking temples in the world, dating from the seventh century. It was restored in 913, again in 1187 and 1327, the beautiful western doors being added in the sixteenth century. At this time (1561), too, were added the brilliant porcelain tiles which cover the dome from the window-sills upwards. The 36 glorious windows are probably of the same date. They render the interior somewhat dark, but they give a more dignified effect which is enhanced by the rich mosaics dating from the tenth century. The floor is covered with magnificent carpets. In the centre is the Sacred Rock, from which the Mosque takes its name—which is very near to, if not

actually on, the site of the temple of King Solomon. The Mosque stands in a spacious stone-paved square; the Threshing Floor from which good views are to be obtained not only of the Mosque but of the city and country round. In the interstices of the pavement grew *Lepidium perfoliatum*, *Bursa patagonica*, *Holosteum umbellatum*, *Lamarkia aurea*, *Polycarpon tetraphyllum* and *Spergularia atheniensis*. The Mosque both inside and out presented an air of delicious calm and rest, a place to which one could return again and again. A glorious day was spent in driving from Jerusalem down one of the arid waddis to the Dead Sea, a descent of about 3500 feet for the city stands over 2000 feet above sea level (Mt. Zion is 2535 feet) and the Dead Sea, 46 miles long by $9\frac{1}{2}$ miles broad in its greatest measurements (about 500 square miles), occupies a depression in which the water stands at 1300 feet below the level of the Mediterranean. It has no outlet although it receives the Jordan and half-a-dozen other streams. We left by the Jaffa Gate, but skirted round by the Damascus Gate and the Garden of Gethsemane, ascending the slope of the Mount of Olives and then turned to Bethany, situated in cornfields, and rapidly descended into the Wady el Hand and by the inn of the Good Samaritan. In one of the arid valleys an extraordinary Broom Rape (*Cistanche lutea*) attracted our attention. It was more than a foot high, very fleshy in consistence and of a pure lemon yellow. Eventually we reached the sea-level and drove over the rough sand to the water's edge. The characters of the water and of its aspect have been so often described that one need only say that of vegetation there is practically none. We drove over the sand, where the Rose of Jericho is to be found, for some distance till we reached the Pilgrim's bathing place in the Jordan, here a turbid stream with *Arundo Donax*, *Acacia Seyal*, *Zizyphus*, and *Tamarix* on its banks, and saw the crowd of pilgrims performing their not unneeded ablutions. We then drove on to Jericho, passing by Elisha's Fountain, where one has a memorable view of the Mountains of Moab and Gilead and the Dead Sea. Westwards is the Field of Temptation; in the east are Moab and Edom with Nebo and Pisgah soaring above them; northward the Jordan looked upon by Gilead and Bashan, while below us in the foreground is Jericho's green oasis which extends to Gilgal and the Jordan. Many were the plants we gathered in this limestone ground

Bryonia multiflora, *Ecballium*, *Pisum humile*, *Ononis Natrix*, *Fagonia glutinosa*, *Erucaria aleppica*, *Capparis galeata*, *Pluchea Dioscoridis*, *Filago spathulata*, *Hippocrepis unisiliquosa*, *Caylusea canescens*, *Ruta bracteosa*, *Euphorbia arguta*, *Chenolea arabica*, *Coronaria*, *Achillea micrantha*, purple *Echium* and *Salvia*, *Podonosma syriacum*, quantities of white flowered *Anthemis* and *Anacyclus* and *Caucalis dawcoides*, *Paronychia argentea* (which is used as tea) and *Scandix* were present. On the rocky slopes were glorious tufts of *Cyclamens* and the pale purple-flowered *Linum pubescens*, phlox-like in appearance. The large yellow flowered *Linum flavum*, the striking flowers of *Erodium gruinum*, and the pretty *Geranium tuberosum* were also present and very locally the Spider Orchis, *Ophrys sphegodes*. *Silene Atocion*, with its pretty flowers, was a good representative of the Caryophyllaceae as was *Saponaria Vaccaria*. Here, too, was *Silene conoidea* (quite different from the Jersey plant, so called). Locally we saw the showy *Althaea acaulis* which, like our *Cirsium acaule*, has a stemmed form, and *Althaea hirsuta*, *Lavatera cretica* and *punctata* were noticed. *Ononis Natrix* was quite beautiful. Among other plants were *Melilotus indica*, *Trifolium angustifolium* a beautiful species, *T. alexandrinum*, *T. stellatum*, *T. resupinatum*, *T. tomentosum*, *Circinnus circinnatus*, *Coronilla scorpioides*, *Trigonella lilacina*, *Securigera Coronilla*, *Lotus Tetragonolobus*, *Onobrychis Caput-galli*, *Vicia hybrida*, *V. lutea*, *Lens Lens*, *Lathyrus Aphaca*, *L. hierosolymitanus*, *Tordylium*, *Bifora testiculata*, *Gnaphalium luteo-album*, and the splendid dark crimson *G. sanguineum*, *Chrysanthemum segetum*, *Senecio vernalis*, *Calendula arvensis*, *Cirsium Acarna*, *Notobasis syriaca*, *Cruspinia*, *Lactuca saligna*, *Centaurea Verutum*, *Urospermum picroides*, *Crepis aspera*, with its snowy white pappus, *Campanula Rapunculus*, *Legousia Speculum*, *Cynoglossum pictum*, *Anchusa italica*, *Convolvulus althaeoides*, *Trixago Apula*, *Orobanche speciosa*, *Micromeria nervosa*, *Salvia Horminum*, *S. viridis*, *Teucrium Polium*, *Phlomis viscosa*, *Convolvulus siculus*, *Ruta Buxbaumii*, *Stachys neurocalycinum*, *Ajuga Chia*, *Gladiolus segetum*, *Smilax aspera*, *Asparagus acutifolius*, *Asphodelus fistulosus*, *Stipa tortilis*, *Avena sterilis*, *Echinaria capitata*, *Kochleria phleoides* and *Poa bulbosa*, a wonderful day, an Easter offering rich indeed.

The hotel was very comfortable and the view from the hill above such historic ground was especially beautiful in the evening light as it included Mount Tabor gilded by the sun. The Church of the Annunciation and the Virgin's Well were visited, and we passed through the narrow streets, with the carpenters' shops, little changed in character in the last twenty centuries. The next day we motored through most attractive scenes and scenery to Cana of Galilee and the Valley where the Crusaders met their final defeat by Saleh el Din near the Horns of Hattim, and then reached Tiberias, enjoying on the way a glorious prospect of the Lake and the distant hills, those on our left for miles being covered with pale blue *Echium* and *Anchusa*. We motored to the end of the Sea of Galilee, which is fourteen miles long by six miles wide, to where the Jordan issues, and found in the shallower places large quantities of *Ranunculus sphaerospermos*, identical with our Oxford plant. *Papyrus* grows by the Lake which was fringed for some distance with a luxuriant growth of *Oleander* then in full flower. Every few yards demanded a halt. Our chauffeur had been told by our Dragoman that we were a little mad about flowers, but his views were that little was not the word to use. The strikingly beautiful Umbellifer, *Artedia squamata*, with the flowers of *Tordylium* and the foliage of *Meum* was common, and there were bushes of the snowy white-flowered *Salvia spinosa*, the blue racemed *S. verticillata*, the striking tufts of *Morina persica* and *Linum strictum*, *Peganum Harmala*, a hybrid apparently of *Bursa rubella*, the noble *Acanthus syriacus*, *Bupleurum nodiflorum*, *B. protractum* gilding the ground with its yellowness, *Caucalis leptophylla*, *Phagnalon Tenorii*, *Veronica syriaca*, *Campanula hierosolymitanus*, *Trifolium agrarium*, *T. xerocephalum*, *T. clypeatum*, *Andropogon pubescens*, and the lovely grass, *Pennisetum asperifolium*. The view across the lake was very memorable. The cliffs down which the Gadarene swine rushed to their fate were shimmering in the distance, and later on in the evening under the clear starry sky—the scene was fairy like. An early start was made from Tiberias, to which a very reluctant good-bye was said, for what place is so linked up with tradition, or so remarkable for its delightful beauty, and for its extraordinary geologic and archaeologic interest. Our first visit was made to Capernaum, but many halts were made on

the way. In a marshy spot we met with *Lythrum meoanthum*, *Cyperus longus*, *Scirpus maritimus*, *Ranunculus muricatus* and *R. sardous*, also *Celsia*, *Anchusa undulata*, *Ononis pubescens*, *Melilotus messanensis*, *Medicago coronata* and *Aegilops ovata*. We stopped at Bethsaida and found about Capernaum many interesting species. We descended by a steep and bad road to the Jordan—the scene after we had left of a very bad motor accident. We turned sharply over the bridge, where it is said Jacob crossed the Jordan, and then up an equally steep ascent for the most part over boulders, as the track was in the process of making. The Jordan here is very near its source from the waters of Merom. By its side we saw *Trifolium resupinatum*, *T. alexandrinum*, *T. nervulosum*, *T. spumosum*, *Ononis pubescens*, and the hills stretching beyond us into Syria were blue with *Echium* and *Anchusa*, which showed their colour five or six miles away. We soon ascended to about 3000 feet and had lunch on a flowery plateau overlooking Lake Huleh with its pelicans and wild duck, and yellow and white water lilies. All about us in the arid soil were tiny plants of *Scleranthus verticillatus*, *Valeriana truncata*, *Thlaspi perfoliatum*, *Biscutella*, etc.

The time sped all too quickly, and we motored on to the Customs House near Caesarea Philippi, the modern Baniyas, where we were not unduly delayed, but were enabled to add about a dozen plants to our list. We then motored over that famous and immemorial highway to Damascus, meeting now some camels laden with provender under the care of sedate and stately Arabs, or passing by a Bedouin encampment, or a Circassian village, and having for a rampart on one side the long snow-crested Hermon on which grows the wild wheat. Vast cornfields were on either side, separated by low stone divisions and havings among the peaceful spears of corn many delightful flowers. Here we found *Psoralea Jaubertiana*, *Salvia spinosa*, *Hyacinthus comosus*, *Ornithogalum narbonense*, *Vinca libanotica*, *Hyoscyamus reticulatus*, *Phlomis Nissolii*, *Silene longipetala*, *Achillea Santolina*, etc. Then we could descry in the far distance the white minarets of that very ancient and celebrated city of Damascus, but the approach by road does not give the best idea of its beauty. We passed through miles of fruit trees—Apricot, Peach, Cherry, Fig, Mulberries, Plums, and Pears, growing beside the clear waters of Abana and Pharphar to the Syrian city which

was still reverberating with the Balfourian excitement. There we had a day or two sight seeing of Bazaars, the Street called Straight, the Tomb of Saladin, where we found *Lepidium perfoliatum* and *Bursa rubella*, the splendid Mosque where it is said John the Baptist's head is preserved in a golden casket. It was fortunate we saw the beautiful house and its contents as, since we were there, it has been destroyed by gun fire. At our hotel we met Lord and Lady Edward Gleichen who accompanied us on a journey to the Antilebanon where we found the beautiful *Gladiolus atroviolaceus*, *Allium neapolitanum*, *Ajuga orientalis*, *A. Iva*, *Onosma sericeum*, *Lamium moschatum*, *Androsace maxima*, the very pretty Umbellifer, *Chaetosciadum trichosperma*, *Fumaria arabica*, *Viola parvula*, *Silene conoidea*, *Alyssum montanum*, *Stachys graveolens*, etc. We also went to the hills above Salahighah whence a glorious view of the city is obtained showing the truth of the simile " a diamond set in emeralds " since the white minarets and buildings rise over a sea of foliage and the eye ranges over miles of green trees or fruit blossoms. And there was Hermon the proud with its snowy coronets. A very pleasant expedition was made to the Lakes where we got *Ceratocephalus falcatus* and all too soon came the time to depart for Baalbec by a pleasant road to Shtoura where we lunched and had some good Lebanon wine. There were coppices near in which many interesting plants grew. We found the strange looking but sweet scented *Arum palaestinum* and *A. hygrophyllum*. Our course then led between the Lebanon and the Antilebanon ranges, both attractive. In the upland fields we gathered *Leontice Leontopetalon*, a solitary Tulip, *T. Oculi-solis*, *Onosma giganteum*, *Anchusa strigosa*, *Ornithogalum narbonense*, *O. lanceolatum*, *Muscari comosum* and *M. racemosum*, and the remarkable *Prunus* (*Amygdalus spartiooides*), the nearly leafless branches being covered with pink flowers. Here and there were solitary storks slowly quartering the fields for animal food, and then, lighted up by the declining sun, the golden temples of Baalbec came into view, while the scent of Hawthorn came to us from some bushes near to the entrance of the town. At the comfortable hotel we had a peaceful time. The Temples, even after those of Karnac and Luxor, maintained their claim, and fully came up to our high expectations. All about them were rivulets of water and much interesting vegetation. *Roemeria*

hybrida grew on some wall tops. Near the stone quarries there is an immense block of stone, nearly sixty feet in height, not yet separated from its matrix where it was left unsevered 2000 years ago. In the fields near grew *Crambe Aucheri* and *orientalis*, *Aristolochia paecilantha*, *Taxiera glastifolia*, *Malcomia Chia*, *Caucalis leptophylla*, *Linaria chalepensis*, *Salvia acetabulosa*, *Phlomis viscosa*, *Holosteum linifolium* and *Legousia pentagonia*. Had time permitted (and why did not one make it permit?) one would have gone on to the "Rose red city half as old as Time," but alas our passage was booked so we motored on up the slopes of Lebanon, through delightful scenery, to the picturesquely situated town of Zahle built upon terraces on both sides of the steep gorge of the "Coldwater," a rushing mountain stream (like an alpine torrent) from the Lebanon. The inhabitants are mostly Christians. We took a walk up the gorge meeting in the vicinity of the town with *Barbarea minor*, *Bupleurum libanoticum*, *Kentranthus longiflorus*, *Phlomis chrysophylla*, *Ajuga Iva*, *Zizyphora capitata*, *Poa diversifolia*, var. *crassipes*, *Veronica syriaca*, *Centaurea Meryonis*, *Valerianella echinata*, *Galium judaicum*, *G. coronatum*, *Malcolmia africana*, *Cerastium dichotomum*, *Astragalus galilaeus*, *A. calichrous*, etc. The walk by the rushing stream was brought too soon to an end by a violent thunderstorm and torrential rain, which continued for some time. When we looked out from the window in the morning the country round was snow-covered, which promised a cold drive even if it did not prevent one from getting over the Lebanon Pass between Jebel Keneisch and Jebel el Baruk. However, we tried, and though the hair-pin bends on soft snow were not the safest of travelling methods, we pushed on through magnificent scenery and in intense cold until Mudeirij was reached where I got a bright yellow-flowered *Alyssum*. Just over the top of the col the snow was but little in evidence so we did some rock searching and saw in abundance the white-flowered *Arabis* of our gardens, *A. caucasicum* (*A. albida*). There too was *Barbarea minor*, *B. plantaginea*, *Aubretia libanotica*, *Lamium striatum* and probably *Cerastium inflatum*.

