

THE BOTANICAL SOCIETY
AND EXCHANGE CLUB
OF THE BRITISH ISLES.

(VOL. VIII. PART III).

Victoria Regina.



Floreat flora.

REPORT FOR 1927

BY THE

SECRETARY,

G. CLARIDGE DRUCE, F.R.S.,

to whom, at YARDLEY LODGE, 9 CRICK ROAD, OXFORD, the Subscription,
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W. B. TURRILL, M.Sc.,

THE HERBARIUM,

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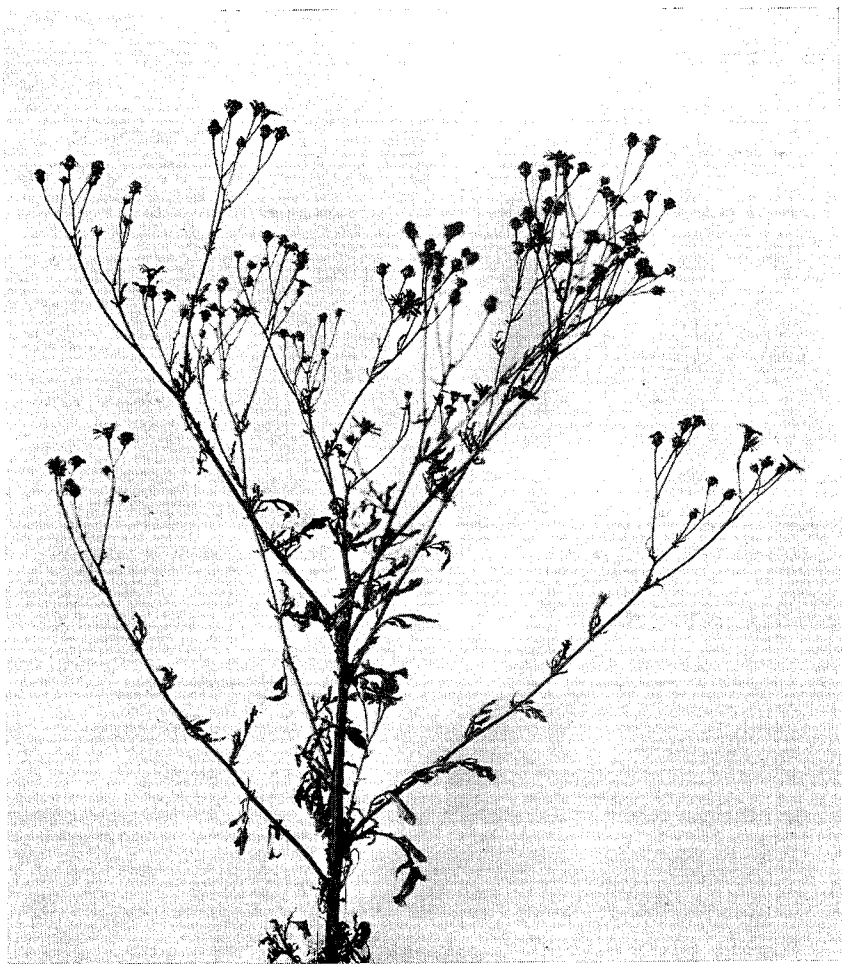
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NEW FOREST, 1927, G. C. DRUCE.

1929

Vol. 100, No. 1

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THE
BOTANICAL SOCIETY & EXCHANGE CLUB
OF THE BRITISH ISLES.

THE REPORT OF THE SECRETARY & TREASURER,
G. CLARIDGE DRUCE, YARDLEY LODGE, OXFORD,
FOR 1927.

BALANCE-SHEET FOR 1927.

Subscriptions received, - £255 10 11 Sales of Reports and Ad- vertisements, - - 21 8 6 Balance from 1926, - - 29 18 1 <hr style="width: 100%;"/> <p style="text-align: right;">£306 17 6</p> <hr style="width: 100%;"/>	Printing Reports, &c., - £181 9 0 Expenses of Distribution, 2 10 0 Postages, Carriage, Station- ery, Experts, - - 40 18 0 Towards List, - - 40 0 0 Balance, - - - 42 0 6 <hr style="width: 100%;"/> <p style="text-align: right;">£306 17 6</p> <hr style="width: 100%;"/>
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Balance carried forward, £42 0s 6d. Life Members' Fund, £91.
Benevolent Fund (including Mrs Wedgwood's, Dr A. H. Evans', and Mr C. E.
Britton's donations), £14 15s.

Audited and found correct.—FRANCIS TWINING, 27th January 1928.

All subscriptions should be paid to the above address on the first of January each year, or to the account of G. C. Druce in the Westminster Bank, Oxford. Payment in advance for two or more years saves trouble and expense. Ordinary Members, 10/-; Exchange Members, 12/6; Entrance Fee for New Members, 5/-.

Strong pressure has been made to bring out interim reports, but for the present such a plan is impracticable.

The Distributor, Mr T. J. Wall, M.A., deserves our gratitude for his carrying out the onerous task of distributing 5262 specimens and for his editing the Report.

The year 1927, so far as the Southern and Midland areas were concerned, was marked by an excessive rainfall—the wettest of six wet years—and by cloudy skies. This had the advantage of lengthening the flowering period but it made botanising a less pleasant pursuit. In the South the rainfall was excessive. In Kent, for instance, at

Edenbridge, there fell 43 in. as against an average of 30 in.; Chichester, 38 in. against 28 in.; Holne, South Devon, 70 in. against 59 in.; Barnstable, 43 in. against 36 in.; St Austell, Cornwall, 51 in. against 45 in.; Scilly was nearly normal, 33 in. against 32 in.; Chewton Mendip, 55 in. against 45 in.; Cirencester, Gloucester, 39 in. against 30 in.; Ledbury, Hereford, 34 in. against 27 in.; Church Stretton, Salop, 41 in. against 36 in.; Birmingham, 35 in. against 26 in.; Oxford, 34 in. against 23 in.; Cambridge, 24 in. against 21 in.; Chelmsford, 28 in. against 22 in.; Bury St Edmund, 31 in. against 25 in.; Blakeney, Norfolk, 28 in. against 23 in. In Wales the excess in Cardiff was 10 in.; at Aberystwyth, 11 in.; at Llandudno, 4 in., and at Bala, 15 in. Douglas in the Isle of Man had 6.6 in. in excess. The Border counties also had an excess of from 4 to 8 in. Inveraray Castle had a great downfall of 93 in. as against 77 in. Even sunny Grantown had 40 in. as against an average of 31 in., but Ullapool, Torridon, Fort William, and Arisaig had a minus rainfall of 1.5 in. to 2.7 in. Tongue and Wick were nearly normal, and Pomona in Orkney had only 2.33 in. excess. In Ireland, on the whole, there was more rain than normally, Ballynahinch having 10 in. more—71 in. against 61 in., but Omagh in Tyrone had a minus of 3 in. Zetland was abnormally dry and sunny, the best year in memory. In London rain fell on 182 days, 19 more than the average (See *The Times*, January 27, 1928).

The plant discoveries during 1927 have not been sensational, but the steady work on British plants tends to show the extreme variability in Nature and to raise hopes that many more species new to Britain will reward the patient worker. In the new edition of "The British Plant List" attention has been drawn to the additions to the British flora since the first edition was issued 20 years ago. The native species and sub-species have been raised by over 250, the critical genera necessarily accounting for the majority. The twenty years' results will compare favourably with any similar period in botanical history. Such species as *Aquilegia alpina*, *Fumaria occidentalis*, *Sagina scotica*, *Saxifraga Drucei*, *Tillaea aquatica*, *Senecio erraticus*, *Scorzonera humilis*, *Centaurium Scilloides*, *Myosotis brevidens*, *Orobanche reticulata*, *Ajuga genevensis*, *Utricularia Bremii*, *Satureia villosa* (*baetica*), *Ulmus Plotii*, *Rumex arifolius*, *Hydrilla verticillata*, *Orchis praetermissa*, *O. Fuchsii*, *O. O'Kellyi*, *Helleborine leptochila*, *Potamogeton panormitanus*, *Carex microglochin*, *Poa irrigata*, *Botrychium Matricariae*, *Nitella spanioclema*, *Tolypella nidifica* and *Chara muscosa* make a goodly show. There was no discovery in 1927 so outstanding as that of *Carex microglochin* in 1926, but Dr Drabble has named a new Violet, *Viola orcadense*, and a new variety of *Alchemilla* has been found in Teesdale by the writer and subsequently by Miss Todd. It may eventually prove to be a micro-species. Many new *Taraxaca* have been named by Dr Dahlstedt. Miss Vachell found a variety, *hirta*, of the Wood Betony, in Wales, and a Grass, usually described as a sub-species, *Festuca sulcata*, was found by me in company with Lady Davy in Surrey. Additional evidence respecting the occurrences of *Botrychium Matricariae*

cariae in Scotland was obtained. These are more fully alluded to under new species. Messrs Melville and Smith, among others, have added many aliens to our List.

The moist weather afforded such a resplendent show of *Ranunculus acer* as I never before witnessed. The pastures on the gault, especially in the vale of the White Horse, were conterminous sheets of gold. In later months the Yarrow was in magnificent bloom over a great extent of country, and the fruits of the Ash were abnormally abundant.

The publications of the year are reviewed in the subsequent pages. Much good work has been produced. Among the local floras it is a source of relief to me to see the second edition of the "Flora of Oxfordshire" produced, the first being issued in 1886, forty-one years ago. It is a great pleasure to me that the Rev. F. Bennett, who corrected the proof sheets of the first edition, should have performed the same duty for the second. "Nature," "The Gardeners' Chronicle," "The Journal of Botany," "The North Western Naturalist," and "The Irish Naturalist" all show evidence of vitality. Mrs Dent and her energetic assistants keep up the popularity of the Wild Flower Society with undiminished vigour and thus spread the interest in Field Botany among the rising generation.

The County Records are fully up to the average. Such extensions as the discovery by Mr A. Wilson of *Stachys alpina* in Denbigh, by Mr Meade Waldo and Mr Justice Talbot of *Bartsia viscosa* in Kent, by the Rev. E. M. Reynolds of *Scirpus rufus* in Norfolk, by Miss Vachell and Miss Insole of a new locality for *Liparis* in Glamorganshire, by Mr T. Gambier-Parry's find of *Potentilla verna* in Jersey, by my own finds of *Euphrasia hirtella* in Scotland, of *E. atrovioleacea* in Forfarshire, of *E. septentrionalis* in W. Sutherland, by Mr Trapnell's discovery of *Thymus zetlandicus* in Kerry, are notable additions to Topographical Botany.

We are greatly indebted to Dr S. H. Vines, F.R.S., the Rev. F. Bennett, Mr T. Gambier-Parry, Mr R. H. Corstorphine, Mr W. H. Pearsall, Dr Drabble, Rev. H. J. Riddelsdell, Mr W. Watson, Mr W. O. Howarth, Col. A. H. Wolley-Dod, Mr J. Fraser, Mr D. Lumb, Mr A. E. Wade, Mr A. Bennett, and Mr R. Butcher for literary and critical assistance.

To the authorities of the Royal Botanic Gardens at Kew and Edinburgh, and the Natural History Museum, Cromwell Road, we are also indebted for help. Among foreign botanists we are especially grateful to Dr Albert Thellung for naming the adventives. M. Paul de Riencourt has kindly determined the Leguminosae, Dr K. Ronniger the Thymes, Dr Dahlstedt the Taraxaca, Dr E. Almquist the Shepherd's Purses, and Dr J. Murr the Chenopods. Dr C. Lindman, Dr R. Danser, Prof. C. H. Ostenfeld, and Prof. J. Holmboe have also placed us under great obligations.

Our new members for 1927-28 include:—Miss Ackerley (1928); Sir Maurice Abbot Anderson, K.V.O.; Hon. Mrs A. Asquith; Mr C. Amherst; Mrs Beck; Messrs J. H. Bowman, A. R. Bulley, A. K. Bulley,

W. W. Boucher; Mrs Burdon; Mr F. R. Browning; Mrs Cartwright; The Cleveland Naturalists' Field Club; Mr H. W. Clear (1928); Mrs R. Davies; Commander H. Formby; Mrs Murray Guthrie; Dr J. Griffith; Mrs M. Hall; Mr J. Halsley (1928); Rev. D. M. Heath; Mrs Carl Holmes (1928); Mr Huish; The Marchioness of Lansdowne; Mr Frank Lascelles; The Marchioness of Lincolnshire; The Baroness Lucas; Messrs J. E. Lousley, S. P. Mercer, S. K. Mukerji, F.L.S.; Miss and Miss B. J. Macdougall; The Hon. Sidney Peel; Miss E. Pugh; The Hon. Mr Justice Roche; Miss Salmon; Miss C. Stevens; Mrs M. E. Stewart; The Seed Testing Station, Cambridge; Major-General F. C. Stern; Messrs G. H. Stevenson, F. A. Souter; Mrs Theobald; Prof. A. G. Tansley, F.R.S.; Mrs Trevor Tyler (1928); Sir James Watt (1928); Major Guthrie Watson; Colonel G. Watts; Rev. J. Webster, and Mr V. C. Wynne Edwards.

Our death roll fortunately has not been so serious as in some preceding years, yet in the death of Dr B. Daydon Jackson, botany has lost a born indexer, and the Linnean Society a long and devoted servant and biographer. Mr Linnaeus Cumming, an old science teacher at Rugby and an industrious collector of Rubi; Mr St J. Marriott, a zealous and acute worker, and the Rev. J. Roffey, a keen student of the Hieracia, are great losses to our Society. An expert on British Hieracia is sadly needed. Our ranks also have been thinned by the deaths of Miss Pomeroy, Norfolk; Mrs Bruce, Zetland; Mr Hayes, Keswick, and the Rev. Paul Bevan.

We congratulate the Worcestershire Naturalists' Club on their jubilee celebration, the Club being founded in 1877. Their first President was the well-known botanist, Edwin Lees. A very enjoyable reunion took place. The dinner was held in the Shirehall, Worcester, under the presidency of R. C. Grant, M.Sc. The menu was adorned with a picture of *Cephalanthera longifolia*. On October 6th, a Fungus foray was made in Shrawley Woods under the leadership of Mr Carleton Rea, B.C.L., who was my kind host during the celebrations. Many interesting species were noted. *Campanula patula* was in flower, and the writer detected the same form of *Cardamine impatiens* which had already been found by Mrs Stewart in another area of Worcestershire. I have named it var. *poterriifolia*, the leaves in outline recalling those of *Poterium Sanguisorba*. The Secretary, Mr W. J. Else, made most excellent arrangements for this interesting and successful meeting. The Cardiff Naturalists' Society also held some very successful meetings in celebration of its Diamond Jubilee. The Hon. Secretary, Mr D. H. Morgan, is to be most heartily congratulated upon the excellent arrangements made for the comfort of visitors under the presidency of Mr T. W. Proger. Excursions of a very pleasant nature were made to the Caerleon excavations and to Llandaff Cathedral. The dinner, held in the Whitehall Rooms, on November 2, 1927, under the chairmanship of the President, T. W. Proger, F.Z.S., was a great success, as was the reception held on October 27 in the National Museum of Wales, under the auspices of the President and Council. A Reception and Dance was given by the Lord Mayor in the splendid municipal

buildings. An interesting lecture on "The History of the Society" was given in the Whitehall Rooms by A. W. Sheen, C.B.E., M.Sc., etc. Enjoying the hospitality of Mrs Vachell, an opportunity was given of visiting, with Miss Vachell, Nash Point to see the new variety of *Stachys officinalis*—var. *hirta*, which she has detected there. Near by it was my good fortune to see *Hedera Helix*, var. *sarniensis*, in some quantity. The visitors were entertained to tea on 4th November at Cardiff Castle by the Marquis of Bute, K.T.

We congratulate Sir W. T. Thiselton Dyer who, on 28th January, reached the age of 84. He and Lady Dyer celebrated their golden wedding on 23rd June. The Linnean Gold Medal for 1927 was awarded to Dr Stapf, the editor of "The Botanical Magazine." The Annual Medal, awarded by the Massachusetts Horticultural Society in 1927, was given to Dr Liberty Hyde Bailey of Ithaca, the well-known author of the "Standard Encyclopædia of Horticulture." Sir Frederick Keeble, K.B.E., under Rule 11, has been made a Member of the Athenæum. Lord Lambourne also receives congratulations upon his receiving the K.C.V.O. in the Birthday Honours List. His portrait is in the "Gardeners' Chronicle," 143, 1927. Very hearty good wishes are offered to Dr A. G. Tansley, F.R.S., the well-known British exponent of Ecology and editor of "The New Phytologist," upon his election to the Sherardian Chair of Botany at Oxford in January last. An appreciative article, with a portrait, appears in the "Gardeners' Chronicle" 183, 1927. His predecessor, Dr S. H. Vines, F.R.S., is one of the two scientists to receive the title of Emeritus-Professor at Oxford. We are also glad to see that Sir John B. Farmer has been elected one of the six British Honorary Fellows of the Botanical Society of Edinburgh.

My own field work during 1927 did not afford any startling discovery. In March the Canary Islands were visited. The botanical results are described in another place, but before sailing I went to Biddesden where *Taraxacum subdilatatatum* was found,, and with Mrs Baring, Mr Justice Talbot, and the Rt. Hon. H. Baker, I went to see the display of Crocus at Inkpen. The plant had been nearly extirpated by raiders in past years but now, under careful watchfulness, the Crocus is spreading again. Incidentally one came to hear of its introduction to this Berkshire locality where it looks so very much like a native. Over 70 years ago the occupier of the field brought back from Littlecote a load of garden rubbish among which he noticed some bulbs. The refuse was spread over the land and next year the Crocus appeared, and it has rapidly increased. Downton, near Salisbury, was searched for *Asarum*, long known to grow there. It is apparently spreading. In the Moot *Galanthus* was in great plenty with other relics of cultivation. Visits were paid to Stansteadbury and Cambridge, and then to Bacres to Miss Grenfell's, when a visit to Dropmore resulted in the hybrid, *Viola canina* × *lactea*, being found. The Fritillary was seen in great profusion at Swallowfield, many of the plants being white flowered. Barnack quarries in Northamptonshire gave a great show of *Aceras* and *Pulsatilla*. The Souththorpe marsh afforded *Carex elata*,

Orchis incarnata and its hybrid with *O. praetermissa*, the last species very showy as was also its hybrid with *Fuchsii*. The Huntingdonshire side of the River Nene afforded *Cirsium eriophorum*.

A section of our members, brought together under the aegis of the Hon. Mrs Adeane and Hon. Mrs G. Baring, met at Weston-super-Mare when, under the very efficient guidance of Mr W. D. Miller (who gives an account in subsequent pages), a most enjoyable programme was carried out, almost all of the characteristic plants of Cheddar, the Mendips, Glastonbury moors, etc. being seen. The members were glad to notice that *Dianthus caesius* was flowering freely, and much of it beyond the reach of marauders. The hybrid *Helianthemum*, white-flowered *Vicia Orobus*, and *Orchis hircina* were noted. The party which included, in addition to those mentioned, Mr Justice Talbot, Miss D. Meynell, Hon. Miss E. Elphinstone, Miss Robinson, Hon. Mrs and Miss Campbell, then went on to Cardiff where Miss Vachell acted as leader. This also proved a most successful meeting. Mr R. L. Smith, Mr A. E. Wade, and others were most kind in showing the adventives at Barry and Splott. The rare plants of Gower, including *Draba aizoides* and *Adiantum Capillus-Veneris* were seen and the party were fortunate to add a fresh locality for *Equisetum hyemale* close to Cardiff. By the kindness of the authorities of the National Museum of Wales that splendid building was inspected at an unwonted hour. The members are greatly indebted to Mr W. D. Miller and Miss Vachell for their untiring efforts to make the expeditions successful. One may add that *Orchis incarnata*, var. *dunensis* was in great beauty at Kenfig.

At the end of June the neighbourhood of Culeaze in Dorset was explored with my kind hosts, Major and Mrs Guthrie Watson. The meadows were full of *Orchis praetermissa* and its hybrids with *Fuchsii* and *maculata*. The following day the New Forest was explored and *Gladiolus* seen in bud. At Ridge *Scorzonera* was mainly over flower. I think it is indubitably native, and it has a much wider range than was at first thought. As the guest of the Rt. Hon. Harold Baker at Crabwood, near Winchester, some interesting species were seen. *Lobelia urens* was much more plentiful than usual at Hinton. Several aliens were obtained at Christchurch, and some species of *Thymus* were added to the Hants flora. Miss Grenfell entertained several members at Baeres, including the Countess of Mexborough, the Hon. Mrs Adeane and Miss Vachell. *Cynoglossum germanicum* was in good growth at Pyrton, and *Ornithogalum pyrenaicum* was noticed at Compton in Berkshire and *Leucojum aestivum* at Hambledon. On the 28th, the Hon. Mrs Baring, Mr M. and the Hon. Mrs Adeane and myself went to Southport to see the Eclipse, of which a good view rewarded us for the night journey. A rush to the Birkdale Sandhills gave us *Orchis incarnata*, var. *dunensis*, *Thymus pycnotrichus*, as well as a new modification of *Anthyllis*, in addition to the well-known species which grow there. In early July the Countess of Buxton entertained several members at Newtimber, and a visit to Berwick Wood enabled us to see *Phyteuma spicatum*. An expedition to Arundel and Amberley allowed

us to visit the chief plants of that interesting area, but, alas, the last root of *Orchis hircina* had been removed. Later in the month, under the guidance of Messrs R. Melville and R. L. Smith, Mrs Wedgwood and I explored the immense dumping ground of Metropolitan refuse at Dagenham. The adventives which occur there will be the subject of a special article by our industrious leaders. The special features there were the thickets of *Heracleum Mantegazzianum* and *Rumex Patientia*, the former making almost a forest with its gigantic growth. In the Hackney marshes the features were the fine growth of *Archangelica*. At Dagenham I got a new variety of *Medicago sylvestris*, named by M. P. de Riencourt as *cyclocarpa* Hy. Later in the month Lichfield was visited and Sir Roger Curtis motored me to Burton-on-Trent. The sunless summer had proved inimical to the growth of aliens. Not a plant of the thousands of *Herniaria hirsuta* of last year was to be seen. However the search was rewarded by finding thousands of *Festuca Danthonii (ciliata)* in good condition, and an undescribed Dandelion of the *Vulgaria* section. *T. brachyglossum* and *T. fulvum* were gathered there also. In the canal near Micklem Cross, *Zannichellia repens* was added to the Staffordshire flora.

Towards the end of the month I again visited Banchory in Kincardineshire in search of *Botrychium Matricariae* but it was a vain quest. We were directed to the precise spot where Mr Sim had gathered it in 1872, but the place—a grassy roadside bank—is not now in so favourable a condition for fern growth. Moreover, *B. Matricariae* is known to be uncertain in its appearance, or rather perhaps has no long life. However, through the kindness of Mrs White, a sister of Mr Sim's, a more complete specimen was given me which proves that the species in question was *Matricariae*. *Cirsium eriophorum*, as an adventive, was found in a pasture field near the Dee, *Alchemilla curtifolia* was obtained near Banchory in Kincardineshire, and also *Taraxacum Kjellmanni*, *Thymus Drucei* and *T. neglectus*. In August a short visit was paid to Ireland, but the persistent wet drove me away. My object was to see the southern form of *Spiranthes Romanzoffiana* so one went by way of Fishguard to Kenmare. Leaving Oxford at 7.30 p.m., we were at Kenmare by 12 noon the next day—a quick journey. Through the kindness of Lord and Lady Lansdowne we motored, along with Lady K. Lambton, to Waterville, but although an arduous search was made not a specimen of the Orchid was to be seen. A second day was spent in motoring down to Derrynane where *Arabis ciliata* was in some plenty on the sand-dunes with *Thymus neglectus*. *Pubilaria planifolia* in good fruit was seen in its old station. A third expedition was made by motor from Kenmare to Berehaven, when after 4½ hours search a single plant of *Spiranthes gemmipara* was seen growing with one plant of *S. spiralis*. It is not safe to decide on the evidence of a single specimen, but there is a difference from the Lough Neagh form. How much this variation is due to the place of growth one cannot say. Here it was in a pasture and not a very wet pasture. By Lough Neagh I saw it growing with its feet in the water as a taller plant with narrower

leaves. I scarcely think they are specifically distinct. In any case I doubt if Rydberg's *stricta* is more than a variation of *Romanzoffiana*. At Kenmare we got a Dandelion "nearly related" to *T. Koehleri*. On our way home we stayed at Fishguard to see *Anthemis macrantha* which is abundantly naturalised there. At Cardiff we saw *Roemeria* in flower, and Miss Vachell motored us to the Glamorgan sand-dunes where we saw quite a hundred spikes of *Liparis Loeselii*, var. *ovata* and a very interesting form of *Ononis repens*. *Ballota nigra*, var. *molliissima* Druce, and *Trifolium medium*, var. *pedunculosum* were also seen in Glamorganshire. In September the New Forest was again visited and *Senecio erraticus* was gathered. On the way, in Berkshire the latter species, or possibly a hybrid (*intermedius*), was seen at Shefford where *Rumex Weberi* occurred. A late autumnal visit to Lord Dartmouth's at Patshull resulted in finding at Arbury Castle, with Lady Joan Legge, *Alchemilla pastoralis* in its second British locality. Major Woodward showed us a tree, which is a seedling of the Wyre Forest *Pyrus domestica*, in the splendid arboretum there. A short visit to Wilsford for the coming of age of the Hon. Stephen Tennant afforded *Thymus britannicus* and *T. neglectus*.