Here the scenery was sublime. We were amid snow peaks, and all about the lower hills were numerous villages some "perched like a swallow's nest on the eaves" of pointed hills,

while numerous pencilled valleys descended to the foot hills, and beyond glistened Beyrout bordering the purple wine-like sea. We had left behind us the biting blasts but our chauffeur and dragoman were obdurate about reaching the Cedars, as the snow was so deep, so we had to get something of our own back by very frequent descents from the car to the paradise of plants that were about us. What an immense variety there was! Myriads of Cyclamens and here and there the wonderful Labiate, *Eremostachya laciniata*, with its stems and pedicels as it were wrapped against the wind in the whitest of wool, and there were *Mollucella spinosa*, *Salvia hierosolymitana*, *S. Horminum*, *S. viscosa*, and *Orobus variabilis*. Rarely has one had a more delightful drive or a greater gathering of plants. From Beyrout we motored out to the gorge of the Dog River where there is a Roman aqueduct still bringing down water from the hills, its arches in some cases being against the cliff-side, and then they were filled with *Asplenium Capillus-veneris*. Here we found *Geranium purpureum*, *Orchis coriophora*, *O. pyramidatis*. *Orobanche lavandulacea*, *Briza minor*, while *Vicia peregrina*, *Isatis aleppica*, *Anthyllis tetraphyllos*, *Rosa phoenicea*, *Genistae*, *Cytisi*, and other bushy Leguminosae were in evidence, and there were Cisti and many Labiates, *Salvia hierosolymitanus*, *Pimpinella peregrina*, *Onosma frutescens*, *Trifolium clypeatum*, *T. pilulare*, *Filago spathulata*, *Ononis hirta*, *Vicia palaestina*, and *Teucrium lamiifolium*. From Beyrout we determined to drive along the coast to Haiffa by the way of Sidon, Tyre and Acre. The weather was glorious, the road for almost all of the way was in sight of the sea, and it was up and down rocky prominences, the French Corniche road as yet unspoiled. We passed by pleasant villages and olive and orange groves. The vegetation was ever varying, but always of interest. Sidon lies embowered in orange trees laden with delicious fruit and there were Lemons and Loquats also on sale. In some places there was a great quantity of the pretty Crucifer, *Ricotia Lunaria*, with its pretty bluish flowers and its ripe pods resembling those of Honesty. In other places there was a purple pall where *Limonium sinuatum* grew appropriately enough near that coast where the purple *Murex* was formerly obtained, and there were places silvery white as with hoar frost with *Paronychia argentea*, or in others covered with the velvety *Medicago marina*. We also gathered *Vail-*

lanthia hispida, *Biscutella Columnae* and *Enarthrocarpus arcuata*, of which but little was left but the silicles.

Tyre was also in the midst of Oranges and Palms. Here, on a headland, we got the curious *Plantago cretica*, as well as *Trifolium xerocephalum*, and *Centaurea arenosa*. We had passed by Sarepta where Elijah lodged, the tomb of St George, and several rivers before reaching the cheerful town. Leaving it by a hilly road we reached the great plain of Acre crossing the river Kishon. Taking to the sands, with the waves washing our wheels, we sped merrily along, seeing two huge dead turtles thrown up by the waves, and then reached Haifa nestling at the base of Mt. Carmel; a busy town, and what may some day be the chief feature in a great haven. We ascended Mount Carmel, 1810 feet high, amid a myriad of delightful plants. The air was redolent of Rosemary, Lavender, Cistus and Myrtle. A striking species was *Teucrium rosmarinifolium*, and there were *Stachys palaestina*, *Bupleurum Fontanesii*, *Lagoecia cuminoides*, *Satureia Thymbra*, *Valerianella discoidea*, *Linum flavum*, *L. pubescens*, *Rubia Oliveri*, *Spartium junceum*, *Salvia triloba*, *Campanula strigosa*, *Legousia Speculum*, *Lotus Tetragonolobus*, as well as masses of wild Hollyhocks. The view was most beautiful—the coast with its numerous headlands, the great plain of Esdraelon, the mountains of Samaria and Galilee, and in the distance the snow-topped ridge of Hermon. Afterwards we motored along the road towards Jaffa. This never-to-be-forgotten day fitly terminated our Palestine journey, and we retraced our way to Cairo, and then sailed from Alexandria to Venice, alighting for a short time at Brindisi, then en fête to welcome our Air Minister, Sir Samuel Hoare, who was on our ship. As a pleasant compliment to Britain the native Government sent an escort of seven seaplanes to Brindisi, where four more came out and did their spectacular evolutions in the air above and around us. The R.H. L. A. Amery, Bishop Gore, Lord and Lady Edward Gleichen, and Mr Howard Carter were fellow-passengers on the very pleasant journey, and after a fleeting glimpse at St Marks at Venice we entered the wagon-lit and journeyed straight through to Oxford, having had one of the most enjoyable—if expensive—journeys I have ever experienced.

NORWAY AND SWEDEN.

BY G. CLARIDGE DRUCE.

After motoring round northern Scotland in early August Mr and Mrs Williamson, Mr Churchill and I sailed from Hull to Oslo, and there Mr Williamson hired an eight cylinder Cadillac and chauffeur to drive us through Norway and Sweden. The season was a little more advanced than on our last visit. The drought had hastened on vegetation so much that the country was much less flowery than before. We drove from Oslo through pretty country to Honefoss and on to Fagernes, about 200 kilos, seeing on our way *Calla palustris* in good flower, and *Hieracium umbellatum* looking very ornamental and different in facies from our plant. *Anthemis tinctoria* is often an adventive plant following the railway. Then we drove through beautiful scenery by Gjovik on the lake to Lillehammer where there are some fine waterfalls, on to Otta, where we got *Nymphaea pumila*, Dombaas and through the Dovrefeld to Kongsvold. On this journey many of the rarest alpiners were noted, including *Arabis alpina*, *Arenaria uliginosa*, *Carex atrofusca*, *C. Lachenalii*, *C. alpina*, *C. cespitosa*, *C. atrata*, *C. pauciflora*, *Eriophorum alpinum*, *Gentiana suecica*, *G. lingulata*, *Phyllodoce caerulea*, *Capsella gallica*, *Cardamine bellidifolia*, *Lychnis alpina* and *Stellaria calycantha*. One may say that although *Sagina saginoides* was noticed in several places one could not find *S. scotica*. Kongsvold is over 3000 feet in altitude, and it was bitterly cold. The plants there had suffered much from the drought. A pretty full account was given in *Rep. B.E.C.* 786, 1922, of this area, and we saw most of the plants noticed then, including *Saxifraga cespitosa*, *S. cernua* (in good flower) and *Carex atrofusca*. *Poa laxa* grew close to the roadway, and the moors were a wonderful sight of alpine willows. *Salix glauca*, *S. lanata*, *S. hastata* and *Betula nana* were pre-eminent. *Aconitum septentrionale* was past its best, but the alpine Hieracia were in great show. The rare alpine, *Poa jemtlandica* Almq., was found in small quantity, also *Erysimum hieracifolium* and *Chaerophyllum sylvestre*, var. *angustisecta* Druce. Near Hjerkin grew *Gentiana islandica*, *G. lingulata*, *G. tenella*, *Poa arctica*, *Agropyron viola-*

ceum, *Poa alpigena*, etc. In the Valley of the Driva, as later on at Merok, I saw *Caltha radicans*, not hitherto recorded in the Norge Floras. There, too, was *Diapensia lapponica*. We had neither the time nor the energy to climb Snaehatter, which is a prominent object in the view from Kongsvold. We then retraced our way to Dombaas, and went down the Romsdell Valley to Aandalness, and to the Isfjorden for the glorious view. We saw the car driven down two planks to the small steamer only about as broad as the car was long, with the level of the water four feet below the pier. This being dexterously managed, we went to Vestnes and drove to Soholt where *Carex maritima* and *Arnica montana* grow. The car was again put on a boat to take us to Geiranger. There grew *Mulgedium* and *Saxifraga Cotyledon*, both over flower, but *Caltha radicans* and *Juncus alpinus* were obtained. We drove by Merok to the glacier-pass in glorious weather. The mountain slopes near the ice were covered with myriads of Hieracia, the alpine sections being well represented, and *Ranunculus glacialis*, *Gentiana nivalis*, *Veronica alpina*, *Agrostis borealis*, *Poa laxa* and *Silene acaulis* still in flower. Descending by the wonderful road we reached Hjelle and then followed along the lakes to Loen, gathering *Mentha gentilis*, a rare Norge plant, on our way. We had a glorious day at Loen, but obtained nothing new. *Epilobium collinum* was mostly over flower, but we saw much *Woodsia ilvensis* and *Asplenium septentrionale*. We drove 90 kilos up the glacier pass to Grotli where *Cerastium cerastioides* and *Gnaphalium norvegicum* were in profusion. The moors were covered with *Rubus Chamaemorus* in splendid fruit, and delicious it is when it is quite ripe.

We had a very long run from Grotli to Otta, and slept at Dombaas from the hotel of which a wonderful view is to be obtained. The next day we went over the Dovrefeld a second time and were enabled to gather a *Draba* which I noticed from the train three years before. It proved to be very robust *D. incana*. *D. rupestris* is much larger than the Ben Lawers plant. In the Driva Valley we found *Rumex arifolius* and *Veronica longifolia*, the latter quite naturalised on a hill slope. We reached Trondhjem in time for dinner, the scenery being delightful the whole way. Here we spent a day or so, and then started for Sweden by driving along the Fjord by Levanger (88 kilos) to Storlien, the border town. The border

summit is 850 m. above sea level. We at once began making a list of plants noticed. It was new country to me for, with the exception of Poland and Russia, all the other European countries have been visited. The first 100 species were a foretaste of what we saw for the next week or so. They included *Cornus suecica*, the bright red berries of which were a great ornament in the woods, *Linnaea*, *Pyrola secunda*, *Vaccinium Vitis-idaea*, *Gnaphalium norvegicum*, *Rumex arifolius*, *Saussurea alpina*, *Rubus saxatilis* and *Antennaria dioica*.

Near Foss we found *Gentiana suecica* in good bloom. Our way led through such vegetation till we reached Are where there is some cultivation. We found a very comfortable hotel—or rather several of them, under the same excellent management. We dined in one and slept in another, both scrupulously clean, with good attendance and food. This is true of almost every place we visited. Are is a great country for alpine work, especially the mountain Areskutan. Then we had over a 200 kilo drive through Jamtland. We passed by lakes and through spruce forests by Morsil to Ostersund, beautifully situated on the lake, seeing much *Betula nana* on our way. From an adjacent eminence the view comprises an area larger than the whole of Switzerland and more than twice that of Wales. Then we went on to Ange through wild country. Indeed at one time it seemed we should have to stay all night in the forest for the road had dwindled to a track. Here for the first time I saw *Sysimbrium araneosum*. Near Ange we saw plenty of *Carex cespitosa*, also *Lycopodium complanatum*, *L. annotinum* and *Juncus alpinus*. Then we journeyed 170 kilos by the river Ljungen, with a large electric power station worked by the side of the falls, passing into the desolate wilderness of Halsingsland, and by Lake Vaxman, we reached Ljusdal. *Lysimachia thyrsoflora* was common by the lakes and, as the dry season had much reduced the water, there was a foreshore attractive to visit, for *Ranunculus reptans* was abundant, *Elatine* (local), *Subularia aquatica*, in thousands, making a sward. It was rather remarkable that while *R. reptans* was so common, I did not see *Flammula* till about the ninth day. Keeping near the river we reached Bollnas passing through attractive scenery. From this place it is 200 kilos to Upsala. Through the trees of a spruce forest one could see a moor showing a

yellowish-green tint which demanded investigation. We found it fringed with *Ledum palustre* past flower, but fruiting in abundance. It was a sphagnum moor which the dry weather allowed one to walk on in safety. It seemed as if bushels of red currants had been scattered over its surface—this was fruiting *Oxycoccus*, and there was plenty of *Carex magellanica* and *C. limosa*, but the conspicuous yellow colour was due to fruiting spikes of *Scheuchzeria*, which was there in hundreds of thousands. One will never see such a sight again. *Andromeda Polifolia* and *Calamagrostis arundinacea* were frequent as in many other parts. We stopped at an important town Gafle, the oldest town in Norrland, with pretty public gardens. On our way we gathered *Campanula patula*.

Nearing Upsala the country became cultivated, and it was with some botanic thrill we entered the town of Linnaeus, a delightful old-world town situated in a level and fertile plain with the river Fyris flowing through its streets. There is a capital hotel, the Grand Royal. Close by is the great Gothic Cathedral (A.D. 1260-1435), where we saw the monument of the great botanist with a bas relief and the inscription "Carolo Linne, Botanicorum Principi amici et discipulo MDCCXCVIII." The Botanic Gardens were visited, in which we saw much of interest. In the University Library we were glad to be able to see in a conspicuous show case the copy of the "Dillenian Herbarium" with a suitable inscription which was sent by the University of Oxford to Upsala on the celebration of the bicentenary of Linnaeus. The courteous librarian pointed out its beautiful binding as it rested in the show case, which at my request he opened—and as I had it in my hand he remarked to my friend that I seemed interested in it—"Yes," was the reply, "you see he was one of its authors." It was a delightful city, and on one of the walks up to the Carolina Park we saw on a hillock *Silene nutans*, *Potentilla supina*, and *Artemisia campestris* within the confines of the city—plants which Linnaeus himself probably saw there. In another direction we also explored one of his favourite areas. There we saw a *Sedum*, his *S. Telephium*, which is quite different from the British plant. It was associated with a curious jumble—*Asplenium septentrionale*, *Artemisia campestris*, *Phleum Phleoides*, *Veronica spicata*, *Scleranthus perennis*, *Bromus erectus*, *Herniaria glabra*, *Filago montana*, *Anthemis tinctoria* and *Carlina vulgaris*. We

then drove on to Hammarby, the old dwelling-place of Linnaeus, now converted into a museum of things connected with the botanist, with some of his books and his clothes and his furniture. The garden contains such plants as Linnaeus grew there. Spreading on to the adjacent moorland was *Lilium Martagon* in fruit, and close by was *Centaurea Jacea* L., sub-sp. *angustifolia* Gugl. Not far away from Hammarby, on our way to Stockholm, was a wooded heath where there was a great quantity of the striking *Melampyrum nemorosum* with its beautiful contrast of orange-yellow and violet-blue blossoms. With it was *Pyrola secunda*. Through flatter country we motored to Stockholm where we were sumptuously housed at the Grand Hotel with its fine view of the harbour and of the Royal Castle opposite. Here we met our most esteemed honorary member, Emeritus Professor C. Lindman, who we were glad to see was recovering from his severe illness. We also made the acquaintance of Professor G. Sannerson, who added *Cerastium cerastioides* to the British Flora. He found it on Crossfell. The Botanical Institute is finely situated and splendidly equipped. There, too, we met Dr Dahlstedt, and in our hotel was Professor D'Arcy Thompson. Dr Lindman accompanied us on a delightful expedition to Saltsjobaden. There we gathered *Geranium bohemicum* and saw the leaves of the newly-described *G. deprehensum*, a recently separated species. We also saw *Arctium tomentosum* (which should be looked out for in northern Britain), *Sorbus suecica*, *Selinum carvifolia*, and *Anemone Hepatica*. Lindman also showed us two of his new Crataegi not as yet noticed in Britain, and we saw some delightful Dalecarlican children dances. We then determined to visit Dalecarlica and motored to Eukoping, Salan and Hedemora (about 200 kilos), where we got *Ajuga pyramidalis*, *Subularia*, *Juncus compressus*, *J. alpinus*, *Utricularia intermedia* and *vulgaris* and *Alchemilla pastoralis*. Then to Falun and to Rattvik, about 180 kilos. Falun is the chief town in Dalarna, celebrated for its great copper mines, worked as long ago as the 13th century. From them over fifty million pounds worth has been extracted. It is an extraordinary sight. On our way we got in Usgone Lake *Elatine*, *Limosella*, *Isoetes*, *Utricularia vulgaris*, *Herniaria glabra*, *Polygonum minus*, and *Nitella gracilis*. A quiet day was spent at the delightful hotel, Silkansborg, at Rattvik, at the head of the very large lake Siljjan in very pic-

turesque scenery. There we saw the small-flowered form of *Geranium sylvaticum*, *Galium erectum* x *verum*, *Polygonum viviparum*, *Cuscuta europaea* and *Salix pentandra*. From Rattvik we had a long drive of 228 kilos to Filipstad, passing through Ludvika on Lake Vessman, stopping for the night at Filipstad which is superbly situated.

Our last day in Sweden was spent in driving from Filipstad to Kill and Arvika on the Alga fiord, which is connected with Lake Vaner, and then to Charlottenburg, a delightful although very hilly journey, the switchbacks sometimes being very steep. Just before we reached our destination we saw some very fine specimens of the very beautiful fern *Struthiopteris*, also *Carex pallescens*, *Eleocharis acicularis* and *Alopecurus fulvus*. Leaving Charlottenberg in the morning, we passed the frontier and had a pleasing but uneventful journey into Oslo, where we had a very charming interview with Prof. J. and Mrs Holmboe at the delightful botanical gardens. These are splendidly equipped and there is a well-housed herbarium with laboratories.

EXPLANATIONS OF THE SALIX LIST IN THE LONDON CATALOGUE.

By JOHN FRASER.

As the compiler of the list and the comital numbers of the Salices in "The London Catalogue of British Plants," eleventh edition, I have been asked to explain the differences between my list and those of the Rev. E. F. Linton and "The Cambridge Flora." The list was written entirely as a simple means of classifying the species, varieties, forms and hybrids of a complicated genus in the herbaria of collectors, and with this object in view, the names of the parents of each hybrid or supposed hybrid are written in alphabetical order; the varieties and forms are also written alphabetically. Both parents of a hybrid may have been the seed-bearer in turn, but in each case the hybrid remains the same, and likewise the name given it. The alphabetical order of writing the names does not invalidate nor confuse the hybrid in any way, and if this were universally ob-

served it would sometimes prevent one and the same hybrid from being recorded or listed twice under the two names of the parents. The Rev. E. F. Linton followed the alphabetical order in his list in the tenth edition of "The Catalogue," so I make no claim to have invented it. If this fact is borne in mind, the differences between his list and mine will mostly disappear.

Some explanation is needed to account for the differences between the order observed in his "Monograph of the British Willows," and the list in "The London Catalogue;" but the author himself explains the more important differences in his book. With regard to the comital numbers, some figures appear within brackets, which are meant to indicate either that the county records are doubtful or that the Willows have been planted, or that the species are known or believed to be extinct in some counties. *S. daphnoides* and *S. pruinosa* are enclosed within parentheses to indicate that they are not natives of Britain. E. F. Linton omits *S. pruinosa* from his Monograph, or may consider it only a form of *S. daphnoides*; but it was the narrow-leaved Willow that was recorded from Great Ayton, Cleveland, and Wensleydale, North Yorkshire, by Messrs Ward, Mudd and J. G. Baker, in all the British Floras published between 1855 and 1874. *S. acutifolia*, Willd. was the name most often used, but various others have been given. Wimmer, "Salices Europaeae," p. 9, adopts *S. pruinosa* Wendland (1830). This makes a large spreading bush with long, slender twigs that bend or droop downwards with the weight of their own foliage. The leaves are always very narrow, linear-lanceolate, attenuate to a slender point, and regularly glandular-serrate or glandular-crenate. The bark in winter is reddish-chestnut or blackish-violet; and in summer is densely pruinose, almost white. *S. daphnoides* grows into the form of a tree 20-35 feet high, with much shorter twigs, more torulose, densely set with short, oblong or oblong-lanceolate leaves in summer, and with catkins in spring; the twigs are green, or reddish and less pruinose than in the other species. It is difficult to preserve these Willows anywhere near London, to which the public has access, on account of the beauty of the silky catkins, between November and March.

E. F. Linton has raised *S. Hoffmanniana* Sm. from the rank of a variety in the previous Catalogue to that of a sub-species under

S. triandra; and lowered *S. decipiens* Hoffmann to the rank of a sub-species under *S. fragilis* L. $\times S. stipularis$ and $\times S. acuminata$ are placed under *S. viminalis*, which was obviously one of the parents. The other is not so clear, though one can readily guess that the large size of the leaves and catkins of $\times S. acuminata$ is due to *S. Caprea*, while the striae under the bark would indicate *S. cinerea* as well. If I were to hazard a guess it would be such a cross as (*S. Caprea* \times *viminalis*) \times (*S. cinerea* \times *viminalis*), leaving out of the question the seed parent in either case. $\times S. stipularis$ and $\times S. acuminata$ are therefore just where Smith left them at the beginning of the nineteenth century, except that the \times denotes that they are hybrids and not true species. Another common Willow, frequently met with, is *S. babylonica* L., also described in the Monograph above mentioned, but no one would mistake this for a British species. Hybrids between it and *S. fragilis* and *S. alba* occur, but they also are planted.

With the above alterations and eliminations the British Willows just number eighteen species, many hybrids, a few varieties and forms, the two latter of which were described by Smith and Linnaeus as species. Dr F. B. White said, "Since, theoretically, every species of *Salix* can hybridise with every other species, the 18 British species . . . should produce about 144 binary hybrids." Only 57 of these are recorded for Britain; and 11 ternary hybrids. Although Linnaeus, Smith and Wulfen described the forms of *S. repens* as species, these have now been reduced to forms. Smith's so-called species can be matched at the present day with care in getting representative specimens, and I have listed them because enthusiastic collectors desire to add them to their herbaria.

The eighteen British species follow each other exactly in the sequence given by E. F. Linton in his Monograph. The hybrids that follow *S. purpurea* in the Monograph differ from the order given in "The London Catalogue." This was due to the author's desire to keep all the Synandreae together for the convenience of description, since all of them have the stamens connate or partly so. For a similar reason, he kept all of the hybrids of *S. viminalis* with the Capreae (*S. aurita*, *S. Caprea* and *S. cinerea*) together on account of "their close alliance and general resemblance." In one case I differ from him in regarding *S. ferruginea* G. Andersson as

of different parentage from *S. aurita* × *viminalis*. I have seen numerous plants of this Willow, so carefully described by Smith as having the "leaves thin, lanceolate, with wavy crenatures and small teeth; minutely hairy on both sides . . . leaves pale green, greyish and often rusty beneath." The thin and very short pubescence, as well as the inclination to become rusty beneath induce me to look to *S. cinerea* for these characters, and to name the hybrid *S. cinerea* × *viminalis*. Wimmer makes *S. ferruginea* Forbes a synonym of this hybrid. I have seen specimens named *S. ferruginea* by Leefe that were *S. aurita* × *viminalis*, so it is easy to make a mistake by one who has not seen the two. The last-named hybrid has the under surface of the leaves silky with a dense covering of hairs, loosely adpressed.

A third breach of the alphabetical sequence in the Monograph occurs amongst the hybrids of the Capreae with *S. Andersoniana*, previously known as *S. nigricans* Sm. The descriptions were all in type and in position, before the author decided to eliminate the last name, as a *nomen confusum*. This was a step in the right direction, though it played havoc with the alphabetical order of the names. Smith described *S. nigricans* from male specimens brought from Norfolk and Hereford, where they do not now exist. I have seen Smith's ♂ specimens Nos. 2 and 3 from Mr Crowe's garden in 1800, and they appeared to me to be *S. Andersoniana* × *phylicifolia*, and possibly cultivated exotics. These ♂ specimens he combined with ♀ specimens from Lapland and so described his *S. nigricans*, though the two forms of leaves were different. In trying to match *S. nigricans* Sm., as figured in "Eng. Bot., ed. 2, pl. 1368," in the Highlands I found I had got the hybrid *S. Andersoniana* × *Caprea* × *phylicifolia*. The name, *S. Andersoniana* Sm. gets one out of the difficulty, as the type of the species, since drawings, description and specimens leave no doubt as to the identity of the type. Some sixty or more forms of *S. nigricans* have been described as species or otherwise. The belief is that most of the Highland forms described by Smith as species are now extinct, and that their places are taken by an equal or greater number of others. Many of them consisted of forms of that protean hybrid *S. Andersoniana* × *phylicifolia*. Where the two species grow together in considerable numbers it is difficult to find either of them pure. Willows being ento-

mophilous, and these two species being closely related and flowering contemporaneously, insects, especially bees, cross and mix them up in every conceivable way. The best way to get over this difficulty is to get acquainted with the characters of *S. Andersoniana* and *S. phylicifolia* as defined by the Scandinavian salicologist, S. J. Enander, and E. F. Linton. All bushes or specimens that mix or confuse these characters are best classified under *S. Andersoniana* × *phylicifolia*.

Although I have ♂ and ♀ specimens of five varieties or forms of *S. triandra* L., I have not burdened the list with them. They are enumerated and named by Andersson. They include the subspecies *S. Hoffmanniana* (Sm.). In introducing *S. triandra* × *viminalis* b. *Trevirani* (Spr.) to the list of British Willows, I have been actuated by the much greater length and width of the leaves of the Hereford and Staffordshire specimens, as well as those of an old Surrey bush, as compared with the small and narrow leaves of the form a. *hippophaeifolia* (Thuill.). The former is always ♂ in my experience, with stout catkins; the latter always ♀ with slender catkins. Other examples of one sex only in Britain are sub-species *S. decipiens* (Hoffm.) ♂, *S. undulata* Ehrh. ♀, and × *S. acuminata* Sm., ♀. *S. hexandra* Ehrh. is now stated to be the hybrid *S. alba* × *fragilis* × *pentandra*, so that I have put *S. Ehrhartiana* Sm. in its place for the British *S. alba* × *pentandra*. The forms placed under *S. purpurea* as f. *Lambertiana* (Sm.) and f. *Woolgariana* (Borr.), are, in my opinion, identical, as I have proved, by collecting both forms from the same bushes, and by cultivation. I have also seen them as gathered by another collector from one and the same bush. The oblong leaves of f. *Lambertiana* are the product of stooled bushes, or strong shoots from the base of tall bushes. This is the older of the two names. The cuneate-obovate leaves of f. *Woolgariana* are the product of old or adult bushes. *S. viminalis*, b. *intricata* Leefe is fairly frequent in Surrey, but unimportant. So far as I have seen, the narrow or linear leaves of *S. viminalis*, c. *linearifolia* are of doubtful constancy, because bushes or small trees that are allowed to get old produce leaves of decreasing width; yet many people collect them. Where names given by F. B. White or Andersson are to be excluded from certain hybrids, the alterations are due to the criticisms of S. J. Enander and E. F. Linton,

DIFFERENCES FROM THE CAMBRIDGE FLORA.

In the above work it is assumed that *S. undulata* Ehrh. and *S. lanceolata* Sm. are not synonymous, the former being placed under *S. alba* × *triandra* and the latter under *S. triandra* × *viminalis*. The glabrous ovary of × *S. undulata* is against the theory that *S. viminalis* had any part in the parentage. Ehrhart described his plant as having hairy ovaries, but his description must have been faulty since they are glabrous in his own specimen. The actual size of the leaves of a dried specimen cannot be depended upon to establish a real difference between two Willows, since they are always the victims of their immediate surroundings, yet "The Cambridge Flora" lays great stress on the size of the leaves of Smith's *S. lanceolata* as compared with Ehrhart's *S. undulata*. Plants of *S. lanceolata* on the banks of the Thames can furnish twigs with smaller leaves than those given for *S. undulata*, and longer ones than those mentioned for *S. lanceolata*. *S. hippophaefolia* Thuill. has pubescent ovaries, leaves that are pubescent at first, with obscurely serrulate or crenulate leaves and quite different stipules from *S. lanceolata*, so that the two could scarcely have had the same parentage. Even Smith himself, in his mature judgment, admitted that *S. lanceolata* and *S. undulata* were synonymous (1830 and 1840); Wimmer followed suit in 1866, and E. F. Linton in 1913.

Under *S. fragilis*, var. *latifolia* Andersson the figures of Sm. Eng. Bot. t. 1807, and Forbes Sal. Wol. t. 27 are quoted as representing such a variety. In my opinion both figures represent *S. alba* × *fragilis* (*viridis* Fr.), even though they are there named *S. fragilis*. The artist has made the ovary appear sessile, whereas it should be shortly pedicellate. I could not imagine any form of *S. fragilis* as having a sessile ovary. Under *S. alba* × *fragilis* (*viridis* Fr.) the figure of *S. russelliana*, Eng. Bot. t. 1808, is quoted and the leaves represented are said to be from a coppiced shoot. I consider them quite natural and that they represent the ordinary British *S. fragilis*. The deep, irregular serratures of the leaves, and the subulate, gradually tapered ovary attest this.

The author of "The Cambridge British Flora" takes a different method of dealing with the intricate forms of *S. repens* L. from that adopted in "The London Catalogue," but this may be taken as a matter of opinion and an easy way of solving the problems; but he

hopes more attention may be given to the study of varieties and forms of species, and that some more of Smith's described forms of *S. repens* may be rehabilitated. He arranges them in three groups, the first of which is (a) *S. repens*, var. *ericetorum* Wimmer et Grabowski. This includes *S. repens* Sm., *S. prostrata* Sm., *S. repens*, var. *vulgaris* Koch, *S. repens*, var. *genuina* Syme Eng. Bot. viii., 246 (1868), including var. *prostrata*, var. *ascendens*, and var. *parvifolia*. The second group (b) is placed under *S. repens*, var. *fusca* Wimmer et Grabowski, and includes Syme's *incubacea*, var. *lanata* of MM. Camus, *S. fusca* L., *S. incubacea* L., *S. incubacea* Sm. and of other authors. The third group (c) contains *S. repens*, var. *argentea* of Syme's Eng. Bot. viii., 248. I have sheets representing all the forms mentioned under *S. repens* L., except the typical *S. incubacea* L., and *S. prostrata* Sm. Most of them are from Surrey, except *S. repens*, var. *argentea*.

S. nigricans Sm. is retained in The Camb. Brit. Fl., but I have given the reasons above for the change to *S. Andersoniana*. One point here calls for explanation. Two sub-varieties are created here, namely, (a) sub-var. *leiocarpa* nobis, and (b) *eriocarpa* nobis. *S. Andersoniana* Sm. had a glabrous ovary, and S. J. Enander, the eminent Swedish salicologist, says the ovary is always glabrous; E. F. Linton says, "pubescent in some forms."

Under *S. herbacea* × *lanata* two forms have been described, namely, × *S. Sadleri* A. & G. Camus, and × *S. stephania* White. The former is the older name, and as the plant under cultivation developed characters showing the parentage given, it was inevitable that some botanist would recognise it. *S. stephania*, therefore, sinks to a synonym of × *S. Sadleri*, because two names for the same hybrid are unnecessary.

Under *S. herbacea* × *lapponum*, four hybrid Willows are named. All of them have been well scrutinised by E. F. Linton, assisted by S. J. Enander and others, some of them being cultivated till they showed characters of their respective parents. The hybrids of the smaller Highland Willows cannot be dealt with from their general appearance. A large proportion of them in which *S. herbacea* is one of the parents bear a considerable resemblance to one another and have to be separated by the indumentum of the leaves, ovaries, etc., or its absence, and by the relative length of the style and stig-

mas. (A) $\times S. cernua$ Linton, is a synonym of *S. herbacea* \times *repens*, attested by the small size and shape of the leaves, their feeble serrations, the reticulation of the upper surface, and the silky pubescence in their early stages. (B) $\times S. sobrina$ White is a synonym of *S. herbacea* \times *lapponum*, and a much older name for it is *S. ovata* (Seringe) Andersson. The oval leaves, rounded at both ends or subcordate at the base bear a strong imprint of the influence of *S. herbacea*; and the more or less densely pubescent ovary and long style reflect the influence of *S. lapponum*. (C) $\times S. eugenes$ Linton, is a synonym of *S. herbacea* \times *lapponum* \times *myrsinites*, and much resembles the previous hybrid, with the addition of several features or characters of *S. myrsinites*, namely, more leathery leaves, more strongly serrate, and very long, reddish style and large stigmas. The elevated reticulation on the underside of the leaves also comes from *S. myrsinites*. (D) $\times S. Grahamsi$ White is a synonym of *S. herbacea* \times *myrsinites*, and bears a strong resemblance to the previous two in the form of the leaves, but their glossy green colour and raised reticulation show the influence of *S. myrsinites*; and so do the reddish hue of the bracts, styles and stigmas. So far as general appearance goes, a fifth hybrid could as easily have been added to the above, with equal injustice to the parents. I refer to *S. arbuscula* \times *herbacea* (*S. simulatrix* White). The leaves here again show the influence of *S. herbacea*, and are closely serrate as are those of both parents. The slender ascending stems are intermediate. The long silky hairs on the underside of the young leaves, their raised netted veins on both sides, the shape of the catkins, and the grey tomentose ovaries all claim *S. arbuscula* as a parent. I identified this hybrid on the spot, in its wild habitat.