Grateful thanks are due to all helpers, and may I take this opportunity of thanking also the very numerous writers of congratulatory letters upon my election as a Fellow of the Royal Society. The honour was rendered doubly acceptable because of these most kind congratulations. I had hoped to acknowledge all these letters personally, but, alas, the pressure of work has prevented my doing so. I trust the writers and those who supported my nomination will accept this belated assurance that I am inexpressibly grateful to them.

PLANT NOTES, ETC., FOR 1927.

(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. or J. of B.* = *Journal of Botany*; *Nat.* = *The
Naturalist*; *N.W. Nat.* = *North Western Naturalist*; *Ph. Journ.* =
Journal of the Pharmaceutical Society.

1/5. CLEMATIS ORIENTALIS L. Alien, Orient. Hortal. Introduced
into Britain in 1731. Mount Joy, Newport, Isle of Wight, Miss MAUD
NEALE.

3/6. ANEMONE SYLVESTRIS L. Alien, Europe. In a wood at Beedon,
Berks, Mr BUTLER.

6/4. RANUNCULUS AURICOMUS L. See some Recent Advances in
our Knowledge of Inheritance in Plants by Prof. F. E. Weiss, F.R.S.,
in *Manchester Lit. & Phil Soc.* 75, 1926-7. In this interesting paper
the author was able to add another instance in unilateral inheritance
(See also *Brit. Assoc. Rep.* 404, 1926), which is offered by *Ranunculus
auricomus*. The normal form has finely dissected leaves very like those
of an ordinary buttercup and flowers also like those of a buttercup with
five bright yellow petals. In addition to this normal form, there exists
an apetalous form in which the petals are missing, the sepals are more
delicate and usually slightly crumpled, yellow on the inside but still
green on the outside. They are wider than those of the petaloid form
and may be considered semi-petaloid in their development, thus showing
a transition which in other members of the family has become complete.
Schinz & Keller have a variety with more or less aborted petals—*R.
auricomus*, var. *palustris*. Prof. Weiss alludes to *R. pseudopsis* Jord.
which Rouy puts as a var. of *auricomus*. His own investigations lead
to the conclusion that there are two distinct varieties, one completely
apetalous and the other with five distinct petals, and that the inter-
mediate forms with a defective number of petals are of hybrid origin.
The figures dissected show radical leaves from plants resulting from a
cross of a petaloid form with the apetalous form. Both have leaves

(1) dissected form characteristic of the normal petaloid parent and (2) radical leaves resulting from crossing the apetalous form with pollen of the petaloid form. Both have the type of the apetalous maternal. In the F.2 generation, raised from crosses, a few completely apetalous flowers were observed on a single plant. It is, therefore, probable that the very rare cases of apetalous plants with dissected foliage are descendants F.2 or later forms of hybrid parentage. The offspring in which the apetalous form was the female parent showed a very marked difference from the reciprocal cross just described. With a solitary exception they exhibited solely the characteristics of the female parent. In the next generation of F.2 they remained entirely of the same type. It is obvious, therefore, that while the fertilisation of the petaloid forms with pollen of the apetalous form yields somewhat intermediate offspring the reciprocal cross shows purely unilateral inheritance. We have in Britain, as given in my List, var. *incisifolius* Reichb. and also a form with nearly entire radical leaves, var. *reniformis* Kittel. It is a point whether these are true varieties. The latter approaches *R. cassubicus* in outline.

13/10. DELPHINIUM EXALTATUM Aiton. Alien, N. America. Hort. Introduced in 1758. Stream-side, Banchory, Kincardine, G. C. DRUCE. Det. J. FRASER.

17/1. BERBERIS VULGARIS L. The U.S. Department of Agriculture, Bulletin 21, 1544, again calls attention to the importance of eradicating this plant in areas devoted to cereal culture. Since 1918, in the U.S.A., a campaign of eradication of the Barberry has gone on and 14,000,000 bushes have been destroyed. When it is remembered that a single bush may have on it thirty-eight times as many spores as there are people in the world, i.e., 64,000,000,000, the importance of the campaign can be understood. Each of those spores could produce a red rust spore in ten days, and each red rust spore might have 200,000 or more red summer spores, and each of these could again in ten days produce an equal number. Figures like these make one reel. Fortunately every spore does not germinate. In this useful Bulletin the life-history of the Fungus, with illustration, is given, and practical methods of eradicating the pest (salt or kerosene) are described. It is stated that before the campaign began, in Minnesota 20% of the wheat crop was destroyed. This fell in 1925 to 12%. In North Dakota, in 1916, 70% suffered, but this fell in 1925 to 5%. The years selected were just as favourable to rust production as 1916. The estimated average annual loss from 1915-1920 was 50½ millions of bushels of wheat, and from 1920-1925, since the campaign, in round figures only 16,000,000 bushels.

21/2. PAPAVER RHOEAS L., var. WILKSII Dr. Hort. The Shirley Poppy. Anthers yellow, flowers pale pink or white. Rubbish heaps, Dagenham, Essex, G. C. DRUCE, R. MELVILLE, R. L. SMITH and Mrs

WEDGWOOD; Didcot, Berks, G. C. DRUCE. A wild form, with yellow anthers, was found at Odiham, Hants, in 1893, by Miss C. E. PALMER.

21/12. *P. RUPIFRAGUM* Boiss. & Reut. Pugill. Pl. Rar. 6, 1882 = *P. ATLANTICUM* Ball ex Cosson Fl. Atl. i., ii., t. 6, 1883? Alien, Morocco. Rubbish heaps, Dundee, Angus, July 1927, G. C. DRUCE.

37/9. *ARABIS ROSEA* DC. Syst. ii., 215, 1821. Alien, South Italy. Allied to *A. muralis* Bert., under which Nyman puts it as a sub-species. Found on a wall at Slinfold, Sussex, by B. REYNOLDS, in 1926. The name is verified by Dr THELLUNG.

39/3. *CARDAMINE IMPATIENS* L., nov. var. *POTERIIFOLIA* Dr. In the type plant the leaflets are described by Syme (*E.B.* i., 162) as " $\frac{1}{2}$ - $1\frac{1}{2}$ inch long, acute, generally cleft into 2 or 3 lobes towards the base." I have never met with so long leaflets. Usually they are under an inch. This variety differs from our common English plant in having the basal leaflets blunt and broad with the outline of those of *Poterium Sanguisorba*, the upper leaflets broader and blunter than in the type, the pods shorter and more spreading and the petals very minute. Mrs C. E. Stuart found a seedling in a pollard willow by the Teme, near Powick Bridge, in the parish of St John's, near Worcester, in 1922, and grew it in her garden whence I had a plant in 1927. On the Fungus foray to Shrawley Wood in September, I found seedling plants with leaflets of a similar outline. Willkomm and Lange (*Prod. Fl. Hisp.* iii., 826) describe the leaflets—"Segmentis numerosis, rotundatis ovalibus, oblongisve mucronulatis," but no mention is made of their being acute or rounded. The facies suggests possible hybridity with *C. flexuosa* With.

Var. *PATULIPES* Rouy & Foucaud Fl. Fr. i., 238. "Pédoncules très étalés ou même réfléchis; siliques continuant la direction des pédoncules, non rédressées." I have gathered this at Matlock, Derby, and Miss C. E. PALMER had it from Great Malvern, Worcester.

Var. *APETALA* (Moench) = *MINOR* Rouy & Fouc. *l.c.* Probably the common British form. Plants of it from Derbyshire have remained constant in my garden for many years. G. C. DRUCE.

48/3. *WILCKIA (MALCOMIA) PARVIFLORA* (DC.) Dr. Alien. Waste ground, Splott, Glamorgan, March 20, 1927, R. L. SMITH.

55/7. *DIPLOTAXIS TENUISILIQUA* Delile Ind. Sem. Hort. Monsp. 7, 1847. *D. auriculata* Dur. Alien, N. Africa. Bristol, W. Gloster, C. SANDWITH.

86(2). *CAYLUSEA A.* St Hil. 2nd Mém. Resedae 29, 1837.

86(2)/1. *CAYLUSEA CANESCENS A.* St Hil., *l.c.* Alien, North Africa. Splott, Glamorgan, with other aliens. Coll. and det. R. L. SMITH.

88/21. *VIOLA ORCADENSIS* Drabble in Journ. Bot. 44, 1927. This is the *V. tricolor*, var., Orkney Isles, August 1886, sent by W. R. Lin-

ton to the B.E.C., characterised by its large deep blue flowers. Also from Balta Sound, Unst, and from the north shore of Sullom Voe, growing under the low sea bank, W. H. BEEBY, 1886, *in litt.* to Dr Drabble. This is in part my *Lloydii* from Balta. G. C. DRUCE.

96/18. *SILENE NOCTURNA* L., var. *PAUCIFLORA* Otth. Par, Cornwall, L. T. MEDLIN.

98/11. *LYCHNIS PYRENAICA* Berger Fl. Bass. Pyr. ii., 264. Alien, Pyrenees. Hortal. Garden escape, Grouville, Jersey, May 20, 1926, L. ARSENE. Identified at Kew as a form of *Petrocoptis (Lychnis) pyrenaica*.

101/5. *STELLARIA HOLOSTEA* L. Birdlip Hill, Gloster, J. W. HAINES. This has narrow attenuated petals. See *Rep. B.E.C.* 216, 1920. Mr Haines has found the same form at Ferryside, Carmarthen, growing with the type. The attenuation of the petals was much marked, the plants were sturdier and the petals longer.

101/5. *S. HOLOSTEA* L., nov. forma *LOUSLEYI* Dr. Differs in its much narrower linear petals, 3 mm. wide as against 5 mm. in the type, the petals, too, are more deeply cleft and the segments acute, not obtuse as in the type. The peduncles are much more hairy. Gathered by J. E. LOUSLEY by a roadside at Woldingham, Surrey. G. C. DRUCE.

123/2. *TILIA EUROPAEA* L. = *T. VULGARIS* Hayne. On the Seedling structure. See *Journ. Linn. Soc.*, 329, 1926.

127/27. *GERANIUM SIBIRICUM* L. Dagenham, Essex, R. MELVILLE and G. C. DRUCE.

132/1. *OXALIS ACETOSELLA* L. Contains 0.86 per cent. of binoylate of potassium. ISABELLA A. PURDIE in *Ph. Journ.* 105, 1927.

146/1. *LABURNUM LABURNUM* (L.) is known from *L. alpinum* by its foliage being duller in tint and by being more or less hairy.

149/2. *ULEX GALLII* Planch., var. *BREVIALATUS* Riencourt. Chapel-en-le-Firth, Derby, G. C. DRUCE.

151/3. *ONONIS SPINOSA* L., var. *PARVIFLORA* (Rouy). *O. antiquorum* Vill. non L. Plants more slender, with diffuse stems; spines strong; leaves much smaller than type. On the slopes near Ivinghoe Beacon, Bucks, 1927, G. C. DRUCE. Det. P. de RIENCOURT.

153/2. *MEDICAGO SYLVESTRIS* Fries, var. *CYCLOCARPA* Hy. Dagenham, Essex, July 1927, G. C. DRUCE, R. MELVILLE and R. L. SMITH.

153/4. *M. POLYCARPA* Willd., var. *OLIGOCARPA* (Corb.) Rouy. *M. denticulata* Bréb. non Willd. Littlehampton Common, Kent, Dr H. BANCROFT. Det. P. DE RIENCOURT. 94

153/4. *M. LAPPACEA* Desr., var. *SARDOA* (Moris p.p.). Hackney, Middlesex, G. C. DRUCE, R. MELVILLE and R. L. SMITH.

153/5. *M. ARABICA* Huds. In Britain it appears in two varieties:—
 (1) The type with relatively conical subulate spines but little curved from below the middle, not so long as the legume is broad. (2) Var. *LONGISPINA* Rouy Fl. Fr. v., 35, 1899, which has the subulate spines very bent and much longer than in var. a. I collected it at Abingdon, Berks, and Portmadoc, Carnarvon, in 1917, and it exists in my herbarium (as *maculata*); less well marked from Afton Down, Isle of Wight; Odiham, N. Hants, 1890, C. E. PALMER, and Acton, Middlesex, 1902, A. LOYDELL. Mr GAMBIEP-PARRY has it from Kingston-Bagpuize, Berks, in 1927, well marked and like my Abingdon specimen, DRUCE.

153/19. *M. TUBERCULATA* Willd., var. *BREVISPIA* Rouy. Burton-on-Trent, Staffs, G. C. DRUCE.

154/4. *MELILOTUS INDICA* All., var. *EXALTATA* Biv. Splott, Glamorgan, G. C. DRUCE, R. MELVILLE and R. L. SMITH; Ware, Herts; near Bristol, W. Gloster, G. C. DRUCE. Plant 4-8 dcm.; leaves like that of type but larger; inflorescence laxer, $1\frac{1}{2}$ -2 times longer than leaf.

155/1. *TRIFOLIUM MEDIUM* Huds., var. *PEDUNCULOSUM* Seringe. Near St Donats, Glamorgan; Banchory, Kincardine, G. C. DRUCE.
 Var. *BRACHYCALYCNUM* Rouy. Buriton, Surrey, W. BIDDISCOMBE.

155/2. *T. PRATENSE* L., var. *PARVIFLORUM* Bab. Rouy (*Fl. Fr.* v., 120) treats this as a "forme"—*T. brachyanthum* Rouy—differing from *pratense* "dents calicinales, même les supérieures, plus longues que le tube, toutes plus longues que la corolle, ce qui rend les capitules chevelus même à l'anthèse, capitules petits, le plus souvent géminés, plus ou moins pédonculés, surtout l'axillaire." He gives two varieties—a. *genuinum* and b. *heterophyllum*, the latter a more slender plant, with elongated stems, small leaves, the upper smaller and narrower than the lower, analogous to the var. *heterophyllum* of *T. pratense*. This, identified by P. DE RIENCOURT, grew in a large patch by the roadside near Yarnton, Oxon, where it was shown me by T. GAMBIEP-PARRY.

155/7. *T. ARVENSE* L. M. P. de Riencourt identifies plants which I gathered at Christchurch, S. Hants; Cardiff, Glamorgan; Burton-on-Trent, Staffs, and Dundee, Angus—all on waste and disturbed soil—as *T. Brittingeri* Weitenw. This, I believe, is synonymous with the var. *strictius* Koch. G. C. DRUCE.

155/10. *T. ELEGANS* Savi, a fistulose form. Barry, Glamorgan; Dundee, Angus, G. C. DRUCE; Dagenham, R. MELVILLE.

Var. *PHYLLANTHUM*. This teratological condition was found at Marlborough, Wilts, by Mrs Wedgwood, and I saw it also at Didcot, Berks, and at Burton-on-Trent, Staffs, G. C. DRUCE.

T. ELEGANS × *HYBRIDUM*? M. P. de Riencourt queries some plants which I gathered with both parents on waste ground near Didcot, Berks, and at Ashby-de-la-Zouche, Leicester, G. C. DRUCE.

156/1. *ANTHYLLIS VULNERARIA* L., modif. *NORMANNIAE* Riencourt. On the Birkdale dunes, S.W. Lancs, on the Eclipse day, 1927, G. C. DRUCE, Hon. Mrs ADEANE and Hon. Mrs GUY BARING.

Sub-var. *CAMPANIANA* Rienc. *in litt.*, modif. *ELONGATA* with the above.

160/5. *LOTUS CORNICULATUS* L., var. *ARVENSIS* Ser., modif. *ELONGATUS-BRACHYODON* Rienc. Banchory, Kincardine, G. C. DRUCE. Modif. *PARVIFOLIUS* (Rouy) Rienc. Cardiff, Glamorgan, G. C. DRUCE.

160/7. *L. HISPIDUS* Desf., var. *SUAVEOLENS* (Pers.). St Brelade's, Jersey, L. ARSENE. This is synonymous with the var. *major* Rouy, already described in our *Report*.

169/1. *SCORPIURUS SULCATA* L. is figured in *Gard. Chron.* 49, 1927. This native of the Mediterranean will grow well in sunny places in light soil in England, and is interesting on account of its caterpillar-like legumes.

176/3. *VICIA CRACCA* L. Our common form is that figured in Curtis *Fl. Lond.* t. 101, which is the *imbricata* of Gilibert. Rouy gives var. *a latifolia*, which is common as at Barry, Glamorgan; Alton, Hants, etc.

176/4. *V. OROBUS* DC., modif. *MICROPHYLLA*, teste P. DE RIENCOURT. Maenclochog, Pembroke, H. ARNETT.

176/6. *V. VARIA* Host, var. *GLABRESCENS* (Heimerl.). Burton-on-Trent, G. C. DRUCE; Hackney, Middlesex, G. C. DRUCE, R. MELVILLE and R. L. SMITH.

176/13. *V. ANGUSTIFOLIA* Reich., var. *LUTESCENS* Corb. Porth, Newquay, Cornwall, C. C. VIGURS; St Osyth, Essex, 1902. See C. E. SALMON in *Trans. Linn. Soc.*, 1926. I have it in my herbarium from St Osyth, Essex, gathered in 1898. G. C. DRUCE.

176/14. *V. LATHYROIDES* L., var. *OLBIENSIS* (Reuter & Shuttleworth ined. ex Rouy *Fl. Fr.* v., 216, as a "forme"). Stem elongated (2-4 dm.); leaves proportionately narrower and longer, the leaflets of the lower leaves oblong-cuneiform, of the upper leaves narrow, sublinear, attenuate, and apiculate at the top; tendrils of the upper leaves much longer

than the other leaflets and strongly circularly recurved at the apex; pods longly and feebly incurved. Frilford, Berks, G. C. DRUCE.

Var. PARVA Rienc. Southport, Lancs, G. C. DRUCE.

176/36. V. GRACILIS Lois. Our British plant has smooth pods—*leiocarpa* Gren. & Godr. The hairy-podded form, *eriocarpa* Gren. & Godr., should be searched for.

182(2). CASSIA L.

182(2)/1. CASSIA NICTITANS L. Alien, N. America. Barry, Glamorgan, R. L. SMITH.

185. RUBUS FRUTICOSUS (which species?). In New Zealand there is said to be only one Blackberry bush, but that is 200 miles long. *Ulex europaeus*, *Senecio Jacobaea* (called horse-poison there) and *Hypericum perforatum* are weeds which are menaces in the Antipodes.

189/26. POTENTILLA VILMORINCIANA Korn. Alien. Hortal. Well established in an open copse, Glen Car, Letterkenny, Donegal, F. R. BROWNING.

190/17. [ALCHEMILLA CRINITA Buser], var. BRITANNICA Jaquet & Druce. Damp pastures, Teesdale, Durham, 1925, G. C. DRUCE; 1927, Miss TODD. Closely resembles *crinita* in its habit, form of leaf, leaf-lobes and leaf-cutting and in the shape of the urceoles, but it differs in the leaf-colour which is green-glaucous, not dull yellowish-green, in the pubescence being shorter and less dense, and the flowers have hairs. These characters may prove specific but for the time it has been thought best to connect it as a variety with *crinita* until study of it *in situ* may confirm or contradict this suggestion. F. JAQUET and G. C. DRUCE.

194/6. ROSA LUTETIANA × RUGOSA. Growing with both parents about 100 yards south-west of the Episcopal Church, Cushendun, Co. Antrim. The suckers, bud-shape, sepals and petal-colour are those of *rugosa*, but its stem prickles, leaves, stipules, and fruit take after *lutetiana*. The shape of the prickles and size of the flowers are intermediate. R. L. PRAEGER in *Ir. Nat.* 258, 1927.

194/7. R. DUMALIS Bechst. In my "Plant List" of 1908, feeling sure that there was a doubt as to what *dumalis* was, I used *R. sarmentosa* Woods in *Trans. Linn. Soc.* 213, 1817, to designate this biserrate which Déséglise had identified as *Rosa dumalis* Bechstein. Prof. G. Boulenger has ascertained that the oldest name is *R. squarrosa* Rau Enum. Rosa. Wirceb. 77, 1816, which is one year earlier. In *Bull. Bot. Belg.* 113, 1927, he states that he would use *dumalis* of Bechstein published in 1810 instead of *glauca*, since Pourret had used in 1788 that name for a different species from that of Villars, which dates from 1809 and which must be dropped. Bechstein's description of *dumalis* in Forst-

botanik of 1810 is, says Boulenger, excellent and detailed, and the spreading sepals crowning the fruit in September show that it is not a canina Rose. C'est donc sans le moindre hésitation que je propose d'adopter le nom proposé par Bechstein, qui doit remplacer celui de *R. glauca* préoccupé, pour l'ensemble des formes réunis par Crépin, donc *R. dumalis* devient la forma *typica*, embrassant le *R. Delasoici* Lagg. et Pug. et le *R. Reuteri*, f. *myriodonta* Christ. In my List N.935, with the assent of M. Crépin, I identified the *Rosa caesia* Sm. in *Eng. Bot.* t. 2367, 1811, as the earliest name for the plant usually called *R. coriifolia*. Boulenger says "D'après les descriptions et la figure, j'avais d'abord cru devoir considérer cette Rose d'Ecosse comme une variété du *R. canina*. Mais un examen des échantillons types provenant de l'herbier Sowerby, conservés au British Museum, m'a fait revenir à l'opinion de Crépin qui, en 1896, avait identifié le *R. caesia* avec le *coriifolia*. . . Le *R. caesia* devient donc *R. dumalis* [*glauca*], var. *caesia*."

195/4. PYRUS (SORBUS) DOMESTICA Ehrh. Our member, Mr C. Nicholson, gives an account, with a photograph, in the *Gard. Chron.* ii., 304, 1927, of a tree at Hale End. It is 65 feet high and its bole at 5 feet from the ground has a diameter of 3 ft. 6 in. Its spread of foliage is 85 ft. It may be added that the Goodwood Service Tree is 40 ft. high, 2 ft. in girth, and the circumference of the area covered by its branches is 150 ft. (See "Trees of Goodwood" by the Duke of Richmond and Gordon). This year I saw at Arley Castle, Worcestershire, a seedling of the Wyre Forest tree, and there is another in our Botanic Gardens at Oxford said to have been planted by Sibthorp, which is now 50 ft. high with a girth of 5 ft. 4 in.

211/17. SEDUM HISPANICUM L., var. MINOR Praeger. Alien, Spain. On walls at Garford, Berks, well naturalised. G. C. DRUCE.

211/21. S. DENDROIDEUM Moq. & Lesse. Alien, Mexico. Completely naturalised on rocks above quarry, St Catherine's Bay, Jersey, L. ARSENE. This is what I recorded in 1920, as *Sempervivum arboreum*, and replaces that record, G. C. DRUCE.

231/3. CUCUMIS MELO L. Tropics. Dagenham, Essex, R. MELVILLE and R. L. SMITH.