HYBRIDISATION AND ADVENTIVE PLANTS.

EXTRACTS FROM PREFACE TO FLORAE NOVAE-ZELANDIAE.

By J. D. HOOKER, 1853.

“ Hybridisation has been supposed by many to be an important element in confusing and masking species . . . as an agent in confusing species (it) is a very favourite argument with those who are fond of founding species on inconstant characters: when shown a specimen combining two such spurious species they at once pronounce it a hybrid—a very simple way of getting rid of a difficulty.

“ The most satisfactory proof we can adduce of hybridisation being powerless as an agent in producing species (however much it may combine them) is the fact that no hybrid has ever afforded a character foreign to that of its parents, and that hybrids generally are constitutionally weak, and almost invariably barren. Unisexual trees must offer many facilities for the natural production of hybrids, which, nevertheless, have never been proved to occur, nor are such trees more variable than hermaphrodite ones.

“ The fact now universally conceded by all intelligent horticulturists that no plant has been acclimated in England within the experience of man is a very suggestive one.” Can this be now seriously maintained?—Editor.

PERSONALIA AND VARIOUS NOTES.

MR J. F. RAYNER gave as his Presidential Address to the Southampton Natural History Society a Review of his Botanical Experiences in four Counties in 1925.

THE large Indian and general Herbarium (50,000 sheets) made by Mr J. S. Gamble, together with his interesting collection of Indian timbers and a selection of his botanical books, have been presented to Kew by Mrs Gamble.

DR F. W. PENNELL, Curator of the Academy of Natural Sciences, Philadelphia, has been exploring Peru and Chili and, it is said, has

brought back over 100 new species of Scrophulariaceae. Ten thousand specimens were collected in all.

MR EDWARD and MR GEORGE CADBURY have presented 414 acres of Chadwick Manor Estate, near Rubery, in Worcestershire, to the National Trust. It includes St Oswald's Camp.

PROF. JOHN PERCIVAL has prepared a collection of the chief Wheats of the world—11,300 single-line forms mounted on stout sheets, 36 cm. x 28 cm., contained in 15 cases. The price is £100 a set. Only a few sets are available. They have been described in his Classic Monograph on the Wheats.

MR FERDYNAND KARO of Poland has recently completed 65 years of professional work. Before he left school he had began a Herbarium. He spent 20 years in Siberia. At Irkutsk he collected 5000 species and named 300 varieties. In four years at Nenczynsk he collected 30,000 specimens, naming 460 varieties. Near Blagovyeschensk, where he was 4 years as a pharmacist attached to the gold mines, he collected 20,000 specimens, 500 being new varieties. He was a great friend of M. Freyn, my old correspondent, who was a mining engineer. Among the large number of plants which he named eighteen bear the name *Freynii*. The Pharmaceutical Society of Poland, with fitting ceremony, celebrated Karo's sixty-five years' work in June 1925.

MR G. C. CALDER, B.Sc., Curator of the Calcutta Botanic Garden, has been appointed Director of the Botanical Society of India.

THE Herbarium of the bryologist, W. Ingham, has been acquired by gift by the University of Leeds. It contains 12,000 specimens, some of which are original gatherings.

DR E. J. SALISBURY, on December 9, 1924, gave a very interesting lecture to the Pharmaceutical Society in London on "The Nature and History of the British Flora."

LA SOCIETE BOTANIQUE DE GENEVE held its 50th anniversary on December 16th, 1925, when the President, M. Henri Romieux, who presided at its foundation, gave its history since 1875. The Uni-

versity of Geneva conferred on our valued Honorary Member, G. Beauverd, a doctorate for his researches in Botany. On the proposition of Prof. Chodat, seconded by Dr Beauverd, Dr G. Claridge Druce was unanimously elected "membre correspondant pour services rendus à la science botanique."

BONAPARTE, PRINCE ROLAND. Note by M. Henri Lecompte on Les Derniers Publications et les Collections Botaniques de Prince Roland Bonaparte, Membre de l'Académie des Sciences. This alludes to the publication of fascicles xiv., xv., et xvi. of the "Notes Pteridologiques," the last published works of our valued member. They contain important descriptions of Ferns from the Belgian Congo, Madagascar, India, Indo-China and Borneo. The Madagascar plants were chiefly collected by Berrier de la Bathie. Christensen, the author of *Index Filicum*, the Prince's valued collaborator, assisted in their preparation during the Prince's "cruelle maladie," under the inspiration of his daughter, S.A.R. the Princess of Greece. His Fern herbarium is the largest in the world. This has been given to the Muséum National d'Histoire Naturelle, but the old building being insufficient to house them adequately the Princess of Greece has had them housed in a special department, together with his Fern Library, which bears the name Galerie Bonaparte. The Phanerogams in his collection, which, we believe, include M. Rouy's plants, are to go to the Faculté des Sciences de Lyon.

THE Rev. W. Keble Martin, Coffinswell Rectory, Newton Abbot, is painting British Plants and would be glad if members would send him fresh specimens.

F. J. HANBURY, Esq., Brockhurst, East Grinstead, is anxious to have seeds of rare British plants. He will defray expenses.

Mr A. E. WADE, Botanical Department, the University of Cardiff, is contemplating the preparation of a Flora of Monmouthshire, and would be glad of assistance.

MRS ISABEL ADAMS, F.L.S., is painting British Aquatics. Members wishing to help in collecting specimens are asked to communicate with her at 14 Vernon Road, Edgbaston.

MRS. PERRIN, 23 Holland Villas Road, London, W.14, is continuing her beautiful paintings of British Plants. Members willing to assist in collecting specimens are asked to write to the above address.

MR T. A. DYMES, F.L.S., Carthona, West Drayton, Middlesex, wants ripe capsules of British Orchids, especially *Malaxis*, *Herminium*, *Cephalanthera*, *Spiranthes*, &c.

MR H. BRITTEN, 5 Wenloch Terrace, Fulford Road, York, is preparing a Flora of Cumberland, and would be glad of any records or notes.

ADDITIONS AND CORRECTIONS.

Report 1922.

p. 828. Lines 21 and 22. For "*V. tricolor* L., var. *Lloydii* (Jord.), fide W. G. Travis, who saw all these specimens on October 27, 1922" read "*Viola tricolor* L., sub-species *genuina* Wittrock, var. *faeroensis* (W. Becker) C. H. Ostenfeld, in *Botany of the Faeroes*, part III., p. 856 (1908)."—H. H. JOHNSTON.

Line 27. For "*V. arvensis* Murray, var. *obtusifolia* (Jord.), fide W. G. Travis" read "*Viola derelicta* Jordan."—H. H. JOHNSTON.

Report 1923.

p. 26. Line 30. For "Var. SUBCAUDATIFOLIUM" read "Var. CAUDATIFOLIUM."

p. 148. Line 16. For "*latifolia*" read "*latifolium*."

p. 181. Line 4. For "sand flats" read "Sand Flats."

p. 213. Line 30. For "Exeter" read "Painswick, Gloster."

p. 236. Line 9. For "W. Perth" read "W. Ross."

p. 237. Line 28. For "W. Perth" read "W. Ross."

Report 1924.

p. 427. Line 20. For "*micropetalus*" read "*microcarpus*."

- p. 435. Line 1. For "Easton, Roxburgh" read "Earlston, Berwick."
- p. 441. Line 6. For "ALONIENSE" read "OXONIENSE."
- p. 445. Line 37. For "TRANSWALLIANA" read "TRANSWALLIANUM."
- p. 450. Line 26. Add "Hunsbury Hill, Northants. The plant is now destroyed there by the iron works."
- p. 457. Lines 12 and 16. For "MELVILL" read "MELVILLE."
Line 26. For "F. ROBINSONII" read "A. ROBINSONII."
- p. 462. Line 27. For "hierarchiarch" read "hieraciarch."
- p. 463. Line 35. For "country" read "county."
- p. 465. Line 29. For "*alterniflorum*" read "*angustifolium*."
- p. 484. Line 10. For "International" read "Imperial."
- p. 555. Line 4. For "Dr." read "O. K."
- p. 556. Line 14. For "Routh Park" read "Roath Park."
- p. 561. Line 28. For "Ben Evenagh" read "Ben Ben-evenagh."
- p. 567. Line 3. For "ARBOREA" read "ARBORESCENS."
Lines 13 and 26. For "Foch" read "Fach."
- p. 568. Line 15. For "Dunfarsghy" read "Dunfanaghy."
- p. 578. Line 12. For "Mdesteg" read "Maesteg."
- p. 580. Line 18. Delete "Hevingham, Norfolk, Nicholson
Additions."
- p. 582. Line 21. For "Gilton" read "Elton."
- p. 583. Line 7. For "Mucknash" read "Monknash."
- p. 588. Line 6. For "Clawton" read "Kisden, York."
- p. 590. Line 15. For "ALBUM" read "VULGARE."
- p. 598. Line 28. For "WADE" read "WEBB."
- p. 607. Line 35. Delete "*Gnaphalium supinum*."
- p. 686. Line 27. For "S. & T." read "McMill."
- p. 687. Line 33. Insert as authority for CENTAURIUM "W. Wright."
- p. 688. Line 29. After "ALNUS ALNUS (L.)" insert "Britt. & Br."
- p. 698. Line 32. After "twine" add "'em."
- p. 699. Line 5. For "HERBARIUM" read "EXCHANGE."

ADDENDA.

PLANTS NEW TO BRITAIN.

415 (2). SPERGULARIA NICAENSIS Sarato. See Rouy & Fouc. Fl. Fr. iii., 307. Alien, Eur. mer. Newport, Monmouth, R. MELVILLE. Det. A. THELLUNG. Closely allied to *S. purpurea* G. Don, and with much of the appearance of *S. atheniensis*, but it has larger petals ($4\frac{1}{4}$ mm.) and longer pedicels.

†452 (2). MALVA AMBIGUA Guss. Alien, S. Europe. Barry, Glamorgan, September 1923 [102], R. L. SMITH. Det. A. THELLUNG and C. H. OSTENFELD. I saw it there also in 1925, Editor.

†509 (3). OXALIS LATIFOLIA H.B.K. Nov. Gen. et Sp. v., 327. Alien, Mexico. Bellozone Valley, Grouville Station, Jersey, 1925, L. ARSENE.

130 (2). THERMOPSIS Br. in Ait. Hort. Kew. iii., 3, 1811.

†526 (2). T. MONTANA Nutt. (T. FABACEA auct. Am. bor., non DC.). Alien, Amer. bor. In some plenty at Gailey Reservoir, Staffordshire, doubtless planted. G. C. DRUCE and Sir R. CURTIS.

1050 (2). EPILOBIUM AMBIGENS Hausskn. Det. A. THELLUNG. Native. With *E. Lamyi*, *obscurum*, *montanum* and *parviflorum* near Henley, Oxon. Here there was a confused mass of hybrids—*montanum* × *obscurum* and *montanum* × *parviflorum*, and another in which *E. Lamyi* was present, unless indeed it is a natural intermediate between these plants. The hybrid × *E. semiobscurum* Borbas, which is said to have the foregoing parentage, is already in our List, but this Henley plant has a different facies, the upper part of the stem, the pods and upper leaves or bracts being more canescent. G. C. DRUCE.

1393 (2). SENECIO ERRATICUS Bert. See *Rep. B.E.C.* v., 35, 140, 771; vii., 33, 190. Mr C. Trapnell gathered plants near Lyndhurst, S. Hants, in 1923, growing with *Jacobaea* and *aquaticus* which recalled the above critical species, and Dr Ostenfeld found and described a hybrid from Surrey of these species (*Rep B.E.C.* 39, 1923) which has something of the facies of the above. Dr Murr

and the Kew authorities named the Hants plants as *erraticus* (*barbaefolius* Krock.), and Dr Thellung has recently confirmed this name. In the absence of more complete specimens I felt uncertain, but with Dr Thellung's authority we may now feel pretty confident of our being able to retain it as British. G. C. DRUCE.

†1412 (11). *GAZANIA RIGENS* (L.) R. Br. Alien, S. Africa. Hortal. Sennen Cliffs, Cornwall, 1925, E. B. WILKINSON.

†1255 (2). *ASTER FLORIBUNDUS* Willd. (*A. NOVI-BELGII*, sub-sp. *FLORIBUNDUS* (Willd.) Thell.), var. *MINOR* (Nees). Alien, Amer. bor. Hortal. Waste ground, Cambridge Road, Colchester [2325], G. C. BROWN. Det. A. THELLUNG.

†1257 (6). *A. VIMINEUS* Lam. Alien, Amer. bor. Hortal. With above [2326]. G. C. BROWN. Det. A. THELLUNG.

†1257 (7). *A. ASCENDENS* Lindl. Alien, Amer. bor. Waste ground, Splott, Cardiff, R. L. SMITH.

1572. *HIERACIUM RECLINATUM* Almquist. Sweden. A plant, allied to this, teste Dahlstedt grew at Llandecwyn, 4 miles N.-E. of Harlech, Merionethshire, August 1919, G. C. DRUCE. *Reclinatum* is put subordinate to *H. lacticeps* Dahlst. in Lindm. *Svensk Fam.-Flora*, p. 617.

1630. *H. SCYTOPHYLLUM* Omang, var. In a wood at 700 feet altitude at Yspytty Cynfyn, about ten miles from Aberystwith, Cardiganshire, G. C. DRUCE.

1635 (2). *H. POLYCOMUM* Dahlst. Native, Scandinavia. A plant gathered by me at Ronas Voe, Zetland, is named a modification of *polycomum* by Dahlstedt. A plant very near to above grew at Harlech, Merioneth in 1919. G. C. DRUCE.

†1731 (2). *CYCLAMEN REPANDUM* Sm. & Sibth. Alien, S. Europe. In abundance and spreading at Penrhos, Anglesey. The tubers were brought from Sorrento, Italy, many years ago by Lady Stanley of Alderley. Many hundreds of plants were in great beauty last April. G. C. DRUCE.

1878. *LINARIA REPENS* × *SUPINA*, nov. hybr., with *L. repens* Mill and *L. supina* Desf. Par, Cornwall, found by L. MEDLIN and sent by C. E. THURSTON. This has the low stature of *supina*, but is more erect; the leaves are narrowly linear; the corolla pale-flowered with yellowish tint and faint striae of violet; the seeds barren. I name it × *L. CORNUBIENSIS*. G. C. DRUCE.

†1930 (5). *VERONICA SALICIFOLIA* Forst. Alien, New Zealand. Hortal. Old quarry, St Helier's, Jersey, L. ARSENE. Det., as probably this, A. THELLUNG.

†2219 (3). *EUPHORBIA CERATOCARPA* Ten. Alien, Ital. mer. et Sicilia. Barry, Glamorgan, R. MELVILE and R. L. SMITH. Shown to me and thought to be near *palustris* L. Dr THELLUNG identifies it with above.

†2850 (2). *HORDEUM GUSSONEANUM* Parl. Alien, Sicilia, ? Hispania. Cardiff, Glamorgan, R. L. SMITH and R. MELVILLE.