265/6. OENANTHE LACHENALII Gmel., var. MINIMA Rouy & Camus Fl. Fr. vii., 260, 1901. Rhoscelyn, Anglesey, Rev. W. WRIGHT-MASON; near Derrynane, Kerry, with the type. It forms rosettes with stems almost obsolete, umbels of few, 5-8 rays, involucre practically absent, involucels small or obsolete, leaf segments few, sometimes with a long terminal lobe. G. C. DRUCE.

275/1. ARCHANGELICA ARCHANGELICA (L.) Karst., nov. var. (vellusus) BRACTEATA Dr. It does not appear to be mentioned in the chief Euro-

pean Floras. Plants with the umbels strongly bracteate have been sent by Miss ACKERLEY from grassy places in the grounds of Milton Vicarage, W. Riding, Yorks, and from banks of the Medway between Maidstone and Aylesford, Mrs DAVIES. If one follows the "Actes" it will read *A. officinalis*, var. *bracteata* Dr.

302/1. *KENTRANTHUS RUBER* (L.) Dr. Llandudno, Carnarvon, C. WATERFALL, as a white-flowered, narrow-leaved form, f. *LANCEOLATA* Dr. of *K. ruber*. In true *angustifolia* the spur is short, not exceeding the ovary in length. G. C. DRUCE.

312/1. *SOLIDAGO VIRGAUREA* L. In Sweden Turesson describes four sets of ecotypes—alpine (4000 ft.), sub-alpine (2700 ft.), lowland, woodland. West coast somewhat variable, perhaps produced by intercrossing of the foregoing. The results, so far as they go, entirely support the view that the majority of habitat types are genetically distinct. Prof. Drummond (President's Address, Edinburgh Botanical Society, 1926) says that the results promise to provide a salutary check upon the extravagances of the ultra Mendelian tendency. It compels the geneticist to face squarely the question of adaptation which both Mendelians and Mutationists are inclined merely to shelve as incompatible with their particular theories.

312/1. *S. VIRGAUREA* L., nov. var. (vel forma) *INTERRUPTA* Dr. Inflorescence narrow, much interrupted; flowering spikes sometimes 12 inches long; flower clusters of 2 or 3 or rarely 10 flowers. Shores of Lake Windermere, 1915, W. H. PEARSALL; Erwood, Radnor, A. LEY; Badby Wood, Northants, 1876, G. C. DRUCE.

Nov. var. (vel forma) *DENTATIFOLIA* Dr. Leaves narrowly elliptic, coarsely but rather deeply toothed. Lamorna Cove, Cornwall, 1910, H. E. FOX. G. C. DRUCE.

328/2. *GNAPHALIUM ULIGINOSUM* L., var. *PSEUDO-PILULARE* (Asch. & Graebn.) Scholtz. Parkstone, Dorset, 1927, L. B. HALL and J. E. LITTLE. Ascherson and Graebner describe *pseudo-pilulare* as "Pflanze filzig; hüll blätter dunkel braun; frucht kurzhaarig." This woolly plant is not var. *pilulare* Wahl., which has stem and leaves glabrous. J. E. LITTLE.

328/2. *G. ULIGINOSUM* L., var. *GLABRUM* Koch. A form closely allied to, if not identical with, this glabrous form of *uliginosum* was gathered by Lady DAVY with the type and in great quantity in Kent.

347/12. *HELIANTHUS TUBEROSUS* L., as a Crop Plant. H. D. Shoemaker. U.S. Dept. Agriculture, Washington, n. 33, 1927. As we know there is an early record of this plant in Johnson's "Gerard" of 1633, and it was probably introduced into Britain in 1616, but Lacaita (*Bull. Roy. Bot. Kew*, 321, 1919) says its earliest record in Europe is Colonna (Ecphrasis) in 1616, who figures it from the garden of Cardinal Farnese

at Rome. Lauremberg describes it as being grown in the Baltic in 1632. Champlain in his Voyages and Explorations saw it in the garden of the Indians at Mallebarre, near Cape Cod, in 1605. It seems now to have entirely disappeared from that area. Its native home is usually given as from New York to Minnesota southwards to Georgia and Arkansas. Artichoke contains inulin. Its use is recommended in diabetic cases. The paper is an excellent one with a copious bibliography.

383/3. *SENECIO AQUATICUS* Huds. As Dr Thellung says, it is impossible to draw a sharp line between this species and *S. erraticus* Bert. Indeed Rouy (*Fl. Fr.* viii., 336) unites under the head species *Jacobeia* L. both *aquaticus* and *erraticus* with *Jacobeia* Huds. It will be well to give to these divergences towards *erraticus* a varietal name under *AQUATICUS* as var. *INTERMEDIUS*. Such varieties are in my herbarium from Odiham, N. Hants, 1895, C. E. PALMER; Shefford, Berks, and New Forest, S. Hants. They have the more straddling and more compound leaves of *erraticus*, but the size of the fewer flower heads is that of the type. G. C. DRUCE.

Taraxaca, determined by Dr H. DAHLSTEDT.

ERYTHROSPERMAE.

423/10(2). *TARAXACUM RUBICUNDUM* Dahlst. in Om Scand. Tarax. in Bot. Notiser, 1905. Sweden, Finland, Austria. Gathered on Steep Holme, N. Somerset in 1909 with W. A. HARFORD; on light sandy soil (Northamptonshire Sands), Redhill, Northants, 1927, G. C. DRUCE.

SPECTABILIA.

423/16. *T. BIPINNATIFIDUM* (Rostrup) Dahlst. Westray, Orkney, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 417, 1927.

423/18. *T. CHLOROLEUCOPHYLLUM* Dahlst., nov. sp. Sanday, Orkney, H. H. JOHNSTON, *l.c.*, 418, 1927.

423/32. *T. SERRATILOBIVM* Dahlst., nov. sp. Holm, Mainland, Orkney, H. H. JOHNSTON, *l.c.*, 419, 1927.

423/33. *T. SHETLANDICUM* Dahlst., nov. sp. Fetlar, Zetland, H. H. JOHNSTON, *l.c.*, 429, 1927.

VULGARIA.

423/52. *T. DILATATUM* Lindb., forma *OPINA* Dahlst. Biddesden, Wilts, G. C. DRUCE.

423/54. *T. DUPLIDENTIFORME* Dahlst. (modif.). Radyr, Glamorgan, G. C. DRUCE.

423/58. *T. FULVICARPUM* Dahlst., nov. sp. Papa Westray, Orkney, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 421, 1927.

423/65. *T. KOEHLERI* Dahlst. (modif.). Mansfield, Notts [AA.50]; nearly related to this from Cardiff, Glamorgan, and Kenmare, Co. Kerry, G. C. DRUCE.

423/81. *T. PRAERADIANS* Dahlst. Arkiv. för Bot., n. 10, 1910. Sweden, etc. Radvyr, Glamorgan, G. C. DRUCE.

423/78. *T. PERLACINIATUM* Dahlst. Roade, Cosgrove, Redhill, Northants; as a broad leaved form, Oxford; Lambridge, Oxon; Cothill, Berks, G. C. DRUCE; St Helen's Spit, Isle of Wight, Miss TODD; as a small form, Penarth, Glamorgan, G. C. DRUCE; Holm, Mainland, Sanday, Orkney, H. H. JOHNSTON in *Trans. Bot. Soc. Edin.* 422, 1927.

423/84. *T. SINUATUM* Dahlst. Cardiff, Glamorgan, G. C. DRUCE.

423/85. *T. SUBDILATATUM* Dahlst., nov. sp. Near Uffington Station, and Cothill, Berks [PP.94], July 1927; Barry, Glamorgan; St Giles, Oxon (modif.); Shefford, Berks (modif.); Didsot, Berks (forma); Biddesden, Wilts, G. C. DRUCE.

423/87. *T. SUBLACINIATUM* Dahlst. (modif.). Oxford, G. C. DRUCE.

430/1. *SCORZONERA HUMILIS* L. In May 1927, Surg.-Capt. Borrett brought me, for naming, a flower of this species which he had picked in Dorset at a place more than seven miles distant from the known locality for this plant. I went there with him on June 1st and found a well-grown colony comprising more than thirty plants, all growing within an area of about fifty square yards, on wet grassy peat. Most of the plants were in flower. This record supports the view that the species is native in Britain. L. B. HALL.

435/12. *CAMPANULA PORTENSCHLAGIANA* R. & S. Alien, Dalmatia. Hortal. Cardiff, 1922, R. L. SMITH.

438/2. *VACCINIUM MYRTILLUS* L. Mr R. B. Cooke sends from Dipton Wood, S. Northumberland, two forms of *Myrtillus*, one with leaves about 15 mm. long by 4 mm. broad, the other with leaves 30 mm. long by 20 mm. broad. Mr Cooke has grown the former in his garden for 5 or 6 years, and the latter for about 18 months. They retain their characters. The latter grows to 3 or 4 feet high in the wood. It may be provisionally called *platyphyllum*. G. C. DRUCE.

458/2. *STATICE PUBESCENS* Sm., nov. var. *WEYERI*. Found by W. Van de Weyer on the Dorset coast at Kimmeridge. He has cultivated it and seedlings of it exhibit the same characters. It differs from the type in having the upper part of the corolla papyraceous, colourless, and transparent. G. C. DRUCE.

467/3. *ANAGALLIS FOEMINA* Mill. At a recent meeting of the Linnean Society of London, Dr A. B. Rendle, F.R.S., President in the

chair, Miss Eleanor Vachell gave an account, illustrated with coloured lantern slides, of an unusual specimen of *Anagallis*. The plant of *Anagallis* was noticed in a newly-constructed public park at Coldknap, Barry, Glamorgan, in July 1926, in a flower border about to be weeded, growing amongst a large colony of normal plants of *A. arvensis*. It had 11 stems—seven bearing scarlet flowers and four bearing blue flowers. Two types, *A. arvensis* L. and *A. foemina* Mill., were apparently represented on the same plant, *i.e.*—Seven stems—Corolla segments scarlet, edge even, fringed with numerous glandular hairs, calyx two-thirds as long as corolla. Four stems—Corolla segments blue, edge denticulate, with very few glandular hairs, calyx as long as corolla. The root appeared normal, no fusion of two roots being visible. The interest of the specimen is that the characteristic features of two species (as usually recognised) are represented, but remain distinct. No parti-coloured flowers suggested hybrid origin; it appears, rather, that one portion of the plant may have reverted. The capsules on the seven stems bearing scarlet flowers were considerably in advance of those on the four stems bearing blue flowers. The President read the following letter from the Rev. Canon F. W. Galpin on the subject of Miss Vachell's paper:—"With reference to Miss Vachell's interesting exhibit, I should like to state that, in the year 1924, a great quantity of *Anagallis foemina*, together with an abundance of the common *A. arvensis*, was growing in a field near Rivenhall Place, Witham. My neighbour, Mrs Bradhurst, who lives at The Place, and is a good field botanist, observed a plant on which three stems bore red flowers and one stem blue. She transferred the plant to her garden, as the field was shortly coming under cultivation again; there I saw it, but unfortunately, all the flowers had dropped. I am glad, however, that her find, which was somewhat doubted at the time, has now received ample corroboration. In reply to the President, Miss Vachell stated that all the leaves of her plant were like those of *A. arvensis*. Dr Stapf suggested that Miss Vachell's plant was an instance of somatic segregation. He referred to Hoffman's experiments at Giessen and to Professor Weiss's, which showed a high constancy of colour and reluctance to cross. He paralleled the case of *A. arvensis* and *A. foemina* by reference to *A. Monelli* (blue) and *A. collina* (red), which in their native areas are colour-constant. They are, however, to all appearance the parents of our garden Pimpernels, of which seven colour forms were known by 1839. He suggested that these two species should be subjected to genetic experiment, which might throw much light on the problem of our smaller wild Pimpernels. Mr F. J. Chittenden referred to other examples, such as *Primula sinensis* and *Matthiola incana*, in which several characters are affected by a sport. The sport in these cases is due probably to somatic non-disjunction. The sporting *Anagallis* may be heterozygous for the various *foemina* characters shown by the sport, and the *foemina* characters being linked, the elimination of the homologous *arvensis* chromosome at a somatic cell-division would give a chimera of the type shown. Mr W. B. Turrill urged that further gene-

tical experiments should be made with the blue and scarlet British Pimpernels. He stated that there were other blue forms besides that usually recognised as *Anagallis foemina* Mill., and certainly one in Great Britain, which had the corolla characteristics of *A. arvensis* except that the colour was blue.

480/1. *GENTIANA PNEUMONANTHE* L. In Anglesey plants with 2, 3, and 4 flowers on a stem occurred, one plant being of a beautiful rose pink. A. T. JOHNSON in *N.W. Nat.*, September 1927.

480/3. *G. VERNA* L. When in Teesdale this year I was told by several people that this plant is gradually becoming much rarer. It appears that it is dug up in large quantities to be sold in the streets of certain northern towns, where it commands a ready sale. It is a great shame that one of our most beautiful and rare native plants should, in spite of its inaccessibility, be raided in this manner. I am pleased to be able to add, however, that the Dalesfolk have no hand in this business themselves, but are extremely proud of their "Gentian." J. E. LOUSLEY.

480/4. *G. AMARELLA* L., forma *RUBESCENS* ad interim. Kenfig, Glamorgan, Mrs O'CALLAGHAN. This I found also on the Kenfig sand-dunes in 1904, and Miss Vachell has seen it subsequently. The plant needs examining *in situ*, as it may have to be referred to, or placed under, *G. septentrionalis*. G. C. DRUCE.

486/1. *POLEMONIUM CAERULEUM* L., var. *DISSECTUM* Benth. (not *P. dissectum* Reichb.) = *P. SIBIRICUM* Don. Alien. Gravel pits, Hayes, W. Kent, St JOHN MARRIOTT. Det A. THELLUNG.

515/3. *CUSCUTA EPITHYMIUM* Murr., forma *ALBIFLORA*. On gorse, Caterham, Surrey, Mrs RICHARDS. An albino form which is apparently scarce. G. C. DRUCE.

516/1. *LYCOPERSICON* has been grafted (*Journ. Genet.*, vol. 18, n. 2) by Jorgensen & Crane on to *Solanum nigrum* and other species, and incomplete periclinals have been formed to which the name mericlinal has been given. The periclinals generally show somatic instability reverting to the pure form which forms the core. In one case of *Lycopersicon* × *S. luteum*, in which there were probably three or four outer layers of *luteum* reversion took place through transitional stages to pure *luteum*. The close relationship of *Lycopersicon* and *Solanum* is accentuated by these experiments.

517/16. *SOLANUM CILIATUM* Lam. Ill. ii., 21, 1793, et Encl. iv., 297 in Urban Symb. Antill. viii., 622, 1920-1921 = *S. ACULEATISSIMUM* Sendtn. in Mart. Fl. Bras. x., 59, 1846, p.p. non Jacq. ex Bitter *in litt.* The remarkably spiny *Solanum* which was found on the rubbish tips at Dagenham, Essex, in 1926, was at first identified as *Solanum aculeatis-*

simum Jacq. from the rather poor specimens then found. The plant occurred again in 1927 in greater quantity and was found at Grays, Essex, and near Yiewsley, Middlesex, where London rubbish is also tipped. Some of the seedlings were found in dense tufts, suggesting that they were springing from one fruit, but no remains of a fruit could be found although in some cases the testas of the seeds were left. The seeds were rather large, extremely flat, and had the subreniform outline so often observed in solanaceous seeds. The appearance of the seeds and the occurrence of the plants in this manner suggested that they might be derived from the large red berries which are put on the ends of sprigs of Butcher's Broom and sold in the florists' shops for decorative purposes. One of these berries had been examined by the writer some time previously, but its botanical origin was then unknown although it was evidently of solanaceous type. With the 1927 plants an attempt was made to confirm the original identification. Dunal's monograph described *Solanum aculeatissimum* Jacq. as having yellow berries about the size of a cherry, which would not agree with the suggested origin of the plant on the rubbish. *Solanum ciliatum* Lam., described and figured in the same monograph, agreed with the plant and it also has large red berries. The *Index Kewensis* states that these two names are synonyms and in other works there seemed to be some confusion of these species. In *Urban Symb. Antill.* the two species are separated and the above synonymy given, which makes it clear that the correct name for this species is that of Lamarck. From the above facts there can be little doubt that the origin of the plant, as found, is from the red berries thrown out with household rubbish. These berries appear to be cultivated in France, but the habitat of the plant is given as the West Indies, America, and Tropical Asia. R. MELVILLE.

518/10. *PHYSALIS FRANCHETI* Masters in Gard. Chron. Alien, Japan. Knocknamonagh, near Old Port, Letterkenny, Donegal, F. R. BROWNING.

519/1. *NICANDRA PHYSALOIDES* Gaertn. is figured, t. 199, in *Gard. Chron.* ii., 441, 1927.

532/7. *LINARIA MINOR* Desv., var. *PRAETERMISSA* (Delast.) Coss. & Germ. Routh Park, Cardiff, 1922, A. E. WADE. Possibly adventive.

532/23. *L. MAROCCANA* Hook. fil. Alien, Morocco. Hortal. Roadside, Thorner, near York, J. FRANKLIN. Det. J. FRASER, who says it differs from *Pelisseriana* in being slightly hairy, the leaves on the barren shoots are narrower, linear to linear-lanceolate, and longer, 1-1½ in. as against ¾-1 in. The raceme is more showy with many flowers.

535/3. *SCROPHULARIA ALATA* × *SCORODONIA* = × *S. TOWNROWI* Dr. Our old member, who has devoted much attention to hybridity in plants, has sent the following note on a plant which appeared in his garden where *S. alata* from Worcestershire and *S. Scorodonia* from Newquay,

Cornwall, have been cultivated. Stems slightly winged, much less so than in *alata*, but more so than in *Scorodonia*. Foliage darker than in *alata*, but lighter than in *Scorodonia*. Leaf-stalks flattened as in *alata*. Leaf-toothing coarser than in *alata* but not crenate as in *Scorodonia*. Panicle more diffuse (bushy) than in *Scorodonia* and resembling *alata*. Staminode reniform, but less deeply indented than in *alata*, and not gland-edged like the entire staminode of *Scorodonia*. Fruit very freely produced, but much smaller than that of either of the putative species, many fruits sterile and probably all, or nearly all, so. As the distribution of the two plants does not overlap there is little probability of the hybrid being found wild in Britain. G. C. DRUCE.

535/4. *S. NODOSA* L., var. *TRACHELIOIDES* Dr. & Wade. A singularly graceful plant with the leaves of about the same size and outline of those of *Campanula Trachelium*. Found by Mr A. E. WADE at Cwm Llwh, Brecon, in 1926. G. C. DRUCE.

543/8. *VERONICA ANAGALLIS-AQUATICA* L. The true plant is represented in my Herbarium from Jersey, J. PIQUET; Braunton Burrows, N. Devon, DRUCE; Petches Bridge, H. E. FOX; Finchingfield, N. Essex, Canon VAUGHAN; Hitchin, J. E. LITTLE; Marsworth, Herts, DRUCE; Cothill, Hampstead Norris, etc., Berks; Wendlebury, etc., Oxon; Marsworth, etc., Bucks, DRUCE; Bures, W. Suffolk, G. C. BROWN; Hagbrook, Warwick, Miss C. E. PALMER; Sibstone, Leicester, MITCHISON; Coron, Anglesey; Langton Lees, Berwick; Dunrossness, Virkie, etc., Zetland; Galway, DRUCE.

Var. *DIVARICATA* (Krösche as sub-sp.) C. E. Britton *in litt.* Dove-dale, Staffs and Derby, 1926 (correct record of *aquatica*); Rescobie, Forfar, 1912; Kishorn, W. Ross, 1893, DRUCE.

Var. *AMBIGUA* (Krösche as sub-sp.) C. E. Britton *in litt.* Hambleton, S. Hants; Aston Common, Binsey, Pool Bottom, Oxon; Eddlesborough, Bucks and Beds, DRUCE; Lathdale, Derby, E. & H. DRABBLE; Southport Dunes, Lancashire, DRUCE; Gogar, Edinburgh, BELL; Ayrshire coast, H. E. FOX; North Berwick, Haddington; between Kirkinner and Wigtown, DRUCE.

Var. *ULVACEA* Haussm. Kilsby, Northants; Marston, Oxon, DRUCE. A submerged state rather than a true variety.

543/9. *V. AQUATICA* Bernh. Mr Britton identifies as this specimens from Sausmarez, Jersey, DRUCE; Odiham, N. Hants, Miss C. E. PALMER; Eastwear Bay, E. Kent, LOYDELL; Pyrford, Surrey; North Stoke, Sussex; Chalvey, Cothill, Hinksey, etc., Berks; Ambrosden, Binsey, Hazeley, etc., Oxon, DRUCE; Sutton, Cambridge; Warley, Hunts, FRYER (as *scutellata*); Claverdon, Warwick, Miss C. E. PALMER; Oundle, Eye, Northants; Edinburgh, DRUCE. The Ambrosden specimens are forma *laticarpa* Krösche.

543/18. *V. TOURNEFORTII* Gmel. type. (*PERSICA*.) Penzance, Cornwall; Wool, Dorset; Par, Newport, STRATTON; Totland Bay,

Isle of Wight, H. E. FOX; Limpsfield, Surrey, H. E. FOX; Claygate, Surrey, H. C. WATSON; Mere, S. Wilts, C. BAILEY; Ailsworth, Northants, DRUCE; Gt. Marlow, Bucks; Cornbury, etc., Oxon, DRUCE; Barkythorpe, Leicester, A. R. HORWOOD; Chatteris, Cambs, 1883, FRYER; Hertford, 1847, ANSELL; Lidbrooke, ? Herts, 1850, PURCHAS; Barmouth, Merioneth, 1882, PAMPLIN; Tenby, Pembroke; St Anne's-on-Sea, W. Lancs, BAILEY (approaches *Corrensiana*); Seaton Carew (as *polita*), M. A. LAWSON; Durham; Edinburgh, 1840, SKENE; Ullapool, Loch Maree, W. ROSS, DRUCE.

Var. ASCHERSONIANA (Lehm.). Folkestone, Kent, 1901, LOYDELL; Alton, Hants, 1887, VAUGHAN; near Bluntisham, Hunts, 1899, FRYER; Fleam Dyke, Cambridge, 1865, H. E. FOX; Hayes, Middlesex, 1897, LOYDELL; Hindhead, Surrey, 1905, BAILEY; near Penrith, Cumberland, 1892, BAILEY; Mt. Stewart, Wigtown, 1899, BAILEY; Stonehaven, Kincardine, 1891, BAILEY; Bunrana, Donegal, 1897, H. E. FOX.

Var. KOCHIANA (Godr.). Bletchingdon, Oxon, 1901; Greenham, Berks, 1895 (named by Linton *agrestis*), DRUCE.

Var. CORRENSIANA (Lehm.). Odiham, N. Hants, 1873, Miss C. E. PALMER (as *grandiflora*); Kingsdown, Kent, 1915, H. E. FOX; near Clydach, Brecon, 1897, BAILEY; Burntisland, Fife, 1858, BELL; Rockcliff, Rough Firth, Kirkcudbright, 1899, BAILEY; Balta Sound, Zetland, DRUCE.

543/19. V. AGRESTIS L. Saltash, Cornwall (as *polita*); Alton, N. Hants, VAUGHAN.

Var. GARRIANA P. Fournier. St Saviour, Guernsey, 1906, DRUCE; East Acton, Middlesex, A. LOYDELL; Hilbrook, Suffolk, 1885, H. E. FOX; Flowerdale, W. Ross, 1926, DRUCE.

Var. VERSICOLOR Mathieu Fl. Belg. i. 391. Strath Carron, Ullapool, W. Ross; Banbury, Oxon; Drumore, Wigtown, 1909, DRUCE.

543/20. V. DIDYMA Tenore, var. THELLUNGIANA (Lehm.). Totland, Isle of Wight, STRATTON (as *agrestis*); St Saviour, Jersey, 1853, J. PIQUET; St Agnes, Cornwall, RILSTONE; Odiham, N. Hants, Miss C. E. PALMER (as *agrestis*); Botanic Gardens and Iffley, Oxford, 1871, H. E. FOX (as *agrestis*); Headington, etc., Oxon; Welwyn, Herts, 1820, W. BLAKE (as *agrestis*); Kilsby, Northants, L. CUMMING; Cornbury Park, Oxford, etc., Oxon, DRUCE; Shirley, Derby, 1907, W. R. LINTON (as *grandiflora*); Brackley, Northants, DRUCE; Beardsall, Derby, 1845, ANSELL; Buttersby, Durham, FOX (as *agrestis*); Stromness [2854], Orkney, H. H. JOHNSTON.

Mr C. E. Britton has determined the above from specimens in the editor's herbarium. See his paper on these new forms.

If the collaborator with Dr A. Thellung of the Veronicas is identical with Dr E. Lehmann who some years ago, when he was in the Isle of Wight, borrowed the set of Billot's Veronicas from the late Mr F. Stratton (and which now belong to me)—54 sheets in all—would he kindly let me have them, as my set of Billot's Exsiccata is rendered

much less valuable owing to the Veronicas being missing. Numerous applications for their return were sent to Kiel, but the letters presumably went astray, as I received no reply.

543/39. *V. SALICIFOLIA* Forst. f. = *HEBE SALICIFOLIA* (Forst.). Alien, Australia. Hortal. On waste ground, Galashiels, Selkirk, August 1926, G. C. DRUCE and I. M. HAYWARD.

545. *EUPHRASIA*, nova species. Growing at about 2500 feet in tufts of *Grimmia patens* and *Hypnum cupressiforme*, Glen Fiagh, Angus, 1926, G. C. DRUCE. Its nearest ally seems to be *foulaensis*.

558/2. *MENTHA ALOPEUROIDES* × *ROTUNDIFOLIA*. St Lawrence Valley, Jersey, J. PIQUET. Det. J. FRASER.

558/4. *M. SPICATA* L., var. *CILIATA* Dr. The var. γ of Smith's *viridis*. Differs from type in the leaves, bracts, and calyx being hairier, the latter being very strongly ciliate. Bayswater Mill, Freeland, Oxon, 1904, G. C. DRUCE.

558/7. *M. AQUATICA* L. (*HIRSUTA*) × *PIPERITA* = × *M. FRASERI* Dr. With varying degrees of hairiness on the leaves, which are less elegant in shape than *piperita*. Probably it is a hybrid of the above parentage. Boat of Garten, Easternness; Tongue, Sutherland; Alford, N. Aberdeen; Drum, S. Aberdeen, G. C. DRUCE.

572/1. *SCUTELLARIA GALERICULATA* L., var. *LITTORALIS* Dr. This varies in the amount of hairiness. Damp places in Kenfig dunes, and at Whiteford Point, Glamorgan; Tarbert, Argyll; Wigtown; Kishorn, Jeantown, W. Ross, G. C. DRUCE; Loch Ness side, Inverness, C. E. PALMER.

Var. *PUBESCENS* Mutel. Laugharne, Carmarthen, D. HAMER; Silverdale, S. Lancs, G. ADAIR; Newhaven bog, Northumberland, H. E. FOX.

Var. *LEIOSEPALA* Dr. in Fl. Berks. 402, 1897. Apparently rare in Britain. The wholly glabrous plant (save the corolla), var. *vulgaris* Mutel, does not appear to occur in Britain. Bins Pond, Shortheath, Selborne, Hants, Canon VAUGHAN; Stockleigh Pomeroy, Devon, Miss LIGHTFOOT; Swainsthorpe, Norfolk, G. C. DRUCE.

577/13. *STACHYS OFFICINALIS* Trevis, var. *HIRTA* Rouy Fl. Fr. vi., 305. *Betonica hirta* Leysser Fl. Hal. 109. See Reichb. Ic. 81, f. 952. *Betonica officinalis* L., var. *hirta* Koch Syn. Fl. Germ. 569, 1837. Babington (*Man.* 251, 1847, and 333, 1904) says "calyx nearly glabrous." Syme (*Eng. Bot.* vii., 54, t. 1067) writes of *Stachys Betonica* "calyx glabrous or sub-glabrous except at the throat," and Leighton (*Fl. Salop.* 287, 1841), describing the Shropshire plant, says "very slightly hairy." Babington writing to Leighton says:—"Your *B. officinalis* seems to belong to the true plant; it agrees with Reichb. *Icon.* viii., 952, and

the specimen in his *Fl. Esicc.*, n. 990, with the exception of the few hairs which exist on the outer part of the upper portion of the calyx. In *B. hirta* I learn from his figure and specimen that the calyx is much more hairy and the teeth much shorter. *Eng. Bot.*, fig. t. 1142, appears to belong to the true *B. officinalis* L." It may be well to call to mind that the plate, t. 1067, in Syme's *Eng. Bot.* is redrawn. Other British authors make no mention of the calyx clothing. Recently Miss Vachell, with her customary critical examination of plants, drew my attention to a form which occurs on the Glamorganshire cliffs near Nash Point, which is itself more hairy and has the calyx covered with bristly hairs. Under her guidance I visited the place in November when the plants were practically over but 2 or 3 specimens were seen which had the hairy calyx. On looking through my herbarium I found that some plants which I gathered on the Lizard Downs also had this character, and I refer these and the Glamorgan plant to this variety. The common British plant is var. *glabratus* Rouy. The small plant, var. *nana* Dr., from the Cornish cliffs, keeps constant in culture. G. C. DRUCE.

584/2. *PHLOMIS SAMIA* L. Alien, Greece. Knocknamonagh, above the Old Port, Letterkenny, Donegal, F. R. BROWNING.

594/1. *CORRIGIOLA LITTORALIS* L., nov. forma or var. *RUBESCENS* Dr. Miss Cartwright has kindly sent me two forms of this rarity from Slapton Sands, one the natural green foliaged plant, the other with red and more succulent stems and sepals crimson tipped, to which I give the above name. The two forms grew together, *rubescens* being the more vigorous of the two. Miss Larter also observed the difference in the two forms, and I am indebted to the two observers for their notes and specimens. G. C. DRUCE.

596/6. *AMARANTHUS RETROFLEXUS* L., Peculiar Varieties of. J. H. Schaffner in *Ohio Journ. Science* 469, 1915. Four examples are figured, the type being a uniform green, 1 B has large red, oval or ovate spots of anthocyanin on the leaf-blades. 1 C has a silvery curved band a little beyond the middle. This character is transmitted by seed. 1 D has the silvery band and a red spot on each side of it and this, too, is a hereditary character. "They appear," says the writer, "to represent different mutations which develop without the influence of a determining environment and without the accumulative effect of a purposeful selection.

600/1. *CHENOPODIUM RUBRUM* L., var. nov. *KOCHILFORME* Murr. Ramis plurimis, teneris, foliis omnibus praesertim ramosum valde angustis. Bedminster, Bristol, N. & C. SANDWICH. *CHENOPODIO* (glauca sub-sp.) *WOLFFII* Simonk. parallelum sed originis recentioris sic systematici minus consoliditam. J. MURR.

600/8. *C. SUBFICIFOLIUM* Murr, forma *MICROPHYLLUM* Murr. In plenty near the railway at Didcot, Berkshire. Distributed this year. G. C. DRUCE.

606/5. *ATRIPLEX HASTATA* L., forma *MICROPHYLLA-SERRATODENTATA* Murr. Holy Island [33700], G. C. DRUCE.

606/15. *A.* (c.f.) *MUELLERI* Benth. Alien, Australia. Dagenham, Essex [2612], R. MELVILLE. Det., tentatively, A. THELLUNG.

615/28. *POLYGONUM AMPLEXICAULE* Don. Bridgend, Ramelton, Donegal, F. R. BROWNING.

Var. *OKYPHYLLUM* Don. Copses, Fortstewart, Donegal, F. R. BROWNING.

615/34. *P. COMPACTUM* Hook. f. Bot. Mag. t. 6476. Alien, Japan. Doherty's Sprackburn, Letterkenny, Donegal, F. R. BROWNING.

618/16. *RUMEX ACETOSELLA* L. Contains 1.36 per cent. of potassium binoxylate. *ISABELLA* A. PURDIE in *Ph. Journ.* 105, 1927.

621/1. *ASARUM EUROPAEUM* L. Contribution à l'Étude de l'*Asarum europaeum* by L. LEEMANN in Bull. Soc. Bot. Genève, vol. xix., fasc. 1, 92-173, 1927. The plant was first mentioned by Dioscorides. Its vernacular names are given as well as its pharmaceutical uses, its active principle (asarine), and its geographical distribution. It is said to be totally absent from Scotland but there is a fine colony on the west bank of the Tay below Perth, but probably it is not truly native there. It occurs in Denmark and in many parts of Russia. Illustrations are given which include those of the secretive cells in the rhizome. It is a remarkably able and comprehensive study of this very interesting species.

626/1. *VISCUM ALBUM* L. On *Pyrus japonica*, Okehampton, Devon, Miss Burd in *Dev. Trans.* 124, 1926.

632/1. *MERCURIALIS PERENNIS* L., var. *SALISBURYANA* S. K. Mukerji in *Journ. Bot.* 56, 1927. The leaves are much more deeply serrate than in the type. Staplehurst, Kent. Plants which must be near to this are from Arthog Woods, Merioneth, W. C. BARTON, and Lighthorne, Warwick, C. E. PALMER in *Hb. Druce*.

633/5. *ULMUS CAMPESTRIS*. Mr John Caldwell (*Nature* ii., 513, 1927) figures a "natural graft" which was disclosed in a tree blown down at Craig's House, Corstorphine. It appears that the tree, while still young, had for some reason forked equally. "Something had caused the two forks to anastomose, and the subsequent growth of the tree had enabled the cambial activity to form a solid xylem cylinder round the portion of the two forks which had not fused together."

669/1. *ORCHIS PURPUREA* Huds., nov. var. *PSEUDO-MILITARIS* Dr. Dover, Kent, 1879, EYRE DE CRESPIGNY; Cobham, Kent, 1883, Dr WARD; Wye, H. WALKER; Canterbury, Kent, Bishop MITCHISON; Maidstone, Kent, 1885, in *Hb. Druce*. This is repeatedly mistaken for *O. militaris*

or *O. Simia* from which it widely differs in essential characters. It is a variant of *O. purpurea*, a variable species. Camus (*Icon. Orchid.* t. 28) names and figures *f. longidentata* (of this he gives two examples, differing more widely from each other than they do from other named forms), *expansa*, *breviloba*, *convergens*, *spathulata*, *latiloba*, *minima*, *amedias-tina*, *incisiloba*, *parallela*, *confusa*, *rotundata*, *longimediastina* and *albida*, but none of them precisely match any Kentish form in my herbarium, the nearest being *longidentata* from Bexley Wood, *expansa* (similar outline but smaller size) from the Quenvais, Jersey, and a plant from Wye gathered by me in 1923 which is very near *rotundiloba*. Var. PSEUDO-MILITARIS is a plant with smaller flowers and much narrower divisions of the labellum. In the fresh state there is no difficulty in referring it to *purpurea* by those who know the two species, the colouring of the helmet often being a good distinguishing feature, but the book characters often mislead collectors. *O. militaris* has leaves which are narrower in proportion to their length, the helmet is never tinged with dark purple, and is more acuminate. In *pseudo-militaris*, although the segments are sometimes narrower, or as narrow, they have different range of colouring and cutting from those of *militaris*, while the broader leaves and dark purple colouring of the helmet are also good differentiating characters. Great indebtedness is due to Mr H. Walker who has frequently sent me varying forms, including good albinos—var. *albida* Camus. G. C. DRUCE.

669/5. *O. MORIO* L. A specimen collected by Wm. ANSON in Sussex carried 12 flowers, each abnormal. It was entirely barren and the flowers were doubled. See *Journ. Hort. Soc.* xxxvi., January 1, 1927.

669/10. *O. MACULATA* L., etc. L'Autogamie chez l'Orchis, et chez quelques autres Orchidées, P. MARTENS in Bull. Soc. Bot. Belg. 59-69, 1926. Treats of *O. latifolia*, *O. Morio*, *O. maculata*, and *Ophrys apifera*. We are left in doubt as to what the actual segregate species are which are described under the above names. The same Bulletin contains a preliminary note on the variation in Belgian Orchids. It suggests that at present the author is not well read in the recent history so far as Britain is concerned. He asks if *O. praetermissa* (among others) is genetic. The answer is yes, and for two generations.

669. *O. FOLIOSA* × *MACULATA*. Figured in *Gard. Chron.* 431, 1927, from the Rock Garden at Kew. See *Rep. B.E.C.* 53, 1917.

685/1. *GALANTHUS NIVALIS* L. An account of the seedlings, with illustrations, of the Snowdrop is given in *Gard. Chron.* ii., 7, 1927, by Mr MURRAY THOMSON.

706/3. *SCILLA NON-SCRIPTA* L. & H., var. *BRACTEATA* Dr., f. *STUARTIAE* Dr. The plant so named by Dr Druce (*Rep. B.E.C.* 49, 1920) was first observed by me in the spring of 1917. At that time I saw two flowering spikes. These were in bud when I first noticed them and

I supposed their curious appearance to be due to malformation. Going later to the place I found they had developed into perfect specimens of unusual character. Since that time I have had opportunity to visit the spot most seasons at flowering time and have found a constant increase in the number of plants. Last May (1927) there were between thirty and forty flower spikes. These were all in fairly close proximity to the site of the original plants. The coppice where these bluebells grow has always been a "bluebell wood." I have known it for a great number of years and have been in it often at flowering time in past years. The bluebells there grow very tall, with stout, thick stalks. There are always some with white flowers, and some lilac in colour in this coppice. I have shown specimens of *f. Stuartiae* to people who are familiar with the neighbourhood and who are, or have been, frequenters of this, and other bluebell woods in the district. So far I have found no one who has ever seen this curious and beautiful variety till now. Worcestershire hop-yards and cherry-orchards are in the immediate surroundings. The earth is of the rich red quality which marks the Teme valley, and is the home of *f. Stuartiae*.
BEATRICE STUART.

717/3. *COMMELINA NUDIFLORA* L. Alien, Tropics. Hackney rubbish heaps, Middlesex, R. MELVILLE.

717(2). *ZEBRINA* Schnizl. in Bot. Zeit. vii., 870, 1849.

717(2)/1. *ZEBRINA PENDULA* Schnizl., *l.c.*, var. *VIRIDIS*. Alien, Mexico. Hortal. In the crevices of a wall, St Heliers, Jersey, May 20, 1926, L. ARSENE. Name assented to by Kew.

721/1. *TYPHA LATIFOLIA* L. Chromosomes 15 in pure species. *T. angustifolia*, with which it readily hybridises, reveals abnormalities characteristic of hybridity—irregular chromosome distribution and pollen sterility. ROSCOE in *Bot. Gaz.* 405, 1927. Was the *T. angustifolia* used a pure strain is the question that arises?

722/1. *SPARGANIUM ERECTUM* L.

S. RAMOSUM (Huds.). Root leaves triquetrous in their lower portion and furrowed; with a deep channel upon the upper side, which disappears in the upper portion of the leaf, which is quite flat and very faintly striate on the upper side, but keeled throughout its whole length beneath, and like the upper side faintly striate. Stem leaves and bracts similar but the latter much smaller. Base of root leaves and of flowering stem coloured pinkish-purple.

b. *NEGLECTUM* (Beeby). Root leaves triquetrous in their lower portion; less furrowed than in *ramosum*, keeled and faintly striate on under side throughout their length and with deep central and shallow lateral grooves on the upper surface; the grooves are not apparent in the upper portion of the leaf. Stem leaves and bracts similar but the latter much smaller. Base of root leaves and of flowering stem coloured as in *ramosum*.

c. MICROCARPUM (Neum.). Root leaves convex at base with a very slightly developed keel; remarkably thick and spongy in texture; strongly and broadly furrowed on under side, the furrows changing gradually to faint striations in the upper portion of the leaf. Upper surface of leaf broadly striate in its lower portion with a shallow but distinct central groove, this groove disappearing in the upper portion of the leaf; the leaves about half as broad again as those of *neglectum* and *ramosum* and narrowing much less gradually to the tip than in their case. Stem leaves and bracts more strongly furrowed than those of the above named plants. Base of root leaves and of flowering stem nearly white. Foliage a darker green than that of either *ramosum* or *neglectum*. W. W. BOUCHIER and R. F. TOWNDROW.

741/1. NAIAS MARINA in its somatic cells shows 12 or sometimes 14 chromosomes owing to the smallest two pairs being more or less united. *Vallisneria spiralis* has 20 chromosomes.

758/2. SPARTINA STRICTA (Ait.) Roth. M. L. Fernald (*Rhodora* 117, August 1916) suggests that the oldest name for this grass is *Dactylis maritima* Curtis Enum. Br. Gr. 1787, and that *Spartina maritima* (Curt.) Fernald l.c. is the correct combination.

758/3. S. TOWNSENDII Groves. It is rare to find any part of the surface of the earth which does not support some kind of vegetable growth. The sea has its algae and the land its plants, but the debatable land between the two has hitherto been barren. All round our coasts, in the bays and estuaries, stretch large areas of mud-flats covered twice a day by the salt tide, and barren of vegetation. Nature hitherto has failed in temperate climate to produce a plant which could obtain a foothold under the conditions of alternate salt wet and dry. In tropical countries we have the various varieties of mangroves, but they will not stand our climate. Now, however, a new hybrid plant has naturally developed which fills the gap. It plants its roots firmly in the mud and cares nothing for the salt tide covering it so long as it is not too deep. It does more—it naturally warps up the mud by entangling the particles in the roots and gradually raises the surface until it is on a level nearly as high as that of the tide. Forty years ago the mud-flats behind Hurst Castle in the Solent and about Lymington were bare and treacherous, a resort for shore birds and wildfowl. Now for many miles they look like dull coloured fields on which one can walk with safety if not with comfort. It is an astonishing effect to have been caused by a small plant, SPARTINA TOWNSENDII. The rounded outlines of the mud have been levelled up for miles, the sides of the runnels get gradually steeper and steeper till the whole of the mud resembles nothing so much as a vast flat meadow. The feeding value of this grass is probably insignificant, but there are other possibilities. Now that the land has become naturally warped up it could be reclaimed by running a bank round it, with sluices through it, allowing egress but not

inlet of water. Then when the land had dried itself sufficiently it could be ploughed up and planted with succulent grasses. There are probably many hundreds of square miles of mud round the coast which could be reclaimed in this way. There are upwards of 150 in the Solway alone. The plant appears to be extremely vigorous. It grows to about a foot in height. It can be had in any quantity by anyone who chooses to take it from the edge of the sea in the localities named, behind the shingle bank at Hurst Castle, Hampshire. Man does not want mud-flats. They produce nothing useful to him, bar a stray bird. Man wants land with sharp edges and deep water alongside. This plant seems to have become naturally adapted to produce just these conditions. All that is now wanted is to get it known and distributed round our coasts in suitable localities where its economical value in producing new land may prove to be incalculable. Col. H. DE H. HAIG. *S. Townsendii* Groves is figured in *Bot. Mag.*, t. 9192, 1927.

777/1. *PHLEUM PRATENSE* L. The Life History of Timothy. U.S. Dept. of Agric. Bulletin, Washington, n. 1450, March 27, 1927. Mr Morgan W. Evans, under the above title, which has nothing to do with the New Testament, gives in 55 pages a mass of most useful information about the grass. Of the hortial species of the genus only *P. alpinum* is native in North America, but Timothy is one of the grasses most largely grown there. Over ten million acres are under it, and nearly twenty million more are occupied jointly by it and clover. The time of flowering and its growth are given in great detail, and excellent illustrations are copiously interspersed. Mr Evans gives the term "haplocorm" to the thickened, swollen internode, and says that it has had various cognomens—corm, tuber, or bulb, but as none of these strictly applies he uses the above. He does not consider it to be of systematic importance. The length of the spikelets varies greatly—from 0.4 to 11.2 inches. The fields of Timothy are not exactly the place for a hay-fever victim to visit. It was observed that as the wind passed over a Timothy meadow approximately half-a-mile away the clouds of pollen appeared as a haze over the field. Several instances of proliferation are figured and the conditions which induce it are given. This proliferation is distinct from vivipary in which the seed germinates while attached to the parent plant. Ramose branches rarely occur. In nature in the States Timothy seeds mature, fall to the ground, and a large proportion of them germinate during the late summer months. A shoot originating from a seed which germinates in the later summer continues its growth until the following season. If an inflorescence develops on it, seeds will mature in midsummer and in a short time (2-10 weeks) the shoot becomes entirely dry about one year or a little more than a year after it began its growth. This excellent pamphlet treats of Timothy from an agricultural point of view, and no notice is taken of named varieties or forms. It seems probable that the Timothy of the States, of which he is writing, is like the Scottish Timothy, namely, *T. intermedium* Jord., in which "haplocorms" are normally present.

In Britain the grass is much more prone to variation, and experiments are needed in order to prove that the normal fibrous rooted *P. pratense* ever yields "haplocorms."

777/1. *P. PRATENSE* L., forma *MONSTROSA*. Found by Mr JUSTICE TALBOT near Edenbridge, Kent. An extraordinary plant in which subtending the panicle were three tufts of leaves. Each of these tufts seemed capable of producing separate plants.

782(2). *TRIPLACHNE* Link Hort. Berol. ii., 241, 1833.

782(2)/1. *TRIPLACHNE NITENS* Link. Alien, Mediterranean, Sicily. Par Harbour, Cornwall, L. T. MEDLIN.

819/1. *DACTYLIS GLOMERATA* L. Mr J. Griffiths Davies in *Nature* 237, 1927. The chromosome number is clearly established as being 28 in the diploid somatic nucleus of the root-tip and 14 in the haploid nucleus. Mr Griffiths refers to the chromosome number of *Arrhenatherum* as in the neighbourhood of 40. Unfortunately he uses the name *A. avenaceum*, but describes it as with swollen basal internodes. This, of course, refers to *A. tuberosum* Gilib., which has been shown to be specifically distinct and remains true in varied test cultures.

822/1. *BRIZA MEDIA* L., nov. var. *NANA*. Plants reduced to one inch high bearing a solitary 4-6 flowered spikelet. At 750 ft. on the chalk near Heysholt and Graftham, Sussex. Sent by COLIN TRAPNELL.

825/8. *GLYCERIA PROCUMBENS* Dum., nov. var. *ERECTA*. In a swampy place at Cardiff Docks, Glamorgan. Plants erect, 18 in. to 2 ft. high. G. C. DRUCE and Members of the Botanical Excursion, June 1927.

826/9. *FESTUCA OVINA* L., var. *SULCATA* (Hackel as sub-sp. in Mon. 100, 1882). *F. duriuscula* Host non L. Race *F. sulcata* Hack. Rouy (*Fl. Fr.* xiv., 211) groups it as a race under his sub-sp. *F. valesiaca* Schleich. It is a stiff, rigid grass with somewhat glaucescent foliage; leaves short, flat; panicles close; spikelets large, awned. Near Byfleet, Surrey, G. C. DRUCE.

827/4. *BROMUS TECTORUM* L., var. *GLABRATUS* Spenn. Glasgow Coup, Lanark (?), R. GRIERSON, ex J. R. LEE.

827/27. *B. squarrosus* L., var. *VILLOSUS* (Suter) Koch. Mitcham, Surrey, 1867, H. E. FOX, as *patulis*. Det. A. THELLUNG.

830/4. *AGROPYRON REPENS* Beauv. This is treated of under the title, The Seeds of Quack Grass and Certain Wheat Grasses Compared, in a pamphlet by Helen H. Henry in *Journ. Agric. Research* (35, n. 6), Washington, U.S.A. A very complete account of the fruits of this and its allies, with many figures, is supplied in the memoir. The other American species involved are *A. Smithii* and *A. tenerum*. These fruits can, by the aid of the information contained, be readily identified, and Miss Henry says that the shape of the rachilla and the width

of the opening between the edges of the lemma at the base of the rachilla segment are valuable diagnostic characters.