2919 (2). *BOTRYCHIUM RUTACEUM* Sw. Strachan, Kincardine, J. SIM in *Herb. H. E. Fox* as *B. Lunaria*, July 1871. Particulars in next *Report*. The late Prebendary H. E. Fox gave me his Herbarium last year, and in going through it, I detected that one of four specimens of the Moonwort was this species.

SUPPLEMENT TO REPORT OF BOTANICAL SOCIETY
AND EXCHANGE CLUB FOR 1924.

**THE ADVENTIVE FLORA OF THE
PORT OF CARDIFF**

By A. E. WADE, F.L.S., and R. L. SMITH.

The following account of the adventive flora of the Cardiff district is based for the most part upon observations made during the past five years, and upon specimens in the Welsh National Herbarium (National Museum of Wales). A few records from other sources have been added.

Three accounts of the alien flora of the district have been previously published. The first was a paper on the ballast plants of Cardiff by John Storrie, *Transactions of the Cardiff Naturalists' Society*, vol. 8, p. 743 (1876), where about 48 species are enumerated. Many of the specimens he collected remained unnamed until recently. Another account by the same author appears as an appendix in his *Flora of Cardiff* 1886. Riddelsdell in "A Flora of Glamorgan," *Journ. Bot. Suppl.* 1907, includes Storrie's records and many of his own.

The area dealt with includes Cardiff, Penarth and Barry, and the immediate environs, the principal localities being the docks at those places. Cardiff Docks cover an extensive area to the east of the Taff estuary, and adventive plants are likely to occur anywhere in the vicinity. When in dock for a few days most of the ships get a thorough clean and all the deck sweepings, etc., are deposited along the roadside near the dock. The heaps so formed generally produce a crop of plants; sometimes in sur-

prising variety. One such last year gave us three North American species. The ballast is used for filling in the low-lying land in the neighbourhood of the docks. The most prolific area is a tract of land between the foreshore and the last new dock. It is here that all the ships' ballast used to be tipped in bygone years. In 1884 John Storrie recorded about 50 adventive species for Cardiff Docks, and over 80 per cent. of them were found on this spot. It is certain that no ballast has been tipped here for years, yet there are many alien plants to be seen every year. To the eastward of the Docks are the Dowlais Steel Works. All the molten slag from the furnaces is (and has been for years) deposited on the foreshore. When ballast was to be disposed of it was tipped on to the slag heaps. At the present time these ballast covered slag heaps are still smouldering beneath the surface and in places the ground is not only warm but actually hot; no frost could possibly penetrate it. It is difficult to imagine a better "home from home" for these adventive plants. Nine or ten species still to be found on this spot were recorded by Storrie forty years ago, and it is quite probable that these plants have occurred here every year in the meantime. Alterations to sidings, etc., sometimes expose fresh soil and thus give rise to fresh plants, seeds of which in many cases have lain dormant. There are two docks at Barry (about seven miles S.W. of Cardiff, but included in the Port of Cardiff). Between the No. 2 dock and the Bristol Channel is a tidal pond about 500 yards long and 150 yards wide. This is being gradually filled in with any sort of suitable material that the authorities can procure. All the ballast, deck sweepings, etc., from the ships are deposited here. The number of adventive plants that appear on this tract of "made" ground is surprising, notwithstanding the fact that something like 90 per cent. of the material tipped is buried too deeply for any seed which it may contain to germinate. Some of the more robust species (e.g., *Reseda alba*, *Centaurea aspera*, *Stachys recta*, *Chenopodium ambrosioides*, etc.), are quite naturalised and appear every year in increasing quantities. The above-mentioned pond is only about a dozen yards narrower than it was in 1901; so it seems that Barry Docks will afford a home for adventive plants for many years to come. The local flour mills are responsible for the introduction of a few species such as *Gilia capi-*

tata, *Alyssum incanum*, *Bromus unioloides*, etc. Some years ago the Taff Vale Railway Company started to build extensive sidings at Radyr. The work is still unfinished, and at present there exist about eight or nine acres of waste land completely enclosed by railway lines. A few years ago several truck loads of sand ballast were tipped along the edge of one of the sidings. This narrow ridge of sand produced in one season (1921) four species not previously seen on British soil, and representatives of no less than 15 genera of Leguminosae. The sand must have come originally from some Mediterranean port, because all these adventive plants are natives of South Europe. Five or six species are still to be found there, but they are being gradually smothered by the more robust native plants. A piece of low-lying land on the foreshore at Splott, Cardiff, is used by the Corporation for the tipping of town refuse. On the surface of these tips grain-siftings from the local flour mills are scattered broadcast, resulting in a large crop of grain-sifting aliens mingled with other plants introduced by town refuse.

Many of the species enumerated are naturalised, the majority however persist only for a season, the seeds in most cases never ripening, continual re-introduction accounting for the presence of many of them from year to year. It must, of course, be realised that the following is the result of several years of observation and that one must not expect to meet in a single visit with more than a few of the species enumerated. Nevertheless during a visit of two days in October of 1924 Dr Druce, in company with the writers, observed no less than eighty-three of the species herein mentioned.

This list makes no pretence to completeness. Some plants still remain to be identified, and each year adds its quota of new records; indeed, 1924 was responsible for the addition of fifty. Common weeds of cultivation are omitted.

The sequence of genera and species followed is that of the "List of British Plants" by Dr G. C. Druce, to which the numbers refer. Following the name of the plant a general indication of the geographical distribution is given, followed by the locality or localities in which the plant has been observed in the Cardiff district.

When the writers are not responsible for the record the initials of the collector or recorder follow the locality.

As far as possible a specimen of all species observed is deposited in the Welsh National Herbarium.

Thanks are due to Dr G. C. Druce and Dr Thellung for their invaluable assistance in identifying specimens, and to Mr R. Melville, who has accompanied the writers on their excursions, for notes and specimens.

ABBREVIATIONS.

J.S.—John Storrie.

E.V.—Miss E. Vachell.

D.—E. Louden Downing.

A.H.T.—Princ. A. H. Trow.

T.H.T.—T. H. Thomas.

N.B.G.—New Botanist's Guide.

G.C.D.—G. C. Druce.

H.J.R.—Rev. H. J. Riddelsdell.

Miss B.—Miss H. O. Booker.

H.—H. M. Hallett.

G.T.—G. Traherne.

U.C.Hb.—Herbarium of the University of South Wales and Monmouth.

Fl. Glam.—Flora of Glamorgan, 1911.

Cardiff Nat. Soc. Proc.—Proceedings of the Cardiff Naturalists' Society.

RANUNCULACEAE.

16. ADONIS ANNUA L. Europe, Orient. Penarth, *J. S.*
31. RANUNCULUS MURICATUS L. Europe, Orient. Radyr, on sand ballast. This plant is naturalised in the Scilly Isles. It did not, however, persist for more than a season at Radyr.
55. NIGELLA DAMASCENA L. South Europe. Ballast, Cardiff, and as a garden escape at Sully, *J. S.*
60. DELPHINIUM AJACIS L. South Europe. Cardiff Docks, *H. J. R.* Radyr.
63. D. CONSOLIDA L. Europe, North Asia. Garden escape, Cardiff, *J. S.*

BERBERIDACEAE.

72. BERBERIS VULGARIS L. Europe, Temperate Asia. Llandaff Bridge, *H. J. R.*

PAPAVERACEAE.

79. PAPAVER SOMNIFERUM L. Greece, Orient. Of frequent occurrence on rubbish heaps, etc. Of garden origin.
83. P. ARGEMONE L. Europe, N. Africa. Ballast, Cardiff, Penarth, *J. S.* Barry Docks.
84. P. HYBRIDUM L. Europe, Syria, N. Africa. Ballast, Cardiff. Penarth, *J. S.*
87. ARGEMONE MEXICANA L. Mexico, N. America. Ballast, Cardiff, *J. S.*
90. GLAUCIUM CORNICULATUM Curt. Europe. Cardiff, *J. S.* Barry Docks, Splott. Introduced with grain siftings.
91. ROEMERIA HYBRIDA DC. Europe, N. Africa. Ballast, Penarth, *J. S.*
95. HYPECOUM PROCUMBENS L. Mediterranean Region, Arabia. Cardiff, *J. S.*

FUMARIACEAE.

112. FUMARIA DENSIFLORA DC. Europe. Llandaff, *J. S.*
114. F. PARVIFLORA Lam. Ballast, Cardiff, *J. S.* Barry.

CRUCIFERAE.

120. MATTHIOLA TRICUSPIDATA Br. Mediterranean Region. Cardiff Docks.
121. CHEIRANTHUS CHEIRI L. Europe. Cardiff Castle (extinct), Llandaff, *J. S.* Barry Castle, *D.*
128. BARBAREA VERNA Asch. Europe. Ballast, Cardiff, Penarth, *J. S.*
155. ALYSSUM ALYSSOIDES L. Europe, Orient. Ballast, Penarth, *J. S.*
157. A. INCANUM L. Europe, Siberia. Penarth and Cardiff Docks, *J. S.* Barry, Grangetown.
158. A. MARITIMUM Lam. Europe. Ballast, Cardiff and Penarth, *J. S.* Naturalised on the river bank at Grangetown. Of garden origin.

166. *COCHLEARIA ARMORACIA* L. Europe. Frequent on rubbish heaps. Of garden origin.
183. *SISYMBRIUM SOPHIA* L. Temperate Region. Ballast, Cardiff. *J. S. Barry, E. L. D. Penarth, A. H. T.* Introduced with grain siftings, Splott.
184. *S. ALTISSIMUM* L. (= *S. PANNONICUM* Jacq.). Europe. Naturalised in some abundance on waste ground and about the docks.
185. *S. ORIENTALE* L. Europe, Orient, Himalaya Region. Common and apparently naturalised. *b. irioides.* Cardiff Docks.
186. *S. PYRENAICUM* L. (= *AUSTRIACUM* Jacq.). Mediterranean Region. Garden weed, Roath Park.
187. *S. LOESELII* L. Europe, Orient, Himalaya Region. Cardiff, *G. C. D.*
188. *S. IRIO* L. Europe, Asia, N. Africa. Penarth, *J. S. Ballast, Barry.* Common in 1923 and 1924.
191. *S. POLYCRATUM* L. South Europe, Asia Minor. Cardiff Docks. Introduced with grain siftings, Splott.
197. *ERYSIMUM CHEIRANTHOIDES* L. Europe, N. America. Cardiff, *H. J. R. Barry, E. L. D. Cathays Park, E. V. Penarth Ferry, J. S. Canton, Radyr, Splott.*
198. *E. REPANDUM* L. Europe, North Africa, West Asia. Cardiff Docks, *H. J. R.*
200. *CONRINGIA ORIENTALIS* Dum. Europe, Orient. Cardiff, Penarth, *J. S. Radyr, Grangetown, Barry.*
202. *CAMELINA SATIVA* Crantz. Europe, Temperate Asia. Llani-shen, East Moors, *J. S. Barry Island, Cadoxton, H. J. R. Barry Docks, Splott.* Introduced with grain siftings. *b. foetida* (Fr.). Barry Island, *H. J. R. Cardiff, J. S.*
206. *BRASSICA NAPUS* L. Cultivated. Barry Island, Cadoxton, *H. J. R. Cardiff Docks, Llandaff, J. S.*
208. *B. RAPA* L. Cultivated. Cardiff, Splott. *c. Briggsii* H. C. Wats. Cardiff Docks, *H. J. R.*
209. *B. TOURNEFORTII* Gouan. Mediterranean Region, Orient. East India. Barry. Abundant in 1924.
211. *B. CHEIRANTHOS* Vill. Western Europe, N. Africa. Naturalised at Grangetown and about the docks.

- 212(2). *B. FRUTICULOSA* Cyr. Mediterranean Region. Cardiff Docks.
217. *B. ALBA* Boiss. (= *SINAPIS ALBA* L.). Europe, Orient, East India. Cultivated. Penarth, *J. S. Barry*, Radyr.
218. *B. JUNCEA* Coss. Asia. Barry. Abundant in 1924.
222. *B. GALLICA* (Willd.) Dr. (= *B. POLLICHI* Sch. & Spenn.). Europe. Introduced with grain siftings, Splott.
224. *B. ADPRESSA* Boiss. (= *B. INCANA* (L.) Doell). Europe. Penarth, *A. H. T.* Cardiff, Radyr, Barry. Naturalised in some quantity.
225. *DIPLLOTAXIS ERUCOIDES* DC. Mediterranean Region, Asia Minor. Barry. Probably introduced with grain.
228. *ERUCA SATIVA* Mill. Mediterranean Region, West Asia. Introduced with grain siftings, Splott.
235. *LEPIDIUM GRAMINIFOLIUM* L. Europe, Syria. Barry, Cardiff. This has persisted in some quantity for several years.
237. *L. DRABA* L. Europe, Orient. Frequent and naturalised on waste ground.
239. *L. PERFOLIATUM* L. Southern Europe, Orient. Cardiff, Splott.
240. *L. RUDERALE* L. Europe, Orient, Australia. Rather frequent in waste places. Naturalised.
- 240(2). *L. NEGLECTUM* Thell. North America. Introduced with grain siftings, Splott.
241. *L. SATIVUM* L. Orient. Penarth, *A. H. T.* Cardiff, Roath, *J. S.*
247. *L. VIRGINICUM* L. North America. Radyr. Introduced with grain siftings, Splott.
- 247(4). *L. DENSIFLORUM* Schrad. (= *L. INCISUM* Banks & Soland.). New Zealand. Barry Docks.
249. *THLASPI ARVENSE* L. Europe. Penarth Dock, *J. S.* Cardiff, Splott. Introduced with grain siftings in the latter locality.
253. *IBERIS UMBELLATA* L. South Europe. Penarth Ferry, *J. S.* Probably of garden origin.
258. *VOGELIA PANICULATA* Hornem. (= *NESLIA PANICULATA* Desv.). Europe, Orient, North-West Asia. Introduced with grain siftings, Splott.

260. MYAGRUM PERFOLIATUM L. Europe, Orient. Cardiff Docks. Probably introduced with grain.
262. BUNIAS ERUGAGO L. Southern Europe, Asia Minor, Syria. Cardiff Docks, *H. J. R.*
263. B. ORIENTALIS L. Eastern Europe, Asia Minor. Penarth Ferry, Cardiff, *J. S.*
266. RAPISTRUM PERENNE All. Europe. Cardiff Docks, *H. J. R.*
267. R. ORIENTALE DC. Greece. Introduced with grain siftings, Splott.
268. R. RUGOSUM All. Europe, Orient. Barry, Splott. Introduced with grain.
269. R. LINNÆANUM Boiss. & Reut. South Europe. Introduced with grain siftings, Splott.
277. RAPHANUS SATIVUS L. Europe. A frequent garden outcast.

RESÉDACEÆ.

281. RESEDA ALBA L. Europe, Orient. Ballast, Cogan Pill, *E. V.* Barry, Cardiff, Radyr. Naturalised on waste ground. Of garden origin or introduced with grain.
282. R. PHYTEUMA L. Mediterranean Region, Asia Minor. Cardiff Docks, *J. S.*
283. R. STRICTA Pers. Algeria. Canton, *H. J. R.*

CARYOPHYLLACEÆ.

318. DIANTHUS DELTOIDES L. Europe, Western Tibet. Bank of canal feeder, Cardiff, *Mr Chapman.*
324. D. CARYOPHYLLUS L. Europe, West Asia. Cardiff Castle Walls, *B. G.* (Extinct.)
328. GYPSOPHILA PANICULATA L. Europe, North Asia. Cardiff Docks, *H. J. R.*
331. SAPONARIA VACCARIA L. Europe, Asia Minor, Siberia. Ballast, Penarth, *J. S.* Barry, Cardiff, Splott. Introduced with grain or ballast.
332. S. OFFICINALIS L. Europe, West Asia. Cooper's Fields, *W. W. Pettigrew.* Radyr, Cardiff, Llandaff.
338. SILENE CONICA L. Europe, Orient. Penarth, Cardiff, *J. S.* Barry. Probably introduced with grain.
340. S. NOCTIFLORA L. Europe, Orient. Cardiff, Barry, Splott. Introduced with grain.

341. *S. DICHOTOMA* Ehrh. Europe. Cardiff, *E. V.*
342. *S. GALLICA* L. Europe. Cardiff, *J. S. Splott*. Introduced with grain siftings.
343. *S. ANGLICA* L. Europe. Cardiff. Introduced with grain siftings.
351. *S. OTITES* Wibel. Europe, Orient. Ballast, Cardiff, *J. S.*
354. *S. NUTANS* L. Europe, North Asia. Barry.
363. *LYCHNIS GITHAGO* Scop. Europe. Sully, Penarth, *J. S. Cardiff, C. N. S. Proc.*, 1873. Barry, Splott. Introduced with grain or grain siftings.
367. *CERASTIUM ARVENSE* L. Northern and Southern Temperate Regions. Barry.
394. *ARENARIA TENUIFOLIA* L. Europe. Ballast, Cardiff, *J. S.*

PORTULACAEAE.

418. *CLAYTONIA SIBIRICA* L. North Asia, North-West America. Penarth, *J. S.*
419. *C. PERFOLIATA* Donn. North America. Cardiff, *J. S.*

HYPERICACEAE.

428. *HYPERICUM CALYGINUM* L. Eastern Europe. Barry, *D.* Planted, or a garden escape.

MALVACEAE.

441. *ALTHAEA ROSEA* L. Europe. Garden escape or outcast, railway embankment, Cardiff.
443. *A. HIRSUTA* L. Europe, Orient. Ballast, East Moors, Cardiff, *J. S. Ely.*
448. *LAVATERA PUNCTATA* All. Southern Europe, Asia Minor. Cardiff, *J. S.*
452(2). *MALVA NICAENSIS* All. Mediterranean Region. Cardiff, Barry.
454. *M. PUSILLA* With. Europe, North Asia. Splott.
456. *M. PARVIFLORA* L. Europe. Splott.
459. *SIDA SPINOSA* L. Tropical Regions. Cardiff, *J. S.*
461. *HIBISCUS TRIONUM* L. Eastern Europe. Cardiff, *J. S.* Probably introduced with grain.

LINACEAE.

468. *LINUM USITATISSIMUM* L. Europe, Orient. Cultivated.
Barry, *H. J. R.* Cardiff, Penarth, *J. S.* Frequent on
rubbish heaps.

ZYGOPHYLLACEAE.

472. *TRIBULUS TERRESTRIS* L. Mediterranean Region. Cardiff,
J. S.

GERANIACEAE.

475. *GERANIUM VERSICOLOR* L. South Europe. Cooper's Fields,
Fairwater, Ely, Penarth, *Fl. Glam.* A garden escape.
Radyr.
479. *G. PHAEUM* L. Europe. Cooper's Fields, *J. S.* Garden
escape.
481. *G. PYRENAICUM* Burm. f. Europe, Asia Minor. Penarth
Ferry, East Moors, *J. S.* Radyr. Established.
- 490(2). *ERODIUM BOTRYS* Bert. Mediterranean Region. Barry.
503. *LIMNANTHES DOUGLASHII* Br. North-West America. Penarth,
Cardiff, *J. S.* Probably of garden origin.
505. *OXALIS CORNICULATA* L. Temperate and Tropical Regions.
Barry House, Cardiff Docks, *H. J. R.* Penarth, *J. S.*
513. *IMPATIENS GLANDULIFERA* Royle. Himalaya Region. Natur-
alised along the Taff and Ely rivers.

VITACEAE.

521. *VITIS VINIFERA* L. Orient, North-Western India. Barry,
Splott. Introduced with town refuse.

LEGUMINOSAE.

529. *LUPINUS ANGUSTIFOLIUS* L. Mediterranean Region. Sand
ballast, Radyr.
536. *SPARTIUM JUNCEUM* L. Europe. Cardiff Docks.
542. *ONONIS NATRIX* L. Mediterranean Region. Ballast, Car-
diff, *J. S.*
550. *TRIGONELLA POLYGERATA* L. Mediterranean Region, Orient.
Introduced with grain siftings, Splott.
551. *T. MONSPELIACA* L. Mediterranean Region. Ballast, Car-
diff, *J. S.*

552. T. CORNICULATA L. Southern Europe, Asia Minor. Barry, Splott.
554. T. CAERULEA Ser. Eastern Europe, Caucasus. Ballast, Cardiff, J. S.
556. T. HAMOSA L. Egypt. Ballast, Cardiff, J. S. Splott. Introduced with grain siftings.
560. T. LACINIATA L. Egypt. Ballast, Cardiff, J. S.
562. MEDICAGO FALCATA L. Europe. Penarth Ferry, J. S. Cardiff, Barry. Naturalised in several places. A form with virescent flowers is of frequent occurrence.
564. M. SATIVA L. Europe, Orient. Cardiff, Radyr, Barry.
565. M. MARINA L. Mediterranean Region. A feature of the vegetation of the Mediterranean shores. Cardiff, J. S.
566. M. ORBICULARIS All. Mediterranean Region, Abyssinia. Barry, Radyr.
569. M. SOLEIROLII Duby. Italy. Barry Docks.
571. M. TRIBULOIDES Desr. Europe. Cardiff, J. S.
572. M. TRUNCATULA Gaertn. Europe. Radyr, Barry.
573. M. LITTORALIS Rhode. Mediterranean Region. Barry. b. *inermis* Moris. Barry.
575. M. MUREX Willd. Europe. On sand ballast, Radyr, Barry.
579. M. HISPIDA Gaertn. Europe. a. *denticulata* Willd. Cardiff, Penarth, J. S. Barry, Splott. b. *apiculata* Willd. East Moors, J. S. e. *confinis* Burn. Cardiff, G. C. D.
580. M. ARABICA Huds. Europe. Ballast, Cardiff, Penarth, J. S. Barry.
581. M. MINIMA (L.) Bart. Europe. Cardiff, Penarth, J. S. Barry. Naturalised and increasing at Barry.
584. M. CILIARIS Willd. Mediterranean Region, Orient. Grange-town, E. V. Barry.
588. M. MURICATA All. Europe. On sand ballast, Radyr.
590. MELILOTUS MESSANENSIS All. Mediterranean Region. Cardiff, J. S.
592. M. SULCATA Desf. Mediterranean Region. Radyr.
595. M. ALBA Desr. Europe, Asia. Penarth, J. S. Cardiff, Radyr, Barry. Very common about the docks.
596. M. PETITPIERREANA Hayne (= ARVENSIS Wallr.). Ballast, Cardiff, J. S. Barry Island, A. H. T.

597. *M. INDICA* All. Europe, Northern Asia. Frequent on waste ground throughout the district.
601. *TRIFOLIUM PANNONICUM* Jacq. Europe, Orient. Penarth, *J. S.*
602. *T. OCHROLEUCON* Huds. Europe, Orient. Ballast, Cardiff, *J. S.*
603. *T. CHERLERI* L. Mediterranean Region. Sand ballast, Radyr.
605. *T. LAPPACEUM* L. Mediterranean Region, Orient. Barry, Splott.
606. *T. ANGUSTIFOLIUM* L. Mediterranean Region, Orient. Barry, Radyr.
608. *T. INCARNATUM* L. South Europe. Ballast, Cardiff, *Cardiff Nat. Soc. Proc.*, 1876. Barry. Probably introduced with fodder.
610. *T. STELLATUM* L. Mediterranean Region, Orient. Ballast, Cardiff, Penarth Ferry, *J. S.*
620. *T. SUBTERRANEUM* L. Europe, Orient. Ballast, Cardiff, *J. S.* Barry. Although this plant is not unlikely to occur as a native in Glamorgan, it is certainly only an alien at Barry and Cardiff.
622. *T. RESUPINATUM* L. Western Europe, Mediterranean Region. Penarth, *A. H. T.* Cathays Park, *E. V.* Cardiff, Radyr, Splott, Barry.
623. *T. TOMENTOSUM* L. Mediterranean Region. Barry.
627. *T. HYBRIDUM* L. South Europe, Asia Minor. Common in the district. b. *elegans* (Savi). Mediterranean Region, Asia Minor, N. Africa. Barry, *H. J. R.*
629. *T. MICHELIANUM* Savi. South Europe. Barry.
630. *T. NIGRESCENS* Viv. South Europe. Sand ballast, Radyr.
632. *T. GLOMERATUM* L. Western Europe, Mediterranean Region, Orient. Ballast, Cardiff, *J. S.* Barry.
633. *T. SUFFOCATUM* L. Western Europe, Mediterranean and Caucasus Regions. Whitmore Bay, Barry, Penarth, *J. S.*
635. *T. AGRARIUM* L. Europe, North Africa, Orient. Cardiff Docks. Sand ballast, Radyr.

- 641(2). ANTHYLLIS TETRAPHYLLA L. Mediterranean Region. A frequent plant on the Mediterranean coasts. Sand ballast, Radyr.
643. BONAVERIA SECURIDACA Desv. (= SECURIGERA CORONILLA DC.) South Europe. Cardiff, Penarth, *J. S.*
- 643(5). DORYCNIUM HIRSUTUM DC. South Europe. Sand ballast, Radyr, Barry, Cardiff.
- 643(6). D. RECTUM DC. Mediterranean Region. Barry. Established.
- 643(7). D. HERBACEUM Vill. South Europe, Asia Minor. Barry. Established.
644. LOTUS TETRAGONOLOBUS L. Mediterranean Region. Cardiff, *J. S.*
645. L. EDULIS L. Mediterranean Region. Sand ballast, Radyr, Cardiff.
- 645(2). L. CRETICUS L. Mediterranean Region. Barry.
- 649(5). L. ORNITHOPODIOIDES L. South Europe. Sand ballast, Radyr.
- 650(11). PSORALEA BITUMINOSA L. Mediterranean Region, Arabia. Radyr, Cardiff.
651. GALEGA OFFICINALIS L. Europe, West Asia. Canton. A garden outcast.
656. ASTRAGALUS HAMOSUS L. Mediterranean Region, North-West India. Cardiff, *J. S.* Radyr, on sand ballast.
665. SCORPIURUS SUBVILLOSA L. Mediterranean Region. Penarth, *J. S.* Radyr, Barry.
666. CORONILLA VARIA L. Europe. Cogan, East Moors, Penarth, *J. S.* Canton, *H. J. R.* Radyr, Cadoxton, Barry. In its Cadoxton locality it is rapidly covering a stretch of railway bank. It occasionally produces ripe fruit.
667. C. SCORPIOIDES Koch. Mediterranean Region, Persia. Cardiff, *J. S.*
670. ORNITHOPUS PINNATUS (Mill) Druce. Western Europe, Mediterranean Region. Ballast, Cardiff, *J. S.*
672. HIPPOCREPIS UNISILIQUOSA L. Mediterranean Region. Sand ballast, Radyr.
- 674(2). ARACHIS HYPOGAEA L. Tropical Regions. Cultivated. Introduced with town refuse, Splott.

675. HEDYSARUM CORONARIUM L. Italy. Ballast, Cardiff, Penarth, *J. S.* Radyr, on sand ballast.
- 675(2). H. CAPITATUM Desf. Mediterranean Region. Cardiff, *J. S.*
676. CICER ARIETINUM L. Europe, Orient, East India. East Moors, *J. S.* Barry. Introduced with grain siftings.
681. VICIA VILLOSA Roth. Europe, Orient. Cardiff Docks, *H. J. R.* Barry. b. *glabrescens* Koch. Barry, *H. J. R.* Ballast, Penarth, *J. S.* Cardiff Docks, *H. J. R.*
683. V. VARIA Host. Europe, Orient, N. Africa. Cardiff, Barry. b. *dasycarpa* (Ten.). Radyr.
684. V. PSEUDO-CRACCA Bert. Italy. Sand ballast, Radyr.
687. V. BITHYNICA L. Europe. Sand ballast, Radyr, Cardiff.
689. V. FABA L. Cultivated. Frequently introduced with garden refuse and ship sweepings.
690. V. NARBONENSIS L. Mediterranean Region, Orient. Barry. b. *serratifolia* Koch. Barry.
691. V. LUTEA L. Mediterranean Region, Orient. Ballast, Cardiff, *J. S.* Grangetown.
697. V. SATIVA L. Cultivated. Very common on waste ground.
706. V. GRACILIS Lois. Europe, Syria. Ballast, Cardiff, *J. S.*
707. LENS ESCULENTA Moench. Orient. Barry.
711. LATHYRUS TUBEROSUS L. South Europe, Western Asia. Barry, *P. H. Holland.* Cardiff Docks, *H. J. R.*
716. L. SPHAERICUS Retz. South Europe. Barry.
721. L. CICERA L. Europe, Orient. Sand ballast, Radyr, Barry.
723. L. CLYMENUM L. Mediterranean Region. Splott, sand ballast, Radyr.
724. L. OCHRUS DC. Mediterranean Region. Canton, Barry.
726. L. APHACA L. Europe, Orient. Ballast, Cardiff, Grange-town, Penarth, *J. S.* Cathays Park, *T. H. T.* Barry.
731. PISUM ARVENSE L. Europe, North Asia. Splott.
732. P. SATIVUM L. Europe, North Asia. Introduced with ship sweepings and garden refuse. Cardiff, Barry.

ROSACEAE.

885. FRAGARIA MOSCHATA Duchesne. Europe. Established at Barry and Radyr. Of garden origin.

887. *F. CHILOENSIS* Duchesne. North America. Penarth Dock,
H. J. R.
896. *POTENTILLA INTERMEDIA* L. Europe. Leckwith. Waste
ground, Canton. It has persisted here for two or three
years.
906. *P. NORVEGICA* L. North Temperate and Arctic Regions.
Penylan, Splott, Cardiff, Radyr. Established in the two
latter places.
972. *COTONEASTER MICROPHYLLA* Wallich. India. Llandough
Quarry.

CRASSULACEAE.

1026. *SEMPERVIVUM TECTORUM* L. Europe, Orient. Grangetown,
E. V. Barry, Cadoxton, J. S. Cardiff.

LYTHRACEAE.

1045. *LYTHRUM HYSSOPIFOLIA* L. Temperate Regions. Ballast,
Cardiff, Penarth, *J. S. Barry.*

EPILOBIACEAE.

1060. *CLARKIA PULCHÉLLA* Pursh. North America. Penarth Ferry,
J. S. Probably of garden origin.
1061. *OENOTHERA BIENNIS* L. North America. Radyr, Cardiff.
This plant multiplies so quickly that in both the above
localities there are literally thousands of them every year.
1062. *OE. MURICATA* L. North America. Waste ground, Canton.
It persisted here for a few years. Of garden origin.
1065. *OE. ODORATA* Jacq. Chili. Cardiff Docks, *H. J. R.*
1070. *OE. TENELLA* Car. Chili. Penarth Ferry, *J. S.* Probably
of garden origin.

CUCURBITACEAE.

1075. *ECBALLIUM ELATERIUM* A. Rich. Europe, America. Cardiff,
J. S. Barry. This plant readily establishes itself and
would probably become frequent if left undisturbed.

FICOIDEAE.

1077. *MESEMBRYANTHEMUM EDULE* L. South Africa. Barry.

UMBELLIFERAE.