832. TRITICUM. Wheat. Our member, Prof. Percival (*Nature* 280, 1926), has identified some specimens of wheat found by Prof. Langdon of Oxford in a vase on the site of an ancient Sumerian house near Kish in Mesopotamia, of a date about 3500 B.C. He identifies them as *T. turgidum*, a wheat apparently unknown to the ancient Egyptians. He gives illustrations of the modern Rivet for comparison, but the lettering of figure 1 is wrong. It should read the upper row (of the 2 lower) is Sumerian, the lower grains are of Rivet Wheat and their close resemblance is unmistakable. It may be said here that Einkorns. *Triticum monococcum*, has 7; Emmers, *T. dicoccum*, 14; and Bread wheat, *T. vulgare*, 21 chromosomes.

835. HORDEUM sp. Prof. Netolitzky has shown (*Die Umschau* 45, 1911) that Barley was the staple food of the early Egyptians as at Naga ed Der in Upper Egypt over 60 centuries ago. The earliest example of *Triticum dicoccum* appears to be that found by Borchardi in the temple of King Sahure of the fifth dynasty, but it is probable that it was used before that date, as Dr Elliot Smith (*Nature* 82, 1927) says that civilisation first began in the Nile Valley, and it may be that Barley grew wild there before man first made his way into that strip of land.

836/7. ELYMUS VIRGINICUS L. Alien, N. America. Rubbish heaps, Iver, Bucks; Dagenham, Middlesex, R. MELVILLE.

839/1. JUNIPERUS COMMUNIS L. Mr F. R. S. Balfour (*Trans. Royal Scot. Arbor. Soc.*, 1926) says the Juniper which in Norway grows to a tree 30 ft. high is found very useful for fencing work as it is very durable. A fence erected 100 years ago is still perfectly serviceable.

840/1. TAXUS BACCATA L. The Hon. Vicary Gibbs (*Journ. Hort. Soc.* 253, 1927) says that Mr Fletcher of Aldwich Manor, Sussex, has found several fastigate yews covered with male flowers, so that the Florence Court is not necessarily the source or that it, or its progeny, are always female.

865/4. BOTRYCHIUM MATRICARIAE (Schrank) Sprengel Syst. iv., 23, 1827. *B. rutaceum* Swartz non Willd. *B. Matricarioides* Willd. *Osmunda Matricariae* Schrank Baier. Fl. ii., 419, 1789. Rep. B.E.C. vii., 998; viii. 212, 1926, cum icon. t. ii. Another protracted search in Strachan in 1927 proved a disappointment, although this time much more definite information regarding the locality had been obtained. Fortunately its finder, T. R. Sim, is still living in Natal, where his early promise as a systematist has matured and his work at botany and forestry has been rewarded by his being made a D.Sc. His publications on Botany, including Bryology and Forestry, have been most useful. In answer to my inquiries he wrote to me in June 1927, saying, "It is interesting to hear from you after so many years, or perhaps

I am corresponding with a son of my former correspondent. I used to be a member of the B.E.C. many years ago, mostly before 1876, for in that year I went to London, though I returned annually or almost annually to Scotland up till 1888. In Strachan I lived in a particularly favoured locality for rare plants. I well remember collecting the *Botrychium* you refer to, though which year or month I could not now say, but I think it was May or June" [It was July]. He then gives me the exact locality, which is perfectly well defined. "*B. Lunaria* grew there also, and I thought at the time it was simply a sport such as we have in abundance in [the Filices] but I may have been wrong. . . . My father, who was also interested in plants, farmed in Strachan from 1866 for 19 years." Armed with this precise direction I diligently searched the spot, but in the course of years doubtless the roadside grass-covered bank has altered in character, and there was no trace of either species of *Botrychium*. Neither did the surrounding country afford it, nor was my offer of a sovereign to the school children and the interest of their efficient teacher productive. By a bit of good luck the two sisters of Dr T. R. Sim were staying in the village. I called on them, and they both remembered the Moonwort and its locality and, without prompting, directed me to the very place I had so closely scrutinised. Miss Sim showed me a painting she had made of the *Lunaria*, but Mrs Whyte, her married sister, told me she had collected specimens, which she believed she had at her home in Glasgow and promised to send them to me. In September she sent a sheet of plants which, she says, her father collected in 1872. "My book," she says, "is dated 1879." One of the specimens on the sheet was *Lunaria*, but two were *Matricariae* and more complete examples than that in the herbarium of Rev. Prebendary H. E. Fox, now in my collection. They removed the slight doubt I had about the identification as the barren fronds spring from the base of the stems. I then wrote to enquire if she was aware of her father ever receiving foreign specimens in exchange. On September 24 she wrote, "I do not remember either my father or brother having got any such specimens from abroad, and I do not think it likely as my father's exchange of specimens was confined entirely to that of Mosses, and my brother was very little at home after he went to Kent. My sister, who is two years my junior, remembers things of long ago much better than I do, and she remembers seeing it growing at Inverey. She knew it was a rare plant, and we were not allowed to pick it. I expect, therefore, I got a specimen from my father. I am sending the specimen to my brother. . . . He will be very interested, as he devotes all his time now to Botany." We may, therefore, I think, safely conclude that *Botrychium Matricariae* actually occurred in Kincardineshire. It is remarkable that after 50 years one has been able to get such contemporaneous testimony to its occurrence in Strachan, and almost more remarkable is the fact that for over 50 years the specimen lay perdu in the herbarium of my lamented friend without being recognised. Hitherto I have been unable to find other examples in other herbaria, but it is not unlikely that some still exist. G. C. DRUCE.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1927.

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

AMERICAN JOURNAL OF BOTANY, vol. xiv., 1927. Studies in *Saxifraga*, A. M. JOHNSON, p. 323. The Asian *S. punctata* is contrasted with the American *S. arguta* Don. A new sub-section, Radioflorae, is suggested for the Japanese *S. fusca* Maxim. Cytology of a Tetraploid Wheat Hybrid, *Spelta* × *monococcum*, M. C. Milburn and W. P. Thompson, p. 328. The chromosome number of Einkorn is 7, of Emmer 14, and of Spelt 21. This hybrid has a more vigorous growth than its parents, but is completely sterile.

ARSENE, LOUIS. Contribution to the Flora of the Islands of St Pierre and Miquelon. *Rhodora* 29, 117, 1927. These islands are situated in the Archipelago near Newfoundland. Bro. Arsène gives the botanical history of the islands and the results of his own work in them from 1899 to 1903, which resulted in his gathering 454 species. He has deposited 430 species in the Gray Herbarium at Harvard. His general list numbers 487 species, of which 96 are introduced. The genus, *Carex*, is the most striking of the paludal flora, having 42 species in all. There are 24 species of Orchids which make gay the dreary bogs and barrens. Only 15 species of Compositae have been noted. The Phytogeography is well treated, and there is a great mass of most interesting information about these little-known islands.

ASCHERSON, PAUL, and P. GRAEBNER. SYNOPSIS DER MITTEL-EUROPAISCHEN FLORA. Ranales, contd. 1926.

BEAUVERD, G. Polymorphism of *Listera ovata* with new names and combinations. *Bull. Bot. Soc. Genève* 338, 1925 [1926].

BEIHEFTE ZUM BOTANISCHEN CENTRALBLATT, C. Heinrich, Dresden. Vegetation und Flora des Talysh-Gebiete, A. A. Grossheim, Tiflis. Band 43, heft i, 1926. Sciaphilous Plant Types, Theo Holm, l.c. January 1927. The material is from Maryland, Virginia, Porto Rico, etc. Included in this group are *Asarum canadense*, *Panax* and *Hydrastis*. Ample leaf blades are one of the most characteristic features of sciaphilous plants, but it is not a feature of our *Potentilla erecta* var. *sciaphila*. H. Handel-Mazzetti (July 1927) gives a systematic monograph of *Leontopodium* with new species. Forty-one species are described in an able manner. A. A. Grossheim (October 1927) contributes *Iter Persicum* Primum, which includes several new species of *Astragalus*, *Lamium* and *Nepeta*.

BEMROSE, G. J. V. The Adventive Flora of Leicester and District. *Trans. Leic. Lit. and Phil. Soc.*, February 6, 1927. The introductory

part gives some interesting details respecting the previous workers at the Leicester Flora. It is possible that the Herbarium of Mrs Foord Kelcey might contain some material, and there are many plants, not necessarily adventive, in my herbarium from Bishop Mitchison, who lived for some years in Leicester. A few others are to be found in the herbarium of Mr Linnaeus Cumming, recently presented to Rugby School. The present list numbers nearly 300 names. The many hours spent in identifying Mr Bemrose's specimens receive no acknowledgment. *Papaver Argemone* L. (not *Papava* as printed), *P. Lecoqii* and *Rhoeas*, *Fumaria officinalis*, *Brassica arvensis*, *Reseda luteola*, *Arenaria leptoclados*, *Geranium lucidum*, *Trifolium striatum*, *Caucalis arvensis*, *Sherardia arvensis*, *Valerianella olitoria*, *Chrysanthemum segetum*, *Cichorium*, *Anagallis arvensis*, *Centaureum*, *Cynoglossum officinale*, *Echium vulgare*, *Lithospermum arvense*, *Lycopus*, *Linaria spuria*, *L. Elatine*, *L. minor*, *Lamium amplexicaule*, *L. hybridum*, *Verbena*, *Stachys arvensis*, *Euphorbia Helioscopia*, *E. exigua*, etc., but if these are included, why not others? Where are the Veronicas? There are many misprints, and the use of capital letters for the specific name is capricious. We congratulate the compiler upon his industry, and one hopes it may be a prelude to a general flora of the county, which is now sadly needed. A map of the area is supplied. Mr Bemrose kindly supplies some other Leicester and Rutland notes. *Polygala serpyllifolia* Hose, Luffenham, Rutland. *Silene noctiflora* with pink flowers. Blaby. *Trifolium ochroleucon* Huds., if correctly named and native, is a new record for Rutland. It is quite likely to be correct as I have found it within a few miles away in Northamptonshire. *Poterium polygamum* is a new alien to the list for Leicester. *Sambucus Ebulus* L., Stockerton, Leicester, has not been recorded for the last 80 years. *Erigeron canadensis* L., Millbank. *Senecio vulgaris* = *radiatus* Koch and *S. squalidus*, Rathby, Leicester. *Symphytum brachycalyx* Boiss. (Kurdistan), Peatling Parva, and *Silene trinervia* Seb.-Maur. are new to our List. Mr Bemrose also gives *Lathraea Squamaria* L. from Kirby, Northamptonshire. It is a local plant in that county.

BERKELEY. The Press of the University of Berkeley, California, continues a commendable output of papers in which Algae occupy a prominent place. The inter-specific hybridisation in *Nicotiana* by R. E. Clausen and T. H. Goodspeed is continued in vol. xi., 1926.

BACCONE, PAUL. PHYTOGRAPHIA. Recently Mr T. Gambier Parry showed me in the Bodleian Library an interesting MS. volume (MS. Ashmole, 1732). It has a written inscription on the inside of the cover as follows:—"Hunc Librum Venetiis dono acceptum ab eximio philosopho Paulo Boccone Qui illum Plantis singulari necdum noto artificio insitis adornavit. Illustrissimae Academiae Oxoniensi D.D. nobilis. vir Carolus Comes Mancestriae Legatus a Gulielmo iii. Nuper ad sereniss. Remp. Venetum. Nunc ad Christianiss. Galliarum Regem A.D. 1699," Probably in Boccone's own handwriting. It is labelled in

another hand "Phytographia sive stirpium Illustriorum et minus cognitatarum Icones Summâ Diligentia elaboratae—By an eminent hand." It contains a large number of figures of plants with a pre-Linnean name. They appear as if they were executed from living plants by blackening the foliage and flowers and thus making an impression. But there were several exact duplicates such as of *Potentilla Anserina*, so that they could not have been prepared from living specimens. It would appear that carefully dried specimens had been glued on to paper, and then covered with a black material. Prints were struck off this as from a wood-block, and the plants having been reblackedened could have a second impression made. *Fumaria parviflora* (agg.) was thus treated. The more successful prints were those made from the Labiatae—*Ballota*, *Stachys*, etc., being especially good. *Geum rivale* was also good. It may be remembered that Paul Boccone's "Icones et Descriptiones Rariorum Plantarum" was issued at Oxforde Theatro Sheldoniano in 1674 under the editorship of Robert Morison, who had the MS. of Icones through the Hon. Capt. Charles Hatton, and to him (who was the second son of Lord Hatton and a former pupil of Morison in Paris) Morison dedicated the work.

BOTANICAL GAZETTE, Chicago Press, 1927. Ecology, Plant Geography and Geo-botany: their History and Aim. E. Rubel, p. 428. Logically we have in Geo-botany three great problems of research—space, habitat and change, and two subjects of study—the plant and the plant community. That gives us six branches of our science:—(1) Autochorologic Geo-botany; (2) Autoecologic Geo-botany; (3) Auto-genetic Geo-botany (combining the study of the flora); (4) Synchorologic Geo-botany or Chorologic Sociology; (5) Synecologic Geo-botany or Ecologic Sociology; (6) Syngenetic Geo-botany or Genetic Sociology, study of succession (combining with the study of Vegetation or Plant Sociology). Historically plant geography, plant ecology, and geo-botany are synonymous, and include all six branches. Re-vegetation of a denuded Tropical Valley, D. S. Johnson, p. 294. This was near the Blue Mountains in Jamaica when in two days 27 inches of rain fell, practically denuding a large forest area. The re-vegetation is interestingly explained in the above paper. p. 185. F. C. Gates, E. C. Woollett, and E. P. Breaker, on *Spartina Michauxiana*. Nominally a prairie plant, this grass has spread on the shores of Douglas Lake in Michigan. It grows on the upper beach in scattered isolated groups of a few plants or forms elsewhere rather meadow-like zones. It has become somewhat modified in vegetative characters from the prairie plant, and there is the possibility of having a new species in the process of evolution. Its history and methods should be compared with our own *S. Townsendii*.

BOTANISCHES CENTRALBLATT. Band 151, 1927. I. Diels, Berlin; H. Kneip, Berlin; H. Meihe, Berlin; S. V. Simon, Bonn. The botanical abstracts for Britain are absurdly inadequate. The only reference to one's own work is a solitary paragraph under a wrong title, while there are overcrowded references to comparatively insignificant garden items.

BRAUN-BLANQUET, J. *Vegetation Entwicklung und Bodenbildung in der Alpinen Stufe der Zentralalpen*. Mem. Soc. Helv. des Sci. Nat., Geneva. Pp. 63, 1926; 181-349, 1927. The author publishes an important contribution towards the scientific exploration of the Swiss National Park. A striking fact brought out is the great importance of wind-borne dust. At the upper elevation in the Val Cluoza above the tree limit at an altitude of 2340 metres the dust was collected continuously for two years. The average yearly deposition over the period worked out at about 6½ tons per acre, of which more than a quarter, 1.63 tons, was carbonate of lime. The far reaching results of those experiments will exert a great influence in unravelling some of the problems of plant distribution. One has long felt that the influence of the wind in the transport of seeds has been in the past greatly undervalued.

BRENCHLEY, WINIFRED S. *INORGANIC PLANT POISONS AND STIMULANTS*. Cambridge University Press Agricultural Monograph. Second edition, pp. 134, 1927; 10/6. "Since the publication of the first edition of this book two of the elements therein dealt with—Manganese and Boron—have come prominently into notice in certain parts of the world, largely for economic reasons, but also because of new discoveries with regard to plant nutrition. This has resulted in considerable activity in research . . . much of which is now incorporated in the book." Miss Brenchley's name is sufficient in itself to recommend the work as her methods have borne the test of trial and earned warm commendations. The whole subject is rather beyond the scope of this Society, but it may be well to state that various comparative cultures have been made. The results are very curious. Thus it was found that peas grown in soil with salts of Strontium, Barium, and Calcium, rejected the Barium. So, too, did many other species, including wheat, maize, lentils, lupins, etc. Copper has long been found as a normal constituent of certain plants, of course in small quantities. Oxide of copper put near the roots of a young poplar soon led to its death. The yearly absorption of it differs considerably in economic plants. That it has a toxic action is proved, but when highly diluted a stimulating action may be manifested. Its extraordinary toxicity on fungus spores is taken advantage of by the farmer who dresses his corn with an aqueous solution and thus practically eradicates *Ustilago*. Zinc, too, has been found in the ash of certain plants. In certain places, as near Aachen, a very high percentage (up to 20%) of zinc occurs in the soil, and there forms of *Viola tricolor* and *Thlaspi alpestre* are so strongly influenced as to give rise to varietal or even specific names, e.g. *Thlaspi caliminaria*, the ash of the leaves of which has afforded 13.12% of oxide of zinc. In such a soil many species showed morphological differences and were often deformed, weak and poor. Zinc sulphate acted as a distinct toxic agent in water cultures, especially in the case of barley. Arsenic is absorbed slowly by plants, and has been said by some authors to act as a stimulant. Water cultures at Rothamstead have yielded negative results. Boron, too, has toxic effects but less so than compounds of

copper, zinc and arsenic. It also has a distinctly stimulating and favourable influence on plant growth—peas responding more readily than barley to the action of boric acid. In fact, in the Leguminosae, small quantities of boron appear to be essential. Manganese exerts a toxic influence if presented in too great amounts but, as with boron, small quantities appear to cause a very general stimulation of growth. This is an important point considering the frequent presence of manganese deposited on the leaves of plants in or near mining districts.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE, August 31-September 7, 1927. President, Sir A. Keith, M.D., LL.D., F.R.S. Address on Evolution. Section K. President, Prof. F. E. Fritsch, D.Sc. Address on some Aspects of the Present-day Investigation of Protophyta. The papers contributed were outside the range of taxonomic interest. Mr S. K. Mukerji gave before the Forestry Section an interesting account, illustrated with slides, of the Forest of Kashmir. The local excursions were a pleasing part of a successful meeting. Annual subscription, £1. Address, Burlington House, Piccadilly, London, W.

BRITISH BRYOLOGICAL SOCIETY, Vol. i., pt. 5. Report for 1926-7. President, Rev. C. H. Binstead; Secretary, D. A. Jones, M.Sc., A.L.S. 5857 specimens were distributed.

BROWN, G. C. The Alien Plants of Essex, in Essex Naturalist, 31-47, 1927. In this excellent paper our member, who has done a large amount of work on the county flora, has prepared a lengthy list of the adventive plants of the county which owe their origin mainly to the extensive maltings on the Hythe Quay at Colchester. Several were first observed in this area in Britain, and at least one Chenopod was new to science. About 275 species, besides many varieties and some sub-species, are enumerated. A few adventives from Dagenham are also included. The list is commendably free from misprints, and it forms a distinct step in the knowledge of the ruderal flora of Essex.

BROWNE, Lady ISABEL, M.P. A New Theory in the Morphology of the Calamarian Cone, in Ann. Bot. 41, 301, 1927.

BRYCE, JAMES, VISCOUNT BRYCE OF DECHMONT, O.M., by Right Hon. H. A. L. Fisher, Warden of New College. Macmillan & Co., London. Vol. i. and ii., pp. 360 and 360, 1927; 32/-. The son of a distinguished scientist and of a mother of remarkable powers, nature had in James Bryce a distinguished lover of natural science who, if a wider field had not called him, would have stood in the front rank of whichever subject he might have chosen. In his early days he had closely studied the Isle of Arran and indeed had compiled its flora in a work which some day we hope to reprint in these pages, Lady Bryce having kindly given us her permission. No one better qualified to write the career of so distinguished a man as Lord Bryce could have been found than

the late Minister of Education, and in the 700 pages contained in these two volumes, Mr Fisher has given us a clear picture of the man and his work. Bryce was, as one said in our obituary notice (*Report* 693, 1922), a great mountaineer and traveller. It may be remembered that he climbed Ararat (17,000 ft.), doing the last 5000 ft. alone. At a speech to the Alpine Club in 1901 he said, "Ever since, as a boy, I had read of a great inland sea lying between the two ranges of the Cordilleras almost as high above the ocean as the Jungfrau, I wondered as to what the scenery of such mountains and such a sea might be like, and had searched books and questioned travellers without getting from them what I sought." It may be remembered that in that notice in our *Report* are quoted his own words describing Titicaca, and this bit of word painting is, we are glad to see, selected by Mr Fisher in these volumes. "The blue of Titicaca is peculiar, not deep and dark as that of the tropical ocean, nor opaque like the blue of Lake Lemán, nor like that warm purple of the Aegean which Homer compares to dark red wine, but a clear, cold, crystalline blue, even as is that of the cold sky vaulted over it. Even in the blazing sunlight it had that sort of chilly glitter one sees in the crevasses of a glacier; and the wavelets sparkled like diamonds." Bryce was a great word painter and Mr Fisher is wise in giving us examples of his style. "At Santiago [with which Bryce compares Innsbruck] as at Innsbruck, one sees the vista of a long straight street closed by towering mountains that crown it with white as the seas crown with blue the streets of Venice. But there the mountains are nearly twice as high as those of the Tyrolean city, and they never put off their snowy vesture." Mr Fisher tells well the story of Bryce's Oxford days, of how near he was to losing his scholarship at Trinity owing to his conscientious objections, of his work there and of his preparing the essay for the Arnold Prize in 1862 on *The Holy Roman Empire* which exhibited "sound generalisation based upon a wide study of facts" which characterised so much of Bryce's after work. His letters are delightful reading and a wise selection is made of them. They deal vividly with places and things. The history of his political life after he was selected for Tower Hamlets in 1880 with a voting list of 44,000 and an expenditure of not more than £60, is dealt with. As an orator he was not a great success in the Commons. Probably his stern professional manner was too heavy for that assembly. As Mr Fisher says, "The House never gave him its imprimatur." In after years he represented Aberdeenshire in Parliament and became President of the Board of Trade. At the outbreak of the Boer War Bryce took the part of what was called the "Little Englander" and became unpopular. On the accession to power of Mr Campbell-Bannerman, Bryce was given the unthankful office of Minister for Ireland, and to him is due the passing into law of a really helpful housing measure. Later he was given a post—that of Ambassador to the United States—which gave him the opportunity of making for himself a reputation of the first order at Washington. But these are not the pages for the further discussion of this very excellent bio-

graphy which Mr Fisher has prepared. He had to treat of a great man and he has done it in a great manner. Not the least successful part of these volumes is that which discusses the traits of character which characterised both Bryce and Roosevelt. It was the extraordinary pains which Bryce took in order to make himself acquainted, not only with the innermost working of its domestic, as well as its foreign policy, but with the actual and enormous area of the States themselves, that brought him success. Nor did he confine himself to the "States" alone, for South America, Palestine, and Syria were visited in after years. Travel lovers have much to be grateful for to Mr Fisher for giving so freely from his experiences in these countries. In the House of Lords, after his elevation to that Assembly, he attained a power far above that which the Lower House had accorded him. Demos is often jealous of demos and the more so in proportion to the difference in mental capacity. Queen Victoria said of him—"I liked him for he did so much and he was so modest." King George wrote of him as "an old friend and a trusted counsellor to whom I could always turn, confident in the strength and wisdom of his advice." It is pleasing to know that in his closing years he contemplated preparing a Flora of Ashdown Forest. The Warden's work on Lord Bryce will have a permanent value not only for the really great man whom it delineates, but for the literary skill which brings the figure full into our vision.

BUCHENAU, FR. Flora von Bremen in Oldenburg. 361, tt. 10, 1927. Winler Fr., Bremen.

BULLETIN OF THE TORREY BOTANICAL CLUB, 1927. Editor, Tracy Elliot Frazer. Glabrate species of *Tilia*, B. J. Bush, p. 231. A new *Sagittaria* from Florida, S. Kurziana, H. Glück, p. 263. Studies of the Flora of Northern America, H. A. Gleason, with new species, p. 603.