1090. BUPLEURUM ROTUNDIFOLIUM L. Europe, Caucasus Region, Persia. Cardiff Docks, *H. J. R.* Penarth Ferry.
1091. B. PROTRACTUM Hoffmg. & Link. Mediterranean Region. Cardiff, Barry, *J. S.* Probably introduced at Barry with grain siftings.
1101. AMMI MAJUS L. Europe, Orient, North Africa. Introduced with grain siftings, Splott.
1103. CARUM CARVI L. Europe, Orient, North Asia. Cardiff, *H. J. R.* Penarth, Grangetown, *J. S.*
1116. MYRRHIS ODORATA Scop. Southern Europe, Caucasus Region. Cooper's Fields, *W. W. Pettigrew.*
- 1151(2). PEUCEDANUM GRAVEOLENS Benth. & Hook. f. Europe, Tropical Asia. Splott.
1157. CORIANDRUM SATIVUM L. Southern Europe, Orient. Grange-town, Cardiff, *J. S.* Splott, Barry.
1166. CAUCALIS DAUCOIDES L. Europe, Temperate Asia. Cardiff, *H. J. R.* Waste ground, Cathays Park. Introduced with chicken food. Barry.

CAPRIFOLIACEAE.

1179. SAMBUCUS EBULUS L. Europe, Orient, Himalaya Region. Penarth Docks, *J. S.* Cogan.

RUBIACEAE.

1201. GALIUM TRICORNE Stokes. Europe. Barry Island, *Woods,* Barry, Cardiff.

VALERIANACEAE.

1219. KENTRANTHUS RUBER Druce. Europe, Syria. Originally a garden escape, and now thoroughly naturalised in several places between Cardiff and Barry.

COMPOSITAE.

1242. GRINDELIA SQUARROSA Dunal. North-West America. Penarth Ferry, *J. S.* Cardiff. Introduced with grain siftings, Splott.
1244. SOLIDAGO LANGEOLATA L. North America. Cardiff. Garden relic.

1255. *ASTER NOVI-BELGII* L. North America. Cardiff. A naturalised garden escape.
- 1255(2). *A. NOVI-ANGLIAE* L. North America. Cardiff. Garden relic.
1262. *ERIGERON CANADENSIS* L. North America. Frequent on waste ground, railway banks and ballast.
- 1262(2). *E. BONARIENSE* L. Tropics and sub-tropics of the Old and New World. Cardiff.
1273. *GNAPHALIUM LUTEO-ALBUM* L. Cosmopolitan. Ballast, Cardiff, *J. S.*
- 1278(13). *HELICHRYSUM MICROPHYLLUM* Cambess. Mediterranean Region. Barry.
1284. *INULA VISCOSA* Ait. Mediterranean Region. Barry, Cardiff. Naturalised and very luxuriant in the latter locality.
1286. *PULICARIA PROSTRATA* Asch. (= *P. VULGARIS* Gaertn.). Europe, Asia, N. Africa. Penarth.
- 1287(2). *ODONTOSPERMUM MARITIMUM* Sch.-Bip. Mediterranean Region, Canary Isles. Cardiff, *J. S.*
1290. *AMBROSIA MARITIMA* L. Europe, Orient, North Africa. Penarth, Cardiff, *J. S.*
1291. *A. ARTEMISIFOLIA* L. North America. Barry, Cardiff, Radyr. Probably introduced with grain.
1292. *A. TRIFIDA* L. North America. Cardiff.
1294. *XANTHIUM STRUMARIUM* L. Cosmopolitan. Cardiff.
1295. *X. SPINOSUM* L. Cosmopolitan. Cardiff, *J. S.* Barry, Canton.
- 1295(3). *X. ECHINATUM* Murr. North America. Cardiff, *G. C. D.*
1301. *HELIANTHUS ANNUUS* L. North America. Garden escape, or introduced with town refuse, Cardiff.
1302. *H. RIGIDUS* Desf. North America. Garden escape or out-cast, Cardiff.
1306. *GUIZOTIA ABYSSINICA* Cass. Tropical Africa. Cardiff, *J. S.*
- 1311(2). *BIDENS FRONDOSA* L. North America. Cardiff, thoroughly naturalised and rapidly spreading.
1312. *GALINSOGA PARVIFLORA* Cav. Central and South America. Penarth, *J. S.* Grangetown.
1314. *MADIA SATIVA* Molina. North and South America. Cardiff, *J. S.*

1315. *HEMIZONIA PUNGENS* Torr. & Gray. California. Cardiff, *J. S. Barry*.
1317. *H. KELLOGGII* Greene. California. Cardiff, *J. S.*
1323. *ANACYCLUS CLAVATUS* Pers. Mediterranean Region. Cardiff, *H. J. R. Barry, Splott*. Introduced with grain siftings. b. *marginatus*. Cardiff Docks, *H. J. R.*
1324. *A. RADIATUS* Lois. Mediterranean Region. Barry, Splott, Cardiff. Introduced with grain siftings.
1325. *A. VALENTINUS* L. Mediterranean Region. Cardiff.
1327. *ACHILLEA TANACETIFOLIA* All. Europe, Orient. Radyr.
1331. *A. NOBILIS* L. Europe, Orient. Barry, Cardiff. Established in both places.
1335. *A. CRETICA* L. Orient. Near Penarth, *T. Chapman*.
1338. *ANTHEMIS TINCTORIA* L. Europe, Orient. Grangetown, Cadoxton. Naturalised. The var. *discoidea* (Willd.) grows with it.
1339. *A. NOBILIS* L. Europe. Cardiff Docks, *J. S.*
1343. *A. ARVENSIS* L. Europe, Orient. Ballast, Cardiff, *J. S.*
- 1344(2). *A. PEREGRINA* L. Italy, Greece, Asia Minor. Cardiff, *G. C. D.*
1348. *A. MIXTA* L. Mediterranean Region. Cardiff, *J. S.*
1355. *CHRYSANTHEMUM PARTHENIUM* Bernh. Europe. A frequent garden escape.
1357. *C. CORONARIUM* L. Mediterranean Region. Cardiff, *J. S. Splott*.
1362. *MATRICARIA SUAVEOLENS* Buch. (= *M. DISCOIDEA* DC.). North America. Common on waste ground throughout the district.
1367. *ARTEMISIA ABSINTHIUM* L. Europe. Splott, Canton.
1368. *A. CAMPESTRIS* L. Europe, North Asia, Orient, East India. Cardiff Docks, *J. S.*
1380. *A. BIENNIS* Willd. North America, Siberia, Himalaya. Cardiff, Radyr, Splott. Grain alien.
- 1383(2). *A. GNAPHALODES* Nutt. North America. Radyr, Cardiff. Established.
1387. *PETASITES FRAGRANS* Presl. Mediterranean Region. A garden escape, naturalised in several places in the district,

1396. *SENECIO SQUALIDUS* L. South Europe. Very common on waste ground.
1397. *S. CRASSIFOLIUS* Willd. Europe. Cardiff Docks, *H. J. R.*
1398. *S. VERNALIS* W. & K. Southern Europe, Orient. Cardiff Docks, *H. J. R.*
- 1401(2). *S. NEBRODENSIS* L. Southern Europe, N. Africa. Cardiff, *H. J. R.* Barry.
1402. *S. CINERARIA* DC. Mediterranean Region. Established on the river bank at Leckwith. A garden escape.
1411. *CALENDULA ARVENSIS* L. Europe, Orient. Cardiff, *J. S.*
- 1412(2). *CRYPTOSTEMMA CALENDULA* Druce. South Africa. Cardiff, *J. S.*
1439. *ONOPORDUM ACANTHIUM* L. Europe, North Africa, Orient. Penarth, *H.* Ballast, Cardiff, *J. S.*
1443. *MARIANA LACTEA* Hill. (= *SILYBUM MARIANUM* Gaertn.). Europe. East Moors, *J. S.* Barry.
1444. *LUPSIA GALACTITES* O.K. (= *GALACTITES TOMENTOSA* Moench). Mediterranean Region. Radyr, on sand ballast.
1454. *CENTAUREA CYANUS* L. Europe, Caucasus Region. Barry, *D.* Cardiff Docks, *H. J. R.* Ballast, Penarth, *J. S.*
1462. *C. SOLSTITIALIS* L. Europe. Ballast, Cardiff, *J. S.*
1463. *C. MELITENSIS* L. Europe, South America. Cardiff Docks.
1465. *C. CALCITRAPA* L. Europe, North Africa, Temperate Asia. Cardiff Docks, *H. J. R.* East Moors, Penarth, Leckwith, *J. S.* Barry.
1468. *C. ASPERA* L. Europe. Ballast, Cardiff, *J. S.* Barry. Probably introduced with grain siftings. Thoroughly naturalised and more or less common at Barry.
1476. *CARTHAMUS LANATUS* L. Europe, Orient. Radyr, Cardiff.
1477. *C. TINCTORIUS* L. Abyssinia. Dinas Powis, with the var. *inermis*.
1478. *SCOLYMUS HISPANICUS* L. Mediterranean Region. Barry, Cardiff.
1481. *CICHORIUM ENDIVIA* L. Europe, Orient. Radyr, Splott.
1502. *CREPIS TARAXACIFOLIA* Thuill. Europe. Common on waste ground throughout the district.

- 1638(21). *ANDRYALA TENUIFOLIA* Tineo. Mediterranean Region. Radyr, on sand ballast.
1648. *LACTUCA VIROSA* L. Europe, North Asia. "Has been recorded from the neighbourhood of the local Docks," *Fl. Glam.*
1649. *L. SERRIOLA* L. Europe. Cardiff, Barry. Naturalised, but gradually dying out.
1650. *L. SALIGNA* L. Europe, North Africa, Orient. Cardiff.
1660. *TRAGOPOGON PORRIFOLIUS* L. Mediterranean Region. Barry, *E. V.* Cardiff, naturalised.

PRIMULACEAE.

1742. *ANAGALLIS FEMINA* Mill. Europe. Penarth, *H.* Canton, Cardiff, *H. J. R.* Barry, Grangetown.

APOCYNACEAE.

1750. *VINCA MAJOR* L. Mediterranean Region. Penylan Hill, Ely, Rhiwbina, *Fl. Glam.* Garden escape.

LOGANIACEAE.

- 1751(10). *BUDDLEIA SPECTABILIS* Kunth & Bonche. Mexico. Introduced with garden refuse, Cardiff Docks.

POLEMONIACEAE.

1771. *GILIA CAPITATA* Sims. North America. Ballast, Cardiff, etc., *J. S.* Introduced with grain siftings, Barry Docks.

BORAGINACEAE.

1781. *HELIOTROPIMUM EUROPÆUM* L. Southern Europe, N. Africa, Orient, Australia. Cardiff, *J. S.* Grangetown, Barry, Splott.
1785. *CYNOGLOSSUM MONTANUM* L. Europe, Orient. Cardiff, *J. S.*
1787. *LAPPULA ECHINATA* Gilib. (= *ECHINOSPERMUM LAPPULA* Lehm.). Europe, Orient. Cardiff, Grangetown, Barry, Splott. Grain alien.
- 1789(5). *BENTHAMIA INTERMEDIA* Fisch. & Mey. California. Barry.
1792. *SYMPHYTUM PEREGRINUM* Ledeb. Caucasus. Cadoxton, Llandaff, *H. J. R.*
1798. *ANCHUSA SEMPERVIRENS* L. Europe. Radyr, Llandaff.

1802. *A. AZUREA* Mill. (*A. ITALICA* Retz.). Mediterranean Region. Cardiff.
1810. *ASPERUGO PROCUMBENS* L. Europe, Arabia, Orient, North Asia. Cardiff, *J. S.*
1827. *ECHIMUM PLANTAGINEUM* L. Mediterranean Region. Ballast, Cardiff, *J. S.* Barry.

CONVOLVULACEAE.

1843. *CUSCUTA RACEMOSA* Mart. (= *C. HASSIACA* Pfeff.). Brazil. On *Nepeta Mussinii*, Cardiff. Introduced with garden seed.

SOLANACEAE.

1844. *LYCOPERSICUM ESCULENTUM* Hill. South America. Cardiff Docks, *H. J. R.* Introduced with garden refuse.
- 1846c. *SOLANUM NIGRUM* L., var. *MINIATUM* (Bernh.). Barry Docks.
- 1846(2). *S. VILLOSUM* Lam. Europe. Barry; sand ballast, Radyr.
1848. *S. ROSTRATUM* Dunal. Mexico. Barry.
1849. *S. TRIFLORUM* Nuttall. North America. Cardiff, *J. S.* Splott.
1853. *LYCIUM CHINENSE* Mill. China. Cardiff Docks, *H. J. R.*
1855. *DATURA STRAMONIUM* L. Cosmopolitan. East Moors, *J. S.* Grangetown.
1857. *HYOSCYAMUS ALBUS* L. Europe, Orient. Shrimphouse, Cardiff, *J. S.* Barry.

SCROPHULARIACEAE.

1863. *VERBASCUM VIRGATUM* Stokes. Europe. Established on the railway embankment between Cardiff and Penarth.
1864. *V. BLATTARIA* L. Europe, North Asia. Llandaff, *Cardiff Nat. Soc. Proc.*, 1873. Barry.
- 1864(3). *V. SINUATUM* L. Mediterranean Region, Orient. Barry.
1865. *V. PULVERULENTUM* Vill. Southern Europe. Barry.
1866. *V. LYCHNITIS* L. Europe, Caucasus Region. Ballast, Cardiff, *J. S.*
1867. *V. NIGRUM* L. Europe. Cardiff, *J. S.* Lower Penarth, *H.* About the local docks, *A. H. T.* Radyr. A white-flowered variety occurs.
1869. *V. CHAIXII* Vill. Europe. Canton.

- 1869(2). *V. OVALIFOLIUM* Simms. Caucasus. Cardiff, *E. V.* A garden escape.
- 1874(2). *LINARIA HETEROPHYLLA* Desf. (= *L. STRICTA* Guss.). Mediterranean Region. Sand ballast, Radyr.
1877. *L. PURPUREA* L. Southern Europe. Ballast, Cardiff, *J. S.*
1878. *L. REPENS* Mill. Europe. Naturalised in abundance in many places in the district and hybridising with *L. vulgaris* Mill.
- 1879(4). *L. REFLEXA* (L.) Desf. Italy, North-West Africa. Cardiff, *G. C. D.*
1880. *L. PELISSERIANA* Mill. Southern Europe, Asia Minor. Ballast, Cardiff, *J. S.*
1881. *L. CAESIA* DC. Spain. Ballast, Cardiff, Penarth, *J. S.*
1882. *L. SUPINA* Desf. Mediterranean Region. Ballast, Cardiff, *J. S.*
1889. *ANTIARRHINUM MAJUS* L. Mediterranean Region. Cardiff, Llandaff, *H. J. R.* Penarth Ferry, *J. S.*
1890. *A. ORONTIUM* L. Europe, Asia Minor, North Africa. Sand ballast, Radyr.
1895. *SCROPHULARIA SCORODONIA* L. North Africa and Asia, Europe. Established at Cardiff Docks.
- 1895(2). *S. SCOPOLI* Hoppe. Eastern Europe, Asia Minor, Himalayas. Cardiff, *G. C. D.*
1896. *S. CANINA* L. Europe, Asia Minor, North Africa. Cardiff Docks. b. *pinnatifida* (Brot.). Cardiff Docks. Both type and variety quite established.
- 1896(2). *S. HOPPII* Koch. Europe. Persisted for several years at Radyr.

LABIATAE.

1991. *MENTHA SPICATA* L. Europe, North Africa, North Asia. Cardiff, *J. S.*
2017. *MELISSA OFFICINALIS* L. Mediterranean Region, Orient. Cardiff, *N. B. G.* Cadoxton, *H. J. R.* Penarth, Radyr.
2024. *SALVIA SYLVESTRIS* L. East Europe, North Asia. Barry, Cadoxton.
2031. *S. VERTICILLATA* L. South Europe, Orient. Radyr, Cardiff, Barry. Naturalised.