BULLETIN DE LA SOCIÉTÉ BOTANIQUE DE GENEVE. Editor, R. Chodat, D. es Sc. 2nd ser., vol. xviii., fasc. 1, January-June 1926.—G. Bonati. Nouvelles Scrophulariacées Malgaches (Madagascar), p. 1-35. Chiefly belong to the genera *Ilysanthes* and *Radaniaea* Benth., *Leucosalpa*, *Hal-leria* and *Torenia*.—G. Beauverd. Quelques Plantes Polymorphes ou Inédites de la Flore des Environs de Chambéry. Includes *Ophrys Bot-teroni*. See also p. 323.—K. H. Zahn and H. Romieux. Hieracia Nouveaux de Suisse et de France, p. 145.—M. Chodat et fils contribute a most valuable paper on Fungi. Fasc. 2, July-December 1926.—G. Gaillard. Notes sur les Roses de l'Entremont.—R. Chodat and L. Reli-font. La Végétation de Paraguay. The Amarantaceae are an especial feature and new species are described.—G. Beauverd. Premier Appari-tion en Europe de *Veronica filiformis* Sm. [1791]. Vol. xix., fasc. i., January-June, 1927. L. Leeman. Etude de *Asarum europaeum* L.

BURKILL, I. H. Guide to the Singapore Botanic Gardens. It is dedicated to Henry Nicholas Ridley, C.M.G., F.R.S., who was its cap-able director from 1888 to 1912.

CALIFORNIA, UNIVERSITY OF. As usual there is a full output for 1927. N. L. Gardner contributes valuable papers on Algae. New Rhodophyceae and *Gelidium* from the Pacific Coast, and *Entophysalis* from China are included.

CANNON, WILLIAM AUSTIN. GENERAL AND PHYSIOLOGICAL FEATURES OF THE MORE ARID PORTIONS OF SOUTHERN AFRICA, WITH NOTES ON THE CLIMATIC ENVIRONMENT. Pp. 158, tt. 31, and 13 text figures. Carnegie Institute of Washington, 1924. This is an able study of an exceedingly interesting, arid area. The author's itinerary included a journey by railway across the Great or Central Karroo to De Aar, thence through the Protectorate of South-west Africa to Swakopmund, returning to Cape Town. Later Pretoria was visited and in late spring Pietermaritzburg and Durban. Beaufort West and Matjesfontein were seen in August, September and October. Over 120 species of plants were observed. In the Great or Central Karroo the average rainfall is about 13 inches, falling on about 45 days. At Matjesfontein it is 6.8 inches. Even at O'okiep, at 3035 feet, it is only 6.4 in. and at Wambar only 3.62 in. At Swakopmund, for 12 years, the average rainfall was 0.69 in. The vegetation, such as it is, is very fully described. The most curious of the species is *Welwitschia*, which has already been mentioned in these pages. Mesembryanthemums are, indeed, the predominating species in many places. Mr Cannon alludes to the features of leaf structure and root-development, and has succeeded in giving an excellent ecological study of this interesting area. The plates are good and include graphic studies of *Welwitschia* and *Adansonia* with its extraordinary stem development for water storage purposes. The Central Karroo is illustrated with its isolated bunches of species of *Mesembryanthemum*. The Euphorbiae, too, are well shown with the horribly spiny Acacia Karroo. Some of the cotyledons are very remarkable. The book is a valuable addition to the flora of South Africa.

COX, T. H. M. & G. C. TAYLOR. PRIMULAS FOR GARDEN AND GREENHOUSE. pp. 127, tt. 16. Dulau & Co., 32 Old Bond Street, London, 1927; 5/-. This eminently careful, compact and cheap little volume will be of great assistance to those who are trying to grow these charming and increasingly popular flowers—a cult to which none more than the Regius Professors of Botany at Edinburgh, I. B. Balfour and W. W. Smith, has rendered greater assistance. The chapters on Propagation and Cultivation are practical and helpful. The beautiful and favourite Polyanthus is said to be the hybrid of *P. veris* and *P. vulgaris* (alas here called *acaulis* and *officinalis*). Of this there is a good account as well as of the history of the showy and curious Munstead Bunch Primroses. Primulas under glass have a chapter, as have the European species. The authors are too pessimistic when they say "botanists will never cease arguing whether *elatior* is a natural species or a cross between the Primrose and the Cowslip." One has never heard in the past decade a single botanist of repute who doubts the specific

distinction of *elatior*. The name, oxlip, has been applied to two different plants. One that occurs in the South-west and North of England is a hybrid, but it is not *elatior*. That species is not a hybrid and is confined to East Anglia. The section on Extra-European Primulas is quite good and beautifully illustrated. A useful table on the times of flowering of the various forms is appended.

CURTIS' BOTANICAL MAGAZINE, Vol. 152, pt. 1. Published for the Royal Horticultural Society; 17/6. Includes a plate, t. 9125, of *Spartina Townsendii* and one, t. 9137, of *Erythraea Scilloides*. T. A. Sprague has already shown that the generic name, *Erythraea*, is antedated by *Centaureium* as given in the British Plant List of 1908, and adopted by Schinz and Thellung.

DANSER, B. H. A Revision of the Queensland Polygona, in Proc. Roy. Soc. Queensland 23, 1927. This able treatment of a difficult genus is the work of our Hon. Member, who for the past years has been working at Buitenzorg, Java. A key to the 15 species is given. Here we may quote the contrasting features of *P. aviculare* and *P. plebium* since the latter is occasionally adventive in Britain. *P. plebium*—Fruit shining, broadest near the middle, about 1 to 1½ mm. long; leaves with invisible lateral nerves. *P. aviculare*—Fruit dull, because of minute longitudinal wrinkles, broadest in or below the middle, 1½ to 2½ mm. long; leaves with distinct lateral nerves. The latter, excessively polymorphic, inhabits the extra-tropical regions of the northern hemisphere. The former is found in the tropical regions of the old world and in the countries south of them. Danser throws out a suggestion that *aviculare* and *plebium* may be only races of a single syngameon. Under *P. minus*, which has a very wide distribution, he gives *P. sessile* and *P. decipiens* of Robert Brown. Under *P. lapathifolium* he also merges two of Robert Brown's species—*glandulosum* and *lanigerum*. *P. Hydropiper*, also a very widely distributed species in Queensland, has a sub-sp. *microcarpum*.

DANSER, B. H. Die Polygonaceen Niederlaendisch-ostindes. Bull. Bot. Buit. viii., 117, 1927. 1 species of *Rheum*, 10 of *Rumex*, 25 of *Polygonum*, 2 of *Muehlenbeckia*, 1 of *Coccoloba*, and 1 of *Antigonon* are described. A key to the genera and species is given. Excellent figures of the fruits of many Rumices are supplied. The Australian *R. Brownii*, which occurs as an alien at Selkirk, has reached Java. *Polygonum minus* is polymorphic there. Danser, it may be observed, still uses the name *P. lapathifolium*. A most exhaustive account of the synonymy of *P. chinense* L. and its distribution is given as well as a striking figure of *P. malaicum*, a new species. This work maintains the high standard of excellence we are accustomed to associate with Dr Danser.

DANSER, B. H. De Polygonum-Soorten der Theetuinen of Java. Contains 9 figures of the Eastern Polygonums.

DANSER, B. H. *Polygonum-Vegetaties un de Tropen. De Tropische Natur*, 28, 1927. Gives views of *Polygonum javanum* and *P. celebicum* in Borneo. *Indische Beker Planten, l.c.* 198. Includes *Nepenthes gymnamphora*. *Polygonaceae of New Guinea*, p. 44. The results of the Dutch Expedition to New Guinea. Includes *P. celebicum* Danser and *P. minus*, var. *procerum* Danser.

DAVIS, BRADLEY M. The History of *Oenothera* in Britain, in *Proc. Ann. Phil. Soc.*, lxx., 349-378, 1926.

DEVONSHIRE. Eighteenth Botany Report *Trans. Dev. Ass.* 58, pp. 121-132, 1926. Edited by the Rev. G. T. Harris. Lists from the various districts of the county are given which it is hoped may lead to the compilation of a County Flora. Devonshire, a most interesting botanical area, has only an antiquated and quite inadequate general flora.

DIXON, H. N. FOSSILIIUM CATALOGUS. II. PLANTAE MUSCINEAE. pp. 116. Edited by W. Jougmans, Berlin, 1927. There is a good Bibliography. Not only fossil but more recent mosses are included. It is a very valuable contribution.

DRABBLE, E. & H. Some Flowers and their Dipteran Visitors, in *New Phyt.* 115, 1927. The observations were mainly made near the edges of the moors in North Derbyshire. Forty-two species were noted as visiting the Blackberry flowers, but only nine the flowers of *Angelica*.

DREWITT, F. DAWTREY, M.A., M.D. LATIN NAMES OF COMMON PLANTS. pp. 68. H. F. & G. Witherby, London, 1927; 3/6. This useful little volume is one that can be cordially recommended as it gives the derivation of many plant-names and the way to pronounce them. A short account of The Name given is supplied. Speaking of Dioscorides, he says a photographic facsimile of the drawings made to the order of Juliana, daughter of the Roman Emperor Flavius, is in the College of Physicians Library, as well as in the Bodleian. But Oxford has also one of the five copies of the original copper-plate engravings of the same plates which were made by the order of Marie Therèse, and these have on them the Greek names of the plants in Jacquin's handwriting. Short accounts are given of Pliny and Linnaeus. A note on Theophrastus might well have been added. The good index is rendered more valuable in having the vowels marked long or short.

DRUCE, G. CLARIDGE. THE FLORA OF OXFORDSHIRE, pp. cxxxii., 538. The Clarendon Press, Oxford, 1927; 30/-. The publication of a second edition of the "Flora of Oxfordshire" marks an achievement without parallel in British systematic botany. Dr Druce has now completed his survey of the flora of the Upper Thames valley, and the results of his labours are available in three large and exhaustive county Floras—Berkshire (1897), Buckinghamshire (1926), and Oxfordshire (1886 and 1927). Possibly only those who have attempted the vegetative survey of a large area can form a truly adequate conception of the monumental

character of the labour entailed, but even a cursory examination of the present volume must impress the reader with the magnitude of the undertaking, and admiration for the excellent manner in which it has been carried out. The first edition (1886) has been long out of print and therefore difficult to obtain even at a prohibitive price. During the 40 years that have elapsed since its publication important vegetative changes have taken place and a large amount of additional matter has accumulated. The present edition has therefore been entirely rewritten and enumerates over 1600 plants—of which 400 are adventitious—as well as some 700 varieties and forms. The county of Oxfordshire has a long botanical history dating back some 400 years, and as a consequence the compilation of the present volume has necessitated over 20,000 book references, in addition to field-work extending over half-a-century. To Dr Druce all this has evidently been a labour of love, and we are the richer by the possession of a book which, besides being a rich mine of information on its particular subject, is a delight to read. To the reviewer it possesses several features of uncommon interest and great value. Its complete list of some 400 adventitious species is not only local, but of very general importance. Mr J. R. Matthews (*Annals of Bot.*, October 1924) says, "Many questions in plant distribution would be less puzzling if a fuller record of man's influence on the flora were available. No serious student of British plants doubts that many species included in descriptive Floras as if they were native in the county, are in all probability not so. It is the difficulty of disentangling the truly indigenous—i.e., the aboriginal or autochthonous—from the adventive, that necessitates and justifies the careful recording of those immigrants that are establishing themselves at the present time." To mention only two of these—*Brassica elongata* and *Flodea canadensis*—in the reviewer's own environment the former has already extended its range to N. Lancs. and Cumberland, and is locally abundant on the railway banks in these vice-counties, while the latter is common in most of the English Lakes and appears there to have passed its vegetative "wax" and to be decreasing in abundance as in Oxfordshire. To the student of geographical distribution many of the native Oxfordshire plants are also of great interest. To take three examples (of plants not occurring in Central Europe but having a distribution which is essentially that of S.W. Europe)—*Polygala calcarea* is a plant of dry chalky places recorded for Bucks, Berks and Oxfordshire (although not for Northants or Warwick), whence it takes a big northward step to W. Sutherland. *Genista anglica* and *Ulex nanus* have a fairly continuous northerly range into Scotland. These three species may be regarded as having become constituents of our flora by migration from the south, but they differ from species of the entirely "English" group (Stapf, 1914) in ranging over a wider area since they have penetrated into Scotland. *Cardamine bulbifera*, a local woodland species in S.E. England, has not yet been recorded from Oxfordshire, though recorded for the neighbouring counties of Bucks and Berks. As Dr Druce remarks, it may yet be discovered in some of the Chiltern woods of his county.

In Europe the species is native in France, Spain and Portugal. A further outstanding feature of this volume is the extended list of biographical records of the "botanists who have contributed to Oxfordshire botany during the last four centuries." Consideration of space forbids more than a mere enumeration of a few of its more important names—Wm. Turner (1548-68), John Gerard (1597), Wm. Coles (1657), Wm. Browne (c. 1660), John Ray (1670), Robt. Plot (1677), Robt. Morison (1680), Jacob Bobart (c. 1690), Wm. Sherard (1690), John Dillenius (1719), John Sibthorp (1780-94), Wm. Baxter (1812-56), Jno. Boswell (1853), C. C. Babington (1855), Henry Boswell, bryologist (1860), Rev. W. W. Newbould (1860-7), H. C. Watson (1873). The complete list occupies 74 pp. of small print, and is intensely interesting. Dr Druce has evidently spared neither time nor expense in making this historical record full and complete. In so doing he has set an example which might with advantage be copied by later writers. To the field-botanist and ecologist the volume is of absorbing interest. The Introduction gives an exceptionally full and lucid account of the Soil, Geology and Meteorology of the county, interspersed with ecological notes of the greatest value, and the text contains the best ecological description of the habitat of each species that I have yet seen in a similar publication. While few species are peculiar to the county—"Orchis Simia and *Stachys germanica* appear now to be confined to Oxfordshire"—the list of "absent" species is rather remarkable. Many botanists will share the reviewer's surprise at the absence of such widely distributed inland species as *Drosera rotundifolia*, *Scirpus caespitosus*, *Eriophorum vaginatum*, *Osmunda regalis*, *Myrica Gale*, *Vaccinium Vitis-idaea*, *Thalictrum minus*, *Prunus Padus*, *Listera cordata*, *Myriophyllum alterniflorum*, *Viola palustris*, *Ranunculus Lenormandi*, *Rynchospora alba*, *Carex elata*, *C. canescens* and *C. helodes*, *Myosotis repens*, *Mentha rotundifolia*, *Potamogeton gramineus*, and *P. obtusifolius*. It will be noticed, however, that the great majority of these species prefer acid peaty or boggy habitats and, as Dr Druce points out, such are very rare in the county. The volume is of convenient size and weight to handle, and contains 130 pp. of invaluable Introduction, and 538 pp. of plant records. Some of the type is small, but that is necessitated by the exceptional amount of "ad rem" information imparted. The Flora is throughout written in an engrossing style and appeals at once to any true lover of Nature. In addition to its value as a systematic record, it contains the copious and invaluable field notes—compiled during over 50 years' research—of one of the foremost botanists of our time. The work emphasises again the debt that British systematic botany owes to its voluntary field botanists in general, and to Dr Druce in particular. He will be heartily congratulated by all in being privileged to see the actual publication of his latest complete Flora, which should have a wide circulation. Your reviewer is conscious that he has quite inadequately expressed his own personal pleasure in reading this volume, but is quite certain that any botanist who obtains it will be grateful for having his attention thus directed to it.—W. H. PEARSALL.

EDINBURGH. Notes from the Royal Botanic Garden, Vol. xv., No. 74. Director, Prof. W. Wright Smith. Vacciniaceae from Burma and Western China, W. Edgar Evans, B.Sc., with new species; also by the same author, A Revision of the Genus *Diapensia*. A description of some Asiatic Phanerogams by John Anthony, M.C., is also given.

EDINBURGH. Transactions and Proceedings of the Botanical Society, Vol. xxix., pt. 4, 1926-7. President, Prof. M. Drummond; Hon. Secretary, J. R. Matthews. The Presidential Address, October 21, 1926, was on "Some Reflections on the Nature of Species." Scottish Alpine Botanical Club Excursion, 1925, by Rev. J. J. Marshall Lang Aitken, B.D., gives an account of the beautiful garden of Logan in Wigtownshire. On the journey round the Mull of Galloway many plants were gathered, including *Crithmum maritimum*, *Inula crithmoides*, *Daucus gummifer* and *Pneumaria maritima*. *Phormium tenax* is cultivated as an article of commerce near Castle Kennedy. The excursion in 1926 was to Teesdale. James Wright contributes Notes of Strand Plants, including *Cakile*, and A. Nelson a paper on Hard Seeds and Broken Seedlings in *Trifolium pratense*. Col. H. H. Johnston. Additions to the Flora of Orkney. Includes 1½ pages of corrections. *Cerastium subtetrandrum* is deleted. *Hieracium auratum* should be replaced by *H. inuloides* Tausch, sub-sp. *striatum*, var. *pseudauratum* Zahn. There still seems to be confusion about *H. aurantiacum*. Five new Dandelions, named by Dahlstedt, are included—*T. bipinnatifidum* (Rostr.) Dahlst., *T. chloroleucophyllum* Dahlst., and *T. serratifolium* Dahlst. belong to the Spectabilia, and *T. fulvicarpum* Dahlst., *T. perlaciniatum* Dahlst. (not *T. perlacinosum* Dahlst.) to the Vulgaria. At Fetlar Col. Johnston also found a new species, the Spectabilian *Taraxacum shetlandicum* Dahlst.

FARRER, REGINALD. FARRER'S LAST JOURNEY, Upper Burma, 1919-20, by E. H. M. Cox. pp. 244, with 29 illustrations from photographs by the author. Dulau & Co., London, 1926; 18/-. There is also included a complete list of all the Rhododendrons collected by Farrer, and his field notes, which have been compiled by Miss Helen T. Maxwell, assistant in the Herbarium of the Royal Botanic Garden, Edinburgh. In the preface the author expresses his indebtedness to the Editor of the *Gardeners' Chronicle* for his permission to quote at length from Farrer's articles which appeared in the years 1919, 1920 and 1921. Prof. W. Wright Smith and the staff of the Royal Botanic Garden, Edinburgh, also rendered unstinted help. In these pages (*Report*, Vol. vi., 102-4) I wrote a memoir of him in which I tried to do justice to a great field naturalist and to an intrepid and untiring explorer. It was a question at the time when I first made his acquaintance if he was to be only a dilettante observer and might even sink to be a valetudinarian since he was not robust, and had the means and some of the temptations to lead an idle and selfish life. But Farrer had in him the divine fire. If at times it seemed to wane and become temporarily dimmed—

for he was a man of many moods—it ever again broke out in flaming zeal. Discomforts, delicate health, and discouragements only seemed to fan the fire and he died in the full warmth of the celestial glow. Mr Cox had the advantage of accompanying Farrer for a year in Upper Burma, just after the War was over. Farrer had only recently recovered from an operation. The expedition was very speedily arranged. Mr Cox shows how difficult is the work of the real collector in a country so wild and so humid as that which they traversed. The difficulties, however, were such as Farrer loved to conquer. As Mr Cox says, his learning was quite out of the ordinary and “I was content to sit at the feet of the master.” The part of Upper Burma explored is as large in area as Scotland, and it is a mass of precipitous hills and valleys, packed close. There is no rainy season—“it merely pours solidly for 23 hours out of every 24 from June to November.” The people are most uninteresting. The incredibly dirty native Maru is “nothing if not eclectic in his diet, and a beetle or slug squeezed between finger and thumb makes a succulent morsel and a welcome change to the usual vegetable diet.” Every foot of ground between the heights of 5000 and 9000 feet is the region of the rain-forest, and here the tree-leech abounds. On the summit of one of the hills they found a tall *Pterostyrax burmanicus* with translucent white blossoms and a delicious aromatic smell, the flowers of which they collected by shooting them down from the tree. On the far side of the Hpimaw Pass, the Lashis, a small mongrel tribe, cultivated the Opium Poppy, and as the author says, “for generations they have used opium as a febrifuge” and he saw no instance of its abuse. That, too, was the case in the English fen districts as it is in many other parts of India to-day. The Rubi there are as varied as here. *R. quinqueflorus* has a vermilion-coloured fruit the size of a half-crown, but it is tasteless and hollow. The Magnolias were fine and striking in the area. One had a flower-cup six inches across ranging from pure white through the softest of pinks to a rich salmon and rose, flushed with purple. This is *M. rostrata*. It is about 30 feet high with a crown like a perfect Scots Fir. They thought it surpassed *M. Campbellii*. If so, it must be one of the most beautiful of all trees. Here, too, was the wondrous blue-flowered *Primula sonchifolia* which has a light orange eye. Of this a good illustration is given. Farrer had heard of it at Peking and loudly as it had been praised he was by no means disappointed. The travellers came across the Coffin Juniper, for which the Chinese pay fancy prices—as much as £70 for a plank. This has caused the extirpation of it over great areas. They think that trees nearer 300 than 200 feet high still exist. They found that a dab of Iodine was a sure cure for all insect bites and these were very numerous and painful, but fortunately there were no midges or mosquitoes at the mud-hut which they called their Fort. Farrer (*Gard. Chron.*, May 29, 1920) gives a vivid picture of the floral treasures of the Sabiya-Kaw Pass—meadows which are a solid mass of flowers. We can only glance at Farrer’s last year of solitary exploration when he found a magenta-rose flowered *Caltha*. He fell ill on the first of October

and he died on the 17th at Myitadi. Oddly enough the news of the death of an Englishman came to an Indian Hill Station to a friend of mine who was able to identify the man as Farrer. The continued soaking wet to which he had been so long subjected doubtless lessened his powers of resistance. He was buried in a clearing above the "fort" on Konglu-bum. As Mr Cox says, "he throve on solitude and adored the high places. . . . He died in harness as he would have willed it, and his body lies among the hills which he loved." It appears that of the 118 Rhododendrons he collected 107 are in the Edinburgh Botanic Garden Herbarium. Twenty-four of these are new to science. We congratulate Mr Cox on producing so good an account of this last journey and in his judicious appreciation of Farrer's life and work.

FERNALD, M. L. The Antiquity and Dispersal of Vascular Plants. *Quart. Rev. of Biol.* i., 212-45, 1926. This able paper discusses antagonistically the Age and Area "Law" of Willis. He quotes a statement that Hooker (an early discoverer of Age and Area) says—"It consequently follows that with the theory of the antiquity of the alpine flora of New Zealand, we should find amongst the plants common to New Zealand and the Antarctic Islands some of the most cosmopolitan and we do so in *Montia fontana*, *Callitriche verna*, *Cardamine hirsuta*, *Epilobium tetragonum* and many others." Hooker was a "lumper" in species, therefore we need not be surprised to find that in a segregate sense not one of the plants mentioned occurs in New Zealand nor with the exception of *Callitriche verna* in the southern hemisphere. This emphasises what has long been in my mind, that when ecological and other writers discuss a certain species in relation to its surroundings and draw deductions from its occurrence it is of primary importance that a specimen of the plant mentioned should be preserved for verification. Have I not heard in the field postulates about a *Festuca ovina* association when it was *rubra* growing there. As a matter of fact I am not certain whether *Montia* grows in New Zealand. Fernald says *M. fontana* L. = *M. minor* Gmel., which is just what it is not. The Linnean specimen labelled *fontana* is *M. lamprosperma*, and it is probably the only form in Sweden and may therefore be taken as the Linnean type. Fernald states that the *Cardamine hirsuta* of Hooker is *Cardamine corymbosa*, *C. glacialis* and *C. heterophylla*, that the *Callitriche* is *C. antarctica* and *C. Muellieri*, and the *Epilobium*, *E. Billardierianum*. Fernald says the occurrence of cosmopolitan species in New Zealand involves an error of 100 per cent. There is an excellent list of the literature cited in this very trenchant criticism of "Age and Area."

FERNALD, M. L. Two Years of Botanising in Newfoundland. *Contr. Gray Herb.*, 1926-27. In 1910-11, 14 additions to the Flora were made including 4 species new to science. At Capstan Point they found a wonderful Arctic flora which included the "excessively local relic-species" having the primitive rachilla, which is almost obsolete in

modern sedges, projecting from the top of the perigynium. They familiarly called it "Mitre Oglochin," noticing that it had been spread along many paths by the high skin boots of pedestrians to which the prickly little fruits had become attached. There were acres upon acres of the superb blue-violet flowers of *Iris setosa*, var. *canadensis*, and there was *Cryptopteris montana* new to Newfoundland. At Flower Cove *Potamogeton vaginatus* was discovered as well as *P. Hillii*, hitherto only known in the Great Lake region. We notice that *Thelypteris* rather than *Dryopteris* is chosen for our old *Lastrea*, and that they reject the suggested trivial *austriacum* in the sense of *spinulosum*. There is an elaborate account of *Habenaria viridis* with its varieties, from which it would appear that our bracteate form is var. *Vaillantii* (Ten.) Fernald. A new species, *H. straminea*, is described. *Braya Longii*, *Potentilla cisticapensis*, *Astragalus stragulus*, *Epilobium scalare*, *Angelica laurentiana*, *Orobanche terrae-novae*, *Antennaria Longii*, *A. Wiegandii* and *Lactuca terrae-novae* are also newly described species. Prof. Fernald is to be warmly congratulated upon his investigation into so misty and midgy a country and upon his success in so greatly extending the number of its known plants.

GAGER, C. STUART, Ph.D., Sc.D., Director of the Brooklyn Botanic Garden. GENERAL BOTANY WITH SPECIAL REFERENCE TO ITS ECONOMIC ASPECTS, with three Chapters on Heredity and Variation in Plants by Orland E. White, Sc.D. pp. 1056, tt. 689. Blakiston & Son, Philadelphia, 1926; 4 dollars. Of the making of Botanical Text-Books there is no end, and one may frankly say that there are too many. Each of them perhaps has something different to say from the others even although the main treatment may be the same, but this work of Dr Gager's stands on a different plane. In the thoughtful and suggestive preface the author says, "One is a better scientist if he is not merely a scientist, just as one is a better lawyer, farmer, merchant, preacher, if he is more than his calling." So, too, this book is much more than the ordinary text-book and it supposes that a foundation for reading the text will be laid in thorough laboratory work. So the text is enriched with interesting information, not always perhaps strictly botanical but intimately related to the plant or botanical subject discussed. He thus humanises knowledge and shows how intimately the student's own life is bound up with the life and uses of plants. Dr Gager aptly quotes Lamarck's eloquent description of the Science of Botany which "does not consist, as is commonly supposed, in the sterile ability to memorise by heart many names of plants and to apply the names to the plants to which they belong, but it consists in an intimate knowledge of the plants themselves, their development, their organisation, their relations, the essential characters which distinguish species with constancy, the common traits which bind together certain numbers of different plants and result in the formation of different kinds of groups . . . the limits which nature has imposed on varieties, that is to say on the different variations which circum-

stances have been able to bring about in plants. These different kinds of knowledge always indicate that marked difference between the botanist who embraces them both, and the simple nomenclator." The first chapter is entitled The Problems of Botany as Illustrated by the Clover, *Trifolium pratense*. In a few pages the salient features are brought clearly before the reader. The Cell, the Vegetative Function of Plants, Reproduction and Life History are treated of clearly and powerfully, with copious illustrations. The Nitrogen Problem is duly dealt with and some startling figures are given. Every ton of Clover needs 40 pounds weight of nitrogen = 4 tons of ordinary manure, yet the air over one acre of ground contains 75 million pounds of nitrogen, only a minute portion of which is at the actual service of organic life. Part iv. is devoted to the great groups of Seed-Bearing Plants. The various families are described, always with some economic reference and aptly told point of interest. They will be read by many to whom technical classification is a bore. This portly volume, "chockful of good things," deserves as it will almost certainly have, a large circle of readers in English-speaking countries.

GODFERY, Col. M. J. Natural Orchid Hybrids. *Genetica* ix., 19, 1927. With figures, among others, of *Habenaria viridis* × *Orchis latifolia* and *Gymnadenia conopsea* × *Orchis maculata*. Coloured representations of several hybrids are given. The paper is of considerable botanical interest.

GROSSHEIM, A. A. Flora of the Talysh, pp. 273, tt. 16, 1926. The author, the botanist of the Tiflis Botanic Garden, has given a valuable account of this little known area which, for the purpose of the Flora, he has divided into botanical-geographical districts.

GWYNNE-VAUGHAN, Dame H. C. I., D.B.E., LL.D., D.Sc., & B. BARNES, B.Sc. THE STRUCTURE AND DEVELOPMENT OF THE FUNGI. pp. xvi., 384, t. 1, and 285 figs. Cambridge University Press, 1927; 15/-. This thoughtful volume contains an account of the whole of the Fungi, and is illustrated by 285 text figures, many of which are original. The authors say the book is addressed to the student rather than to the investigator. A good bibliography, confessedly not exhaustive although extending to 27 pages, is appended as well as descriptions of Culture Media and Fixatives and Mycological Technique, the latter an exceedingly useful chapter. The Introduction treats of Sexual Reproduction, Spores and Spore Mother Cells, Accessory Spores, Morphology of the Spore and of Classification. The Myxomycetes and Plasmodiophorales, forms resembling Fungi, are discussed. The Physiology is very thoroughly done—Saprophytism, Parasitism, Symbiosis, Specialisation of Parasitism, Reaction of Stimuli coming under notice. The Phycomycetes, Archimycetes, Oomycetes, Zygomycetes, Ascomycetes, Plectomycetes, Discomycetes, Pyrenomycetes, Basidiomycetes, Hemi-, Proto- and Autobasidiomycetes are treated of under these headings. The

last has about 12,000 species of which the Hymenomycetes number over 10,000. They include the Mushroom and *Amanita Muscaria*. Its ally, *A. phalloides*, is said to be responsible for 90 per cent. of the deaths due to fungus poisoning. One is not up in Fungus nomenclature but one is more accustomed to see the Stinkhorn named *Ithyphallus*. The warmest congratulations are offered to the authors of this excellent text-book.

GARDENERS' CHRONICLE, 1927. Weekly. Mr F. Kingdon Ward continues his account of the Ninth Expedition in Asia and gives some excellent views of Upper Burmah, etc. Mr N. E. Brown supplies further descriptions of the Mesembryanthemums and gives Keys to the large number of new genera. On p. 18 a short account of the Glasgow Botanic Gardens is given, and on p. 31 a fine photograph of Sargent's Cherry, *Prunus sachalinensis*, at Shoji in Japan. There I saw trees over 60 feet high in glorious flower. A fine specimen of the Oak in Bocket Hall Park is figured on p. 43. Queen Elizabeth is said to have sat under it. Its girth at 3 feet from the ground is 31 feet 8 inches. Economic Plants of the Bay Islands of Honduras are treated of on p. 50. The Rev. Hilderic Friend continues on p. 266 his interesting articles on Ideal Gardens and Plant Lore. On p. 269 the Botanic Gardens at Georgetown, British Guiana, are described. The large flowered *Allamanda cathartica* was a conspicuous feature there when I visited the place in the rainy season in 1911. There are 85 species of Tropical Palms grown in the gardens and fine specimens of *Pithecolobium Saman*, a very beautiful shade tree. An account of the extraordinary plant, *Welwitschia mirabilis*, is given (ii., 10, 1927) with two excellent illustrations by Mr W. C. Worsdell. See Cannon's "General and Phytological Features of the Vegetation of the more Arid Portion of South Africa." A charming article, devoted to a description of the Esterel District, is given on ii., 11, 1927, by A. T. Johnson. Very thoughtful papers are to be found in the numbers of July 2nd and 9th, on Botanical and Horticultural Adventure and Romance, from which we extract the following:—
"The world of to-day is for the naturalist to explore; not merely the plant hunter or the butterfly collector, but the trained observer. Nowadays we over-specialise and collecting has become identified too much with the acquisitive spirit and divorced from the pioneering spirit. . . . Had Darwin not written the 'Origin of Species,' we should still owe him a debt for the 'Voyage of the Beagle.' Wallace's 'Island Life' and 'Malay Archipelago' are fascinating works, as is Hooker's 'Himalayan Journal.' Such books are rarely written nowadays; the writing of a good natural history travel book is almost a lost art, though we have other models besides those mentioned—Waterton's 'Wanderings in South America' and Bates' 'Naturalist in Nicaragua' being among the best. In each of these the glamour of the tropics has laid its spell upon the author, who not only describes the lavish scenery but is also inspired to throw a flood of light on many a knotty problem. . . . But if the modern traveller does not know enough about natural history, assuredly the modern naturalist does not know enough about life

at first hand in the forcing house of the tropics, because he is not a traveller. And it is to the tropics one must go if one would grasp something of the mystery of life. There is something lacking in the Temperate Zone, not only in degree but in kind. There where Life is lived at high pressure, the strangest and most exquisitely adapted forms of life are met with; as, though under conditions of maximum provocation and intensive civil war, only the queer and wonderful survive. The study of natural history is in danger. The modern tendency is to regard the microscope as the end, rather than the means, and its place in the combined attack on the unknown requires readjustment. A new inspiration is needed, a new leader, one who will fire the ardour of the rising generation as did the famous hypothesis to which the name 'Origin of Species' was given. Can another such leader as Darwin arise in the heavy atmosphere of the laboratory, or the dusty herbarium, or in our dull, unimaginative museums? More and more our young scientific men settle down to routine work without ever having seen the tropics, thereby sacrificing the greatest adventure in education. . . . Above all, the blessed word 'research' has claimed thousands of victims, who peer through the microscope until a chronic myopia prevents them from seeing anything but the nearest trees. Research is a fine thing in its way, and a necessary thing; but it comes at the end of the chapter, not at the beginning. . . . The chemist may investigate the reactions and properties of matter, but the future lies with the organic chemist who explores the complex materials through which life is expressed. The physicist investigates the structure of atoms, as the basis of matter, and we find that in explaining matter he has explained it away; so that unless he can bridge the gulf between matter and mind his results will ultimately be sterile. It would seem then that we are working on wrong lines; the division of labour has gone too far, and the field naturalist is too completely divorced from the laboratory worker. We require more vision and fewer visionaries." There is a revision of *Violas* by Lt.-Col. E. Enever Todd as well as a mass of general horticultural information.

HARRISON, J. HESLOP, & K. B. BLACKBURN. The Course of Pollen Formation in Certain Roses with some Deductions therefrom. Mem. Hort. Soc. New York, 3, 23-32, 1927. The authors rightly say that the enormous variation within the genus *Rosa* group has practically defeated all attempts to classify it into species of the same value as those of other genera. To elucidate this difficulty they have attacked the problem from various angles, that of the experimental breeder, of the field worker, of the parasitologist, of the cytologist, and so on. The cytological examination showed that there existed in the roses a polyploid series based on the chromosome number of seven, but they find that the tetraploids and hexaploids were of two types. Judging by the behaviour of the *Drosera* hybrid, *D. obovata*, in the chromosome number and other reasons stated in the paper, the authors came to the conclusion that the Canine Roses are themselves of hybrid origin. This

startling hypothesis they support by citing the pollen condition in a series of Canine microgenes. These yield the following percentages of good pollen—0-10 per cent. in AFZELIANÆ (*subcristata*, *Reuteri*); EUCANINÆ (*biserrata*, *inconspicua*), RUBIGINOSÆ (*echinocarpa*); AGRESTES (*Borreri*); VILLOSÆ (*caerulea*, *pseudo-rubiginosa*); TOMENTOSÆ (*tomentosa*); 10-30 per cent. in AFZELIANÆ (*coriifolia*, etc.); EUCANINÆ (*lutetiana*, *hemitricha*, *aciculata*); RUBIGINOSÆ (*comosa*); TOMENTOSÆ (*sylvestris*, *pseudo-cuspidata*, *foetida*); 30-50 per cent. in EUCANINÆ (*flexibilis*); RUBRIFOLIAE (*rubrifolia*); VILLOSÆ (*submollis*); 50-70 per cent. in EUCANINÆ (*fallens*); VILLOSÆ (*omissa*); and 75-95 per cent. in EUCANINÆ (*senticosa*); VILLOSÆ (*mollis*). Notwithstanding the aborted pollen say in *subcristata*, *fugax* and *caerulea* these had as many fruits as the other roses and from experiments the authors believe that the Canine Roses, to say the least, are facultatively apomictical. The able reasoning, following the results of their experiments, must be consulted in the original paper.

HAUMAN, LUCIEN. Étude Phytogéographique de la Patagonie, in Bull. Soc. Roy. Bot. Belg. 105, 1925. This forms a very interesting survey of a little known region. The mountain flora is peculiar, *Gunnera* growing at 1100 metres. The forest of *Nothofagus* reaches to 1000 metres, and a delicate Violet, *tridentata*, occurs at 900 metres. Perpetual snow occurs as low down as 1200 metres. The author ascended the Sierra Buenos-Aires from which a view of extraordinary beauty was obtained. Many good illustrations are appended, among them being *Berberis buxifolia*, *Benthamiclla patagonica*, and the weird *Nassauvia glomerulosa* in divers forms. The lake, covered with floating bergs from the glacier Moreno, with a group of *Drimys Winteri*, is well shown.

HAVILAND, MAUD D. (Mrs H. H. Brindley). FOREST, STEPPE AND TUNDRA: STUDIES IN ANIMAL ENVIRONMENT. pp. 218, tt. 8 and inap. Cambridge University Press, 1927; 12/6. More precisely the areas described are The Rain-forest, The Steppe, The Tundra, and The Taija. The Rain-forest—Of the Rain-forest typical examples exist in South America around the basins of the Amazon and Orinoco, and in parts of the Central American Isthmus; in Central and Western Africa along the courses of the Congo, Niger and Zambesi Rivers; in Madagascar; in the Indo-Malay Straits, Borneo, New Guinea, etc. The determining factors are a high even temperature and abundant moisture. British Guiana was the district in which Miss Haviland made her observations and some fine photographs illustrate the kind of scenery it affords. Naturally it is the animal life which attracted the authoress most, but there are passing references to the vegetation. She points out the remarkable water system of the reservoir plants such as the Heliconias and the Bromeliads. Picado called the Bromelia forest flora a "grand marécage fractionné—a discontinuous marsh. In these thousands of aquaria, high up, it may be, on the trunks and branches, each holding about half-a-pint of water, these plant-cups situate in the leaf axils, "take the place of the larger but less numerous pools of ter-

restrial marshland," and, as is the case with the latter, they afford breeding places for myriads of mosquitoes. In Trinidad, when the war against these predaceous and poisonous insects was first waged by cleaning out of gullies and by paraffining the water pools, a distinct improvement was not noticed until the trees had been stripped of the parasitic Bromeliads. Miss Haviland gives a long list of the inhabitants of these "aquaria" and it is a varied and astounding one. Some of the larvae, it is said, have been specially adapted for their habitation. There is a symbiotic influence also, for the plant gives out substances which keep the water, despite its organic contents, from putrifying and the plant itself absorbs some of the nitrogenous material. There is a vivid account of the bird life and also of the ant communities and their pilgrimages. It is stated that a termite queen can lay 30,000 eggs a day for ten years. Miss Haviland is a whole-hearted supporter of protective mimicry and she gives many examples to illustrate it. The Steppe, the great undulating grass country of the Old World and the prairies in North America, has its counterpart in Australia, South Africa and in the "llanos" and "pampas" of South America. The largest stretch is that of Southern Russia and Western Siberia which reaches from the plains of Hungary to the highlands of Mt. Altai. There is a clear and able account of the steppe formation and its inhabitants. The Tundra is a huge tract of land which also lies across Eurasia north of the Arctic Circle and is continued into North America as the "barren grounds." Typical tundra is treeless, and for the greater part of the year it is frozen to a foot or so beneath the surface. Physiologically, therefore, it is dry and this is intensified by the desiccating winds. Its aspect is that of utter desolation. It was the region drained by the Yenisei which Miss Haviland, accompanied by my friend, M. Czaplicka, explored. The description given here of the animal and bird life is vivid. The insects are a class to themselves—they have but 10 to 12 weeks to exist, but the mosquitoes make the most of it. Nowhere else perhaps is their reign more supreme and despotic. The flowers, though not numerous, are interesting and those collected by M. Czaplicka on her journey she kindly gave to me and they are now in the University Herbarium at Oxford. Miss Haviland also gives a chapter on The Taiga which is the climatic formation of coniferous forest covering sub-arctic Eurasia and North America. The Taiga of Siberia is 3600 miles long by 800 miles wide and its literature is insignificant. There, too, the mosquitoes render life well nigh insupportable. The bird life is plentiful and vocal. As will be gathered this work of Miss Haviland is of no ephemeral value, and it can be cordially recommended to all lovers of the wild.

HAYEK, A. Prod. Fl. Peninsulae Balcanicae. Fedde Rep. 30, 961-1193, 1927.

HEGL, G. ILLUSTRIRTE FLORA VON MITTEL-EUROPA. J. F. Lehmanns, München. Convolvulaceae, Polemoniaceae, Boraginaceae, etc. The complete set costs about £20.

HERRERA, FORTUNATIO P. *Chloris Cuzcoensis* Cuzco Peru, 1926. Enumerates 110 genera and 187 species of Cryptogams, 2 Gymnosperms, 63 genera, and 9 species of Monocotyledons, and 299 genera, and 512 species of Dicotyledons. Compositae come first with 55 genera and 144 species, followed by Leguminosae with 21 genera and 33 species, Graminaceae with 21 genera and 28 species, and Scrophulariaceae with 7 genera and 24 species.

HJELT, HJALMAR. CONCEPTUS FLORAE FENNICAE. Vol. viii. Compositae. Act. Soc. Faun. et Fl. Fennica, 54, 397, 1927.

HORTICULTURAL, ROYAL SOCIETY JOURNAL. Edited by F. J. Chittenden. Half-yearly. Includes a description of The Gardens at Logan in Wigtownshire, delightfully illustrated with pictures, among others, of *Alocasia macrolissa*, *Dicksonia antarctica*, *Mesembryanthemum*, *Cordyline* and *Drimys*. The mild climate allows such plants as *Euphorbia mellifera* to grow 10 feet high, *Cordyline* and the giant *Echium Pininana* to 15 feet, and *Rosa Moysesii* and *Cestrium elegans* to 13 feet. *Olearia* grows with wonderful beauty of form and prolific flowering, and there are Rhododendrons galore. A visit to these gardens offers a revelation of beauty and interest. Kingdon Ward writes on his "Botanical Exploration in Tibet." There are photographs of *Lilium hyacinthinum*, *Celmisia Lindsayi* and *Lobelia Deckoni*, a Conifer forest at 11,000 feet, the Mixed Forest in the Tsangpo Valley, Sand-dunes on the Upper Tsangpo, etc. He left Darjeeling on March 14, and ascended the Titsa Valley which Hooker explored 80 years ago. There is a most glowing account of the plants seen in his journey. On p. 25 F. R. S. Balfour gives an appreciative sketch of Sir George Lindsay Holford (See *Rep. B.E.C.* 97, 1926) with a speaking portrait, and H. G. Alexander contributes an account of the Westonbirt orchids and shows how these had been cultivated on a princely scale. Nearly 300 awards were made to individual plants, 10 diplomas were given by the Orchid Club, 59 Cultural Commendations from the R.H.S. in respect of individual specimens, and 17 Lindley Medals were won. A Gold Medal was won in 1902 and the magnificent Veitchian Cup at the Temple Show in 1907. In 1912, at the International Exhibition, no less a space than 1100 square feet was occupied, and it was the outstanding feature of the show. It secured the King's Cup. Many other special cups have been won, and Westonbirt has to its credit 33 gold and numerous silver medals. The Cymbidiums at Westonbirt were the finest in the world. On my last visit there about 10,000 pots were occupied and over 1000 spikes in flower could be seen at one time. Over 50 new Cymbidiums have been raised and named. Their cultivation was begun in 1907. *Vanda caerulea*, with a single stem and over 40 leaves bore two spikes of 12 and 16 flowers. On Her Majesty's visit in 1922 a new hybrid flowered for the first time and, with the Queen's permission, it was named *Laelia Cattleya* Queen Mary. Nor shall I ever forget the 800 pots of *Amaryllis* (*Hippeastrum*) in gorgeous flowering as lit up by the descending sun. Alas the name Weston-

birth now is linked with saddened memory as one knows that all its glory in the past was due to the care and love which was bestowed on it by one of the best English gentlemen, Sir George Holford. Miss Eleanora Armitage, on p. 40, contributes notes on Amazonian Vegetation. Plants of the Eastern Pyrenees, T. Ashton Lofthouse, is a very interesting paper on a fascinating region. Gavarnie proved especially beautiful. Nomenclature of Garden Plants—Chaos or Unity?, Dr J. V. Suringar. There is much of value in this article. He criticises Rehder for writing *Pseudotsuga taxifolia* Britt., var. *Fretzii* Rehder since Beissner had previously established the variety under *P. Douglasii* Carr. But Rehder is absolutely correct. Beissner did not use it under *taxifolia*, and to say so is making a man say what he has not said—a practice too common with some botanists even in Britain. The counsel of perfection would be to write *P. taxifolia* Britton, var. *Fretzii* (Beissn.) Rehder. The Unlimited Scheme and Fixed Position of the Plant Body, by Prof. F. O. Bower, F.R.S., is an abstract of the Masters Lecture, 1926. Mr E. A. Bunzara contributes an article on the Hooker and Lindley Drawings. He tells us that the first meeting of the Society took place in Hatchard's Book Shop, Piccadilly, on March 7, 1804. In 1859 it was found necessary to liquidate all the valuable assets. This led to the disposal of a large series of original drawings. The Council have recently been able to purchase many of the Hooker and Lindley drawings, the latter being especially interesting. William Jackson Hooker was taught drawing by Francis Bauer—a good draftsman, but of course not equal to his brother Ferdinand. Hooker engraved and coloured Knight's *Herefordshire Pomona*. He is also said to have coloured the plates of Lambert's *Pinetum* and he produced his *Pomona Londinensis* and *Paradisus Londinensis*. Reproductions of the true Chili Strawberry and of *Rosa spinosissima*, var. *pallida*, by Hooker are included. Lindley gives *Rosa Doniana*, var. *scotica* and var. "Warwickshire;" *R. arvensis*, var. *Andersonianii*, which do not seem to be noticed by Wolley-Dod. Captain Kingdon Ward continues his Botanical Explorations in Tibet. There are some very beautiful illustrations. Mr J. E. Dandy supplies a Clavis to the Species of *Magnolia*, which will be a welcome addition to Mr Millais' book.

HULPHERS, A. Myosotis Studien. Svensk Bot. Tids., Vol. 21, p. 63, 1927.

HUTCHINSON, J., F.L.S., and J. M. DALZIEL, M.D., F.L.S. FLORA OF WEST TROPICAL AFRICA. Vol. i., pt. 1, pp. 246, tt. 106 and map. Published by The Crown Agents for the Colonies, 1927; 8/6. Preface by Dr A. W. Hill. An account is given of Botanical Exploration in West Africa. Adanson was the first botanist to study the flora of Senegal and the Gambia and a figure of the Baobab, *Adansonia digitata*, appropriately forms the frontispiece. Mungo Park, too, brought plants back from Gambia which are at the Natural History Museum. The genus, *Parkia*, the West African Locust Bean Trees, commemorates his

visits, the second ending fatally in the Bussa Rapids of Northern Nigeria. Scott-Elliot collected between 4000 and 5000 specimens in Sierra Leone in 1891-2. The authors have considerably given a list of the various collectors from each of the areas included in their flora. An unusually good and comprehensive glossary is supplied and keys to the groups and families occupy 17 pages. The arrangement of the families in Volume I. begins with the Gymnospermae followed by the Angiospermae—Anonaceae to Umbelliferae. One notices that the family name Ficoidaceae is used and it has four genera under it. There is a *Polygonum tomentosum* Willd. included which does not appear to be a British plant. The authors are to be congratulated on a fine piece of work which, if it does not take so long a time to complete as other floras of Africa, will maintain the high standard of Kew production.

ICONUM BOTANICARUM INDEX LONDINENSIS. Under this title a new edition of Pritzel's Icones, first issued in 1855, is being prepared under the auspices of the Royal Horticultural Society. It will be published in six volumes, two of which are to be issued in 1928, two in 1929, and two in 1930. They will be similar to the "Index Kewensis" in size and in having three columns in a page. They will be issued by subscription at £25 paid in advance or £9 for the first two and £4 10/- for each of the remaining volumes III. to VI. It is being prepared under the editorship of Dr Stapf. The Director of the Royal Botanic Gardens, Kew, placed the necessary accommodation and the use of the Kew Library at the services of the compilers. The work will contain 450,000 references to British plants.