2047. MELITTIS MELISSOPHYLLUM L. Europe. Ballast, Cardiff, *J. S.*
2048. SIDERITIS MONTANA L. Mediterranean Region, Orient. Penarth, Cardiff, *J. S.* Grangetown.
2053. STACHYS ITALICA L. Mediterranean Region. Cardiff, *J. S.*
2059. S. ANNUA L. Europe. Cardiff, *E. V.* Radyr, Grangetown.
- 2059(2). S. RECTA. South Europe. Barry. Naturalised.
2065. LEONURUS CARDIACA L. North Temperate Regions. Cardiff.
2069. LAMIUM MACULATUM L. Europe, Orient. Garden escape. Penarth, *J. S.*

PLANTAGINACEAE.

2088. PLANTAGO PSYLLIUM L. Mediterranean Region, Orient, North-West India. Cardiff, *J. S.*
2099. P. INDICA L. (P. RAMOSA Asch.=P. ARENARIA W. & K.). Europe, Asia Minor, North-West India. Penarth, *Herb. Babington*; Cardiff. Naturalised.
2095. P. LAGOPUS L. Mediterranean Region, Orient. Introduced with grain siftings, Splott.

ILLECEBRACEAE.

2103. HERNIARIA GLABRA L. Europe, North Asia. Ballast, Cardiff, *J. S.*
2104. H. CILIATA Bab. Europe. Ballast, Cardiff, *J. S.* Barry. Established.
2105. H. HIRSUTA L. Europe, Asia Minor, East India. Ballast, Cardiff, *J. S.*
2108. SCLERANTHUS PERENNIS L. Europe. Ballast, Cardiff Docks, *J. S.*

AMARANTACEAE.

2110. AMARANTHUS RETROFLEXUS L. North America. Cardiff, Penarth, *J. S.* Splott, Barry. Established in the latter place. var. *Delilei* Thell. Cardiff.
2111. A. BLITUM L. Temperate and Tropical Regions. Cardiff, Penarth, Barry, *J. S.*
2112. A. ALBUS L. North America. Cardiff. Established for some years. Splott.

2114. A. CHLOROSTACHYS Willd. Europe, Orient, East India.
Cardiff, Splott.

CHENOPODIACEAE.

2120. CHENOPODIUM HYBRIDUM L. North Temperate Region. Cardiff, *J. S.* Splott.
2121. C. URBICUM L. Europe, North Asia. Ballast, Cardiff, *J. S.* Splott.
2122. C. MURALE L. Europe. Leckwith, Cardiff Docks, Splott.
2123. C. OPULIFOLIUM Schrad. Europe. Radyr. Common at Barry, Splott.
2125. C. LEPTOPHYLLUM Nutt. North America. Cardiff, Splott. Introduced with grain siftings.
2126. C. FICIFOLIUM Sm. Europe. Ballast, Cardiff, *J. S.*
2127. C. GLAUCUM L. Europe. Penarth, *J. S.* Splott.
2128. C. VULVARIA L. Europe, North Asia. Barry (in some quantity), Radyr, Splott.
2130. C. AMBROSIODES L. Europe. Barry, Cardiff. b. *suffruticosum* (Willd.). Barry.
2131. C. BOTRYS L. Europe. Cardiff, *J. S.*
- 2131(2). C. STRIATUM Kras. Europe. Cardiff, Barry.
2134. C. VIRGATUM Thunb. Japan. Splott.
2135. ROUBIEVA MULTIDIFA Moq. South America. Radyr, Cardiff, Barry.
2137. BETA VULGARIS L. Europe, North Africa, Orient. Barry, Splott. Introduced with garden refuse.
2145. ATRIPLEX TATARICA L. Central Asia. Cardiff, *E. V.* Barry. Probably introduced with grain siftings.
- 2153(10). AXYSIS AMARANTHOIDES L. North Asia. Introduced with grain siftings, Splott.

PHYTOLACCACEAE.

- 2168(2). PHYTOLACCA DECANDRA L. North America. Cardiff Docks.

POLYGONACEAE.

2183. POLYGONUM BELLARDI All. Mediterranean Region, Caucasus. Introduced with grain siftings, Splott, Barry.

2191. *P. CUSPIDATUM* Sieb. & Zucc. Japan. A garden escape established in several places.
2192. *FAGOPYRUM SAGITTATUM* Gilib. (= *F. ESCULENTUM* Moench). North Asia, Europe. Splott, Cardiff, Barry. A chicken-food or grain sifting alien at Cardiff.
2193. *F. TATARICUM* Gaertn. Europe, North Asia. Barry.
2205. *RUMEX PULCHER* L. Europe, Orient. East Moors, *J. S.* Cathays Park, *E. V.* Splott.
2207. *R. MARITIMUS* L. Temperate and Sub-Tropical Regions. Ballast, Barry, *A. H. T.* Cardiff, *H. J. R.* Splott.
- 2210(6). *R. SALICIFOLIUS* Weinm. North America. Introduced with grain siftings, Splott, Cardiff Docks.
- 2210(12). *R. MAGELLANICUS* Gris. South America. Cardiff, *G. C. D.*
- 2210(13). *R. OBOVATUS* Danser. South America. Introduced with grain siftings, Splott.

SANTALACEAE.

2218. *THESIUM HUMIFUSUM* DC. Europe. Barry. Established.

EUPHORBIACEAE.

2229. *EUPHORBIA ESULA* L. Europe. Cardiff Docks, *H. J. R.*
- 2229(2). *E. VIRGATA* W. & K. Europe. Barry, Radyr. Established in both places.
2230. *E. CYPARISSIAS* L. Europe. Cardiff Docks.
2234. *E. FALCATA* L. Mediterranean Region. Cardiff, *J. S.*
2236. *E. PALUSTRIS* L. Europe. Barry. Has persisted for four or five years.
2240. *RICINUS COMMUNIS* L. Tropical Regions. Barry.
2243. *MERCURIALIS ANNUA* L. Europe. North Africa. Abundant on waste ground, Leckwith, Grangetown, Barry.

URTICACEAE.

- 2247(2). *HUMULUS JAPONICA* Sieb. & Zucc. Japan. Cardiff, *J. S.*
2248. *CANNABIS SATIVA* L. Central Asia, North-Western Himalaya. Penarth Ferry, Cardiff, *J. S.* Dinas Powis.
2251. *URTICA PILULIFERA* L. Mediterranean Region, Orient, East India. Ballast, Cardiff, Penarth, *J. S.*
- 2253(5). *HELXINE SOLEIROLII* Req. Corsica, Sardinia. Foot of a wall, Penylan. Persisted for several years.

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HYDROCHARIDACEAE.

2298. ELODEA CANADENSIS Michx. North America. Common in ponds and streams throughout the district.

IRIDACEAE.

2360. SISYRINCHIUM ANGUSTIFOLIUM Mill. North America. Cardiff, *H. J. R.*

AMARYLLIDACEAE.

2372. NARCISSUS BIFLORUS Curt. Europe. Penarth, *Cardiff Nat. Soc. Proc.* 1893. Barry, *D.*
2373. N. POETICUS L. Europe. Llanishen Reservoir, *J. S. Cathays Park, W. W. Pettigrew.*
2375. N. TAZETTA L. Mediterranean Region. Near Penarth Ferry, *J. S.*

LILIACEAE.

2390. ASPHODELUS FISTULOSUS L. Mediterranean Region, Orient. Barry.
2408. HYACINTHUS COMOSUS L. (=MUSCARI COMOSUM Mill.). Mediterranean Region, Orient. Barry.
2413. ORNITHOGALUM UMBELLATUM L. Europe, Asia Minor, North Africa. Cooper's Fields, *J. S.*

JUNCACEAE.

2441. JUNCUS TENUIS Willd. Europe, Western India, Australia. Cardiff Docks. Also occurred at Aberdare in 1903, where seeds were probably introduced attached to pit props, which had lain at Cardiff Docks.

PALMACEAE.

2459. PHOENIX DACTYLIFERA L. North Africa, Arabia. Introduced with town refuse, Splott. (Seedlings.)

CYPERACEAE.

- 2528(2). CYPERUS DECLINATUS Moench (=C. VEGETUS Willd.). Chili. Penarth Ferry, *J. S.*

GRAMINACEAE.

- 2631(2). PASPALUM DILATATUM Poir. Brazil. Cardiff.

2632. *PANICUM CRUS-GALLI* L. Europe. Penarth, *J. S.* Cardiff, Barry, Splott.
2634. *P. SANGUINALE* L. (= *DIGITARIA SANGUINALIS* Scop.). Cosmopolitan. Established at Cardiff.
2635. *P. ISCHAEMUM* Schreber (*GLABRUM* Gaud). North Temperate and Tropical Regions. Cardiff, Penarth, *J. S.*
2636. *P. MILIACEUM* L. Central Asia. Penarth, Cardiff, *J. S.* Splott.
- 2636(2). *P. MAXIMUM* Jacq. Tropical America, India. Introduced with grain siftings, Splott.
2637. *P. CAPILLARE* L. South and North America. Radyr, Barry.
2639. *SETARIA VIRIDIS* Beauv. Cosmopolitan. Cardiff, Penarth, *J. S.* Barry, Splott, Radyr. Probably introduced with grain siftings.
2640. *S. GLAUCA* Beauv. Temperate Asia, Europe. Penarth, *J. S.* Barry, Splott, Cardiff, Radyr. Probably introduced with grain siftings.
2641. *S. VERTICILLATA* Beauv. Cosmopolitan. Cardiff, Penarth, *J. S.* Splott.
- 2644(2). *BECKMANNIA BRUCAEFORMIS* Host. Europe, Temperate Asia, North America. Introduced with grain siftings, Splott.
2645. *ZEA MAYS* L. Paraguay. Cardiff, Barry. Introduced with ship sweepings.
2650. *PHALARIS AQUATICA* L. Europe. Cardiff, *J.S.*
2651. *P. CANARIENSIS* L. Europe, North Africa. Barry, Cardiff, Splott. Introduced with grain siftings and town refuse.
2653. *P. MINOR* Retz. Greece, Orient, South Africa. Barry, Cardiff, Splott. Doubtless introduced with grain siftings.
2654. *P. PARADOXA* L. Mediterranean Region, Orient. Penarth, *J. S.* Cardiff, Splott. A grain-sifting introduction.
2660. *PALLASIA ACULEATA* (L.) Dr. (= *CRYPISIS ACULEATA* Ait.). Europe. Cardiff, *J. S.*
- 2662(2). *SPOROBOLUS ARGUTUS* Kunth. Brazil. Cardiff.
2668. *ALOPECURUS UTRICULATUS* Pers. Europe, Orient. Cardiff, *J.S.* Barry.
- 2669(20). *PIPTATHERUM MULTIFLORUM* Beauv. Europe. Cardiff and Barry Docks.

THE ADVENTIVE FLORA OF THE PORT OF CARDIFF.

2672. HELEOCHLOA SCHOENOIDES Host. Mediterranean Region, Persia. Cardiff, *J. S.*
2677. PHELEUM PHELOIDES Simonk. Europe, North Asia. Ballast, Cardiff, *J. S.*
2683. AGROSTIS VERTICILLATA Vill. Europe. Barry. Established.
2690. POLYPOGON MONSPELIENSIS Desf. Europe. Barry, Cardiff, Splott. Naturalised by a pond at Cardiff Docks.
2692. P. LITTORALIS Sm. (=P. MONSPELIENSIS × AGROSTIS ALBA). Europe. Cardiff. Growing with the parent plants in some abundance.
- 2697(2). DEYBUXIA RETROFRACTA Kunth. Australia, New Zealand. Barry.
2698. GASTRIDIMUM VENTRICOSUM S. & T. (=G. LENDIGERUM Gaud.). Europe, Mediterranean Region. Penarth, Cardiff, *J. S.* Barry. Introduced with ballast.
2699. APERA SPICA-VENTI Beauv. Europe, Orient. Cardiff, *H. J. R.* Grangetown, Penarth Ferry, *J. S.*
2700. A. INTERRUPTA Beauv. South Russia, Orient. Grangetown, Penarth Ferry, *J. S.* Cardiff Docks.
2704. LAGURUS OVATUS L. South Europe, North Africa. Penarth Ferry, Grangetown, *J. S.*
2717. AVENA FATUA L. Europe, Orient, North Asia. Barry, Cardiff, Splott. b. *glabrata* (Peterm.). Cardiff, *G. C. D.*
2719. A. STRIGOSA Schreber. Europe. Cardiff, Splott. Introduced with ship sweepings and grain siftings. Sub-sp. *verna* Marq. Cardiff, *E. V.*
2720. A. SATIVA L. Cultivated. Cardiff, Barry, Splott. Introduced with grain siftings.
2726. GAUDINIA FRAGILIS Beauv. Mediterranean Region. Shore near Barry, *H. J. R.* Cardiff, Barry.
2727. CAPRIOLA DACTYLON (L.) Druce (=CYNODON DACTYLON Pers.). Cosmopolitan. Cardiff. Naturalised. Splott.
2737. CYNOSURUS ECHINATUS L. Europe, Orient. Cardiff, *J. S.* Grangetown, Barry. Introduced with grain siftings.
2747. ERAGROSTIS CILIANENSIS V.-L. Europe. Cardiff.
2755. BRIZA MAXIMA L. Mediteranean Region, South Africa. Sand ballast, Radyr, Cardiff.

2760. *POA PALUSTRIS* L. North Temperate Region. Cardiff Docks, *H. J. R.* Introduced with grain siftings, Splott.
2789. *FESTUCA LIGUSTICA* Danth. Europe. Introduced with grain siftings. Splott.
2794. *BROMUS RIGENS* L. (= *B. MAXIMUS* Desf.). Mediterranean Region. Europe, Caucasus. Cardiff, Barry.
2795. *B. RIGIDUS* Roth. Europe, Mediterranean Region. Caucasus. Cardiff, *H. J. R.*
2797. *B. TECTORUM* L. Europe, Orient, North Asia. Barry, Cardiff Docks. Introduced with grain siftings, Splott.
2798. *B. MADRITENSIS* L. Europe, North Africa, Orient. Cardiff, *H. J. R.*
2799. *B. RUBENS* L. Mediterranean Region. Cardiff, *J. S.*
2803. *B. UNIOLOIDES* H. B. K. America. Barry, Cardiff. Introduced with grain siftings.
2806. *B. SECALINUS* L. Europe, Mediterranean Region, North Asia. Cardiff, *J. S.* Barry. b. *velutinus* (Schrad.). Cardiff, *H. J. R.*
2809. *B. ARVENSIS* L. Europe, Orient, North Asia. Cardiff, *H. J. R.*
2817. *B. JAPONICUS* Thunb., var. *GROSSUS* Asch. & Graebn. Europe. Cardiff Docks, *H. J. R.*
2821. *LOLIUM TEMULENTUM* L. Europe, North Asia. Cardiff, Splott. Introduced with grain siftings. b. *arvense* (With.). Cardiff, *H. J. R.* Splott.
2835. *SECALE CEREALE* L. Orient. Cardiff, Barry. Introduced with grain siftings.
2836. *TRITICUM OVATUM* Rasp. Europe. Cardiff, *J. S.*
2838. *T. TRIUNCIALE* Rasp. Europe. Cardiff, *J. S.*
2844. *T. AESTIVUM* L. (= *VULGARE* Vill.). Cultivated. Introduced with grain siftings and town refuse. Cardiff.
2846. *LEPTURUS INCURVUS* (L.) Dr. Europe. Cardiff, *H. J. R.* Barry.
- 2846(2). *L. CYLINDRICUS* Trin. Mediterranean Region. Barry.
2851. *HORDEUM JUBATUM* L. North and South America. Cardiff, Splott.
2852. *H. VULGARE* L. Cultivated. Introduced with town refuse and grain siftings. Cardiff.