IRISH NATURALISTS' JOURNAL. Bot. Editors, S. A. Bennett, M.A., B.Sc., Rev. W. B. Megan, B.A., and Prof. James Small, D.Sc. Bimonthly; 6/-. It contains a few notes of Botanical Interest. The Longevity of Seeds, by D. Clouston; A Phenological Survey of Ireland, by A. W. Stelfox; The Fungi, by A. E. Muskett, and Cushendun Notes, by R. L. Praeger.

JOHNSTON, Col. H. HALCRO. Additions to the Flora of Orkney. Tenth Paper in Trans. Bot. Soc. Edin. xxiv., 408, 1927. Contains a page or more of corrections, also records *Cardamine pratensis*, var. *uniflora*, *Rosa mollis*, var. *glandulosa*, *R. omissa*, *R. dumetorum*, var. *semiglabra*, *R. glauca*, var. *denticulata*, *Hieracium striatum* Tausch, var. *pseudoauratum* Zahn, *Potamogeton suecicus* and some new species of *Taraxacum* (see under Taraxaca). Additions to the Flora of Shetland, l.c. 429, 1927. Includes *Caltha palustris*, var. *minor*, *Cerastium tetrandrum*, var. *eglandulosum*, and a new Dandelion, *Taraxacum shetlandicum*.

JOHNSTON, J. M. Studies in the Boraginaceae, VI. A Revision of the South American Boraginoideae. Contrib. Gray Herb. Vol. 78, 1-118, 1927.

JOURNAL OF BOTANY. Edited by A. B. Rendle, F.R.S. Monthly, 2/-. The chief systematic papers are treated of under the respective species.

JOURNAL OF ECOLOGY. Edited by A. G. Tansley, F.R.S. Vol. xv., Nos. 1 and 2, February and August 1927. The Physiology and Ecology of the Calcifuge Habit in *Eriophorum angustifolium* by W. H. Pearsall and E. Marjory Wray. Studies of the Vegetation of the English Chalk, by Violet L. Anderson. *Anemone Pulsatilla* is said to have an average working depth of roots of 0.5-2.5 in., maximum penetration 3.5 in., average spread 2.5 in. *Asperula cynanchica* penetrated 6 in., *Cirsium acaule* 9.5 in., *Hippocrepis* 12.5 in., the Parsnep 14.5 in., *Thymus* 28 in., *Galium verum* 30 in., and *Ononis spinosa* 37 in. Most of the plants, however, examined had small penetration. The volume of soil exploited by the root system varied immensely—*Ajuga Chamaepitys* was satisfied with 20 cubic inches whereas *Helianthemum* used 1508 cubic inches! The chief feeding roots are within 9 inches of the surface. The number of stomata varied greatly—from 52 to the square mm. in *Blackstonea*, growing on clay, to 492 in *Plantago lanceolata*. The present very useful investigation, which has needed much patient industry to accomplish, bears out the generally accepted feeling that the chalk flora is a xerophyte community. Studies on the Vegetation of Nottinghamshire: the Ecology of the Bunter Sandstone, by J. W. Hopkinson. This includes a very interesting study of the Woodlands of Sherwood Forest and its Oaks, both species with the hybrids being found. A list of the species of the Grass Heath Flora is given. Distribution of Vegetation on the Plains of European Russia, by B. A. Keller. L. Cockayne and H. H. Allan give a Paper on The Bearing of Ecological Studies in New Zealand on Botanical Taxonomic Conceptions and Procedure. They emphasise the fact that our knowledge of many species is, from the standpoint of their paper, in its infancy. It is little exaggeration to declare that the commoner a species is the less is known about it—and this is also true of places nearest home. Our member, whom we were delighted to see at the Ecological Society Meeting in Birmingham, Prof. R. S. Adamson, gave a Preliminary Treatment of The Plant Communities of Table Mountain. It is an extraordinarily good account of the vegetation of a fascinating area. W. L. Morss writes on The Plant Colonisation of Merse Lands in the Estuary of the River Nith, a Scottish river separating Dumfries from Kirkcudbright, being tidal as far inland as Dumfries. It would be interesting to know the segregates of the species mentioned. The paper again suggests the desirability of having specimens preserved so that they could be consulted should any doubt arise as to which plant was actually studied. The nomenclature is in many instances archaic. Allusions are made to an "Armeria Society" and *Statice Limonium* and to a "Statice Society." There are few things on which taxonomists are better agreed than that the Sea Lavender is a *Limonium* and not a *Statice*, and there are several forms of *Statice maritima*. The Heath Association of Hindhead Common is described by F. E. Fritsch.

Kew, BULLETIN OF MISCELLANEOUS INFORMATION. No. 1. The Falkland Islands with Photographs of the scenery, Sir John Middleton. On the Flora of the Nearer East (No. 3), A. R. Horwood and W. B. Turritt. Deals with Angora Plants collected by Rt. Hon. Sir R. C. Lindsay. Angora is the new capital of Turkey. Includes *Ruta Lindsayi* Turritt, *Vicia anatolica* Turritt, etc. Grasses of the Fiji Islands, V. S. Summerhayes and C. E. Hubbard, with a key to the species. No. 2, Contributions to the Flora of Siam, W. G. Craib, with many new species. No. 3, Contributions towards a Phylogenetic Classification of Flowering Plants, J. Hutchinson and J. E. Dandy. Genera of Saxifragaceae, J. E. Dandy, with key. There are said to be about 320 species of *Saxifraga*. New species from Panama, Coiba and Cocos Islands, L. A. M. Riley. No. 4, Tropical African Plants, J. Hutchinson and J. Dalziel. No. 5, The Variability of the Camphor Tree in Formosa, F. N. Howes. Contribution to the Flora of Burma, parts iii. and iv. No. 6, The Genus *Dioscorea* in Siam, D. Prain and I. M. Burkill. No. 7, Genera of Magnoliaceae, J. E. Dandy, with key. New genera are *Alcimandra*, *Pachylarnax* and *Elmerrillia*. Notes on African Grasses, with many new species, by Dr Stapf, etc. In opposition to Bentham & Hooker, *Echinochloa* is kept distinct from *Panicum*. No. 8, Sir George Watt supplies a valuable account of the genus *Gossypium* of which several new species are included. No. 9, There is an interesting account of Agriculture and Horticulture in Majorca, which a visitor to that charming Island would do well to read. The type of *Veronica (Hebe) Traversii* is discussed by V. S. Summerhayes. No. 10, M. L. Green has a paper on the History of Plant Nomenclature which includes a short account of the production of the Index Kewensis. African Orchids, with new species, V. S. Summerhayes. Appendix i. Review of the Work of the Royal Botanic Garden, Kew, during 1926. Appendix ii. List of Seeds of Hardy Herbaceous Plants and of Trees and Shrubs which have ripened at Kew in 1927.

KOSTYCHEV, DR S. PLANT RESPIRATION. Translated and edited by Charles J. Lyon, Ph.D. pp. 163. P. Blakiston & Co., Philadelphia, 1927; 2.50 dollars. The author states that for the first time he has portrayed the modern, outstanding features of the science of plant respiration and has considered carefully the whole biochemical side of the problem from a uniform standpoint. Dr Lyon has performed a great service in translating from the Russian into English this very technical and recondite work, which is outside the range of Taxonomic Botany.

LAING, R. M., and E. W. BLACKWELL. PLANTS OF NEW ZEALAND. Third edition, revised and enlarged. pp. 468. 175 original photographs. H. Milford, Oxford University Press, 1927; 18/-. Unfortunately the authors have departed from the Benthamian sequence and have followed that of Engler as being "much more in harmony with evolutionary ideas than that usually adopted." The valuable paper by Dr Parkin, which appeared in our last *Report*, had probably not been seen by

them. The group of islands known as New Zealand, situate in a turbulent sea, has an extraordinary flora, which Drudé considers to be most closely related to that of Antarctic and Melanesian areas. Three-fourths of its species are said to be endemic. That it should have a varied flora is to be imagined since it has great altitudinal range and a wide variety of soils. Its rainfall varies from 13 in. in Central Otago to 228 in. at Peysegur Point, and those two places are only 150 miles apart. What in England would be meadow-lands are in New Zealand covered with tussock grass, consisting of *Poa caespitosa*, *P. anceps*, and various species of *Festuca* and *Danthonia*; toe-toe, *Arundo conspicua*, the tallest grass in the flora, and Palm Lily. In Canterbury 2½ millions of acres are wide, open, tussock plains. Many of these grasses come to Tweedside in New Zealand wool. The Bush is usually gloomy and without striking flowers but, particularly in the North Island, the Nikau Palms and Cabbage Trees bring with them a suggestion of a warmer land. The reduction of the Bush area goes on apace. In 1893 there were 20 million acres; in 1925 it had shrunk to 12½ million. The trees consist of "birch" (really akin to the English Beech) which consists of *Nothofagi*, most attractive trees. The Kauri Pine, *Agathis australis*, a fine tree reaching 150 feet in height is being rapidly extirpated. A tree 5 feet in diameter has been estimated to be 300 years old. The wood takes a fine polish and affords the well known Kauri gum. It is extremely resinous. The best gum exists in a "fossil" state and lies buried in the ground, once forest land. Like amber, which it resembles in appearance, it often has insects, etc., entombed in it. A very large tree at Mercury Bay was estimated by Mr T. Kirk to be 4000 years old, but Mr Cheeseman gave the wiser suggestion of 1700 years. The authors have given a botanical introduction and a key to the Families. There is much of interest throughout the work which is capitally illustrated. No botanical visitor to New Zealand should be without it. The fruticose Veronicas appear as *Hebe* and some beautiful figures are given. The genus is a large one in New Zealand containing over a hundred species. A good glossary is also appended. One wishes that as good a volume was obtainable for the Kenya area in Africa.

LANG, W. H., D.Sc., F.R.S. The Fossil Plants of the Old Red Sandstone in Orkney. Lecture given to the Orkney Natural History Society, August 19, 1927.

LINNEAN SOCIETY. President, Sir Sidney F. Harmer, K.B.E., F.R.S. Transactions, November 26, 1926, to May 27, 1927, December 1927; 8/-. December 26, 1926. C. E. Salmon exhibited and commented on some interesting British plants—*Vicia angustifolia*, var. *lutescens* Corbière from Cornwall, *Alchemilla connivens*, *A. tenuis*, *A. Salmoniana* Jaq., etc. January 6, 1927. A. J. Wilmott gave a preliminary account of a visit to the Sierra Nevada. January 20. Prof. R. R. Gates gave an account of the Tundra Vegetation of Russian Lapland. February 3. Dr G. C. Druce exhibited some British plants, including *Senecio erra-*

ticus. February 17. Miss E. Vachell exhibited *Anagallis arvensis* bearing red and blue flowers on the same plant. See *Rep. B.E.C.* 309, 1927. May 3. A. J. Wilmott gave an account of the Irish *Spiranthes* suggesting that the southern form is *S. gemmipara*, the northern one *S. stricta* Ryd. May 17. E. Marsden Jones and W. B. Turritt gave an account of a new method of preparing herbarium specimens. This was to cover a piece of paper with the paste called Gloy and then to lay out the specimen upon it, pressing it flat and wiping away excess of paste. The sheet is then placed in a press between paper and considerable pressure applied. The specimens should be looked at within a few hours and any excess of paste removed. In a few days the specimens are dry. They retain their shape and sometimes their colour indefinitely. May 12. J. Groves read a paper on the Charophyta collected in Madagascar by Mr T. B. Blow. Mr Blow gave the results of his investigation as to the asserted property of Charas to destroy the larvae of mosquitoes. The results were, however, negative. Capt. F. Kingdon Ward gave an account of the Sino-Himalayan Flora. May 24. The Crisp Medal was given to Prof. H. G. Cannon and the Linnean Gold Medal to Dr Otto Stapf. Dr Rendle gave his Presidential Address. The obituaries, supplied chiefly by Dr Daydon Jackson, are as usual excellent. The Additions and Donations to the Library are numerous and excellently catalogued. W. C. Worsdell was elected A.L.S. in December. Fascicled specimens of Ash and Horse Chestnut from Elton, Hunts, were shown by J. W. Bodger. Dr R. W. T. Gunther exhibited rotographs of unpublished letters of John Ray written to John Aubrey and Dr Edvard Lhwyd. T. A. Sprague gave an account of Brunfels as a botanist. S. K. Mukerji gave an account of the Biological Relations of *Mercurialis perennis*. He has named a strongly toothed form var. *Salisburyana*.

LINNEAN SOCIETY JOURNAL, December 23, 1927, contains a description of the Swiss National Park which is situate in the Lower Engadine. This was the Hooker Lecture of 1926 already mentioned.

LINNEENNE SOCIETE DE LA SEINE MARITIME. Plantes des Iles Kerguelen, 126, 1926.

LONDON UNIVERSITY COLLEGE. An Outline of the History of the Botanical Department. pp. 23, 1927; 2/6. This was issued by the Department on the occasion of the Centenary of the College in June 1927. It states that there have been only three Professors of Botany during the period—John Lindley, 1828-1860; Daniel Oliver, 1860-88; F. W. Oliver, 1888→. There is a short but pleasing account of Lindley and a more complete biography of Daniel Oliver. Allusion is made to Blakeney Point, the botanical ecology of which has been so intensively developed under Prof. F. W. Oliver.

MACGILL AND SMITH. Research Annual, 1927. Plant Breeding, J. Watson. A Visit to some American Farms, H. F. Smith. In an article

on Grasses, it is said that *Dactylis glomerata* is one of the most important of all. In Welsh station trials it yielded the heaviest crop of all grasses—15,949 pounds green weight per acre. Next to it come Timothy and *Phleum pratense*.

MARLBOROUGH COLLEGE, NATURAL HISTORY SOCIETY REPORT to Christmas 1926, No. 75. Edited by L. G. Peirson. C. P. Hurst contributes a paper on Fungi and there is a list of plant-galls found in 1926. Several mosses are recorded but no additions to the County Flora are made.

MARIE-VICTORIN, FR. Notes pour servir à l'Histoire de notre Connaissance sur les Abietacées du Quebec, in Trans. Bot. Soc. Can. 437, 1860. Nouvelles Etudes sur les Composées de Quebec, *l.c.* 461-482, 1927. Gives clear distinctions how to separate *Solidago canadensis* from *S. altissima* L., with an account of the hybrid. Also describes hybrids of *Aster paniculatus* and *cordifolius*, and *novae-angliae* and *paniculatus*, with figures. Notes sur quelques Cas de Tératologie Végétale, 427-433, 1926. In *Acer*, *Salix* and *Iris*. Les Equisetinées de Quebec in Cont. Lab. Bot. Univ. Montreal, n. 9, pp. 137, 1927. It contains an Introduction, general Taxonomy, and Description of the Quebec species and their varieties, all of them being British save *E. scirpioides*. There are 20 illustrations. A remarkable variety, *americanum*, is described under *E. palustre*. The question of the hybridisation of *E. litorale*, the author leaves unsettled. He gives reasons for and against and holds it is an open question. A good clavis is appended. The monograph is a valuable addition to the literature of this genus. Les Gymnospermes de Quebec, *l.c.*, n. 10, pp. 147, 1927. Five genera of Abietaceae, two of *Juniperus*, *Thuja*, *Cupressus* and *Taxus* are included, thirteen native species being well described with their varieties, synonyms, habitats, distribution and history. This again is a very commendable addition to the Flora of Quebec. There are also useful illustrations.

MAIRE, R. Contribution à la Flore d'Afrique du Nord. Mem. Soc. Sc. Nat. Maroc. 1926.

MARTIN, L. H. The Hydrion Concentration of Plant Tissues, III. The Tissues of *Helianthus annuus*. See *Protoplasma* 32, 1927, and (IV.) 522, 1927.

MERRILL, ELMER D. An Enumeration of Philippine Flowering Plants. Manila, 1922-6.

MILLAIS, J. G. MAGNOLIAS. pp. 252 with 10 collotype plates and 30 half-tone plates. Longmans, Green & Co., 1927; 32/-. Horticulturists are already under a deep debt of gratitude to Mr Millais for his two sumptuous volumes on the Rhododendrons which were remarkable not only for the beautiful illustrations but for the useful text. Now from the same pen we have a standard work on the Magnolia beauti-

fully printed and with many remarkably good illustrations. He says the Magnolias are amongst the most ancient shrubs and trees in the world, dating back to the earliest arrival of plant life. The present members are mere remnants of a very extensive group of north temperate forest trees. Hutchinson regards *Pterocarpa* as a type almost as ancient as the *Gingko*. In early times it probably had a similar distribution and fossil remains of Magnolias are common in Tertiary strata of the Northern Hemisphere. Linnaeus gave the name Magnolia in honour of Pierre Magnol, who was director of the botanic garden at Montpellier from 1638-1715. Ornamental as the Magnolias are, they are, says Mr Millais, not so popular as they should be. There is not one that is not worthy of cultivation. Those who are forming gardens should always give them first consideration, when planting. Most of the deciduous kinds are hardy as far north as Yorkshire and some even flourish in Wales or the coldest parts of Scotland. A key by Mr J. E. Dandy is given which helps to discriminate the species. Valuable hints as to propagation and other details of culture are given. Forty-five species are described and numerous varieties and hybrids. One of the earliest to be introduced from North America was *M. glauca*. In the Botanical Garden Herbarium at Oxford is a specimen of *M. grandiflora* from Carolina. *Laurus tulipifera Carolinensis sempervirens, foliis laurinis amplissimus digitatis, flore maximo albo*. This appears to have been sent to the Right Rev. the Bishop of London by favour of Captain Cook. Another sheet from Carolina is dated 1722. This is a very showy North American species. It has flowers 12 inches across. The handsomest species of the genus to my thinking is the Nepalese-Himalayan *M. Campbellii* which is gloriously depicted on plate 4 in Hooker's "Himalayan Plants." It is a tree attaining a height of 80 to 150 feet. It was discovered by Dr Griffith in Bhotan. It has a profuse show of sweet scented pink or rosy flowers shaded with crimson, 6-10 inches across. Unfortunately it flowers too early to stand a chance in England and it takes 25 to 30 years before it flowers. In Cornwall recently it has been raised from seed and there are trees 40 feet high at Leonards Lee and at South Lodge, Horsham. The former has yielded good flowers, and at Bosahan a tree bore 400 blooms when it was 53 years old. There is a specimen at Westonbirt over 30 feet high, but as yet it has not flowered although under the shelter of a wall. Horticulture must be grateful to Mr Millais for the production of this eminently useful monograph. That it will do much to popularise such showy and handsome trees and shrubs is pretty certain and their more frequent occurrence through Britain will be all to the good. The author and publishers are greatly to be congratulated upon the production of so handsome a volume.

MURR, DR JOSEF. *Meine Phanerogamen-Bastarde*, in Viert. Jahrschr. Landes Voralb. 185, 1926. Includes *Luzula Vinesii* (*flavescens* × *pilosa*) in honour of the Sherardian Professor at Oxford, from Innsbruck; *Salix Poelliana* (*Arbuscula* × *aurita*); *Chenopodium Bor-*

basii (album × *opulifolium*); *C. Zahnii* Murr (album × *ficifolium*); *C. tridentinum* Murr (*opulifolium* × *striatum*); *C. subcuneatum* Murr (album × *Zschackei*), England; *C. platyphyllum* Issler; *C. Haywardiae* Murr in *Rep. B.E.C.* 334, 1913, and 19, 1914, Scotland, Switzerland; *C. auricomiforme* Murr & Thell. (album × *auricomum*); *C. subpalmatum* Murr (album × *atriplicis*) in *Rep. B.E.C.* 780, 1925, Druce & Brown, Colchester; *C. Drucei* Murr (album × *striatum* × *Zschackei*) Schutt in Tosters; *C. Schulzeanum* Murr (*glaucum* × *rubrum*), Jena.

MURR, DR JOSEF. Vegetationsbilder aus dem Fürstenthum Leichtenstein. pp. 65, 1927. Dornbirn. Includes notes of many interesting violets. A figure of his hybrid *Juncoides* (*Luzula*)—*Johannis-principis*, is given with a long description.

NATURE. Edited by Sir R. Gregory. Weekly, 1/-. Macmillan & Co., St Martin's Street, London, W.C. Melanism in Lepidoptera is treated of by our valued member, Dr Heslop Harrison (127, 1927), and he gives examples as to its increase in our manufacturing areas. This he attributes to the mineral deposits, manganese, iron, etc., in the foliage which is the food-material of the larvae. He found, by experiments which he details, that melanism, whether induced or natural, is always a Mendelian dominant and further research showed that the metal is the inciting agent. The results demonstrate without any possibility of contradiction that the germplasm can be influenced by external agencies—and this lends weighty support to Lamarckian views. The experiments "provide the principle new in evolution that food not normal to any given organism may so affect its germplasm as to give rise to heritable variations. That being granted, we see at once how a change in habitat can originate new forms and finally new species. In no group of organisms would this be more potent than in plants and thus . . . we can conceive of their origin in stations in which they now exist." On p. 153 a delightful tribute is paid to our late member, Dr Carl Schroeter, in the review written by Prof. R. Yapp. On p. 250 it is announced that the Botanical Library of Capt. John Downel Smith of Baltimore, consisting of 1600 volumes, and the plant collection of more than 100,000 specimens is now in the possession of the Smithsonian Institution of Washington. (See also 388, 562, 564, 1927). p. 254. The grass, *Distichlis spicata*, to which class O. E. Meinzer (*Journ. Wash. Ac. Sc.* Vol. 16, n. 21, 1926) gives the name phreatophytes, indicates water 8-12 feet below the surface and the mesquite, *Prosopis juliflora*, can reach water 50 feet below the surface. On p. 508 an account is given of the Botany School of the University of Sydney. Its Museum bears the names of Bentham and Hooker and its Herbarium that of John Ray. The Advanced Laboratory is called Charles Darwin. The first year's Laboratory commemorates that pioneer in Australian Botany, Sir Joseph Banks, and the Research Laboratory is called Robert Brown who, with Banks, had the honour of being the earliest delineator of Australian Botany. The building, which is exceedingly fine and well

constructed, owed much to Prof. Anstruther Lawson recently nominated Fellow of the Royal Society who died so very soon after the establishment had been opened. p. 228. Dr A. E. Clark Kennedy gives an excellent paper on Stephen Hales, Physiologist and Botanist, 1677-1761. It will be remembered that Hales was a pioneer in the scientific investigation of the flow of the sap in plants and trees. He also did excellent work on the ventilation of ships and due to him forced ventilations were instituted in many of the prisons of England then rampant with gaol-fever. He received the Copley medal of the Royal Society and was one of the eight foreign members of the Royal Academy of Science in Paris. He was a member of Corpus Christi College, Cambridge, and a parish priest at Teddington. There is a monument to him in Westminster Abbey, but his published works are in themselves an enduring memorial of his scientific powers which Dr Clark Kennedy has done justice to in this very readable eulogium.

NEW PHYTOLOGIST. Edited by A. G. Tansley, F.R.S. 25/- yearly. Published quarterly. An article by Dr Drabble is treated of under the author's name.

NORTH WESTERN NATURALIST. Edited by A. A. Dallman, F.C.S. Ann. Sub. 7/6. Issued quarterly. An excellently edited Naturalists' Journal, it includes Aspects of Algerian and Tunisian Botany by Annie Lee; Lichens of the Isle of Man, by J. W. Hartley and J. A. Wheldon; Report on Plant Galls by W. Falconer, F.E.S.; and Cumberland Mosses by J. Murray. The accounts of the meetings of the various Natural History Societies are commendably complete. The Reviews are good, but there does not appear to be any notice of our Reports.

OLIVER, Prof. F. W., F.R.S. Nature Reserves in Trans. Norf. & Norwich Naturalists' Society, xii., 317, 1927. Portuguese Sand Dunes, 279, 1926-7.

OSTENFELD, C. H. Flowering Plants and Ferns from North-Western Greenland, collected during the Jubilee Expedition of 1920-22 with Remarks on the Phyto-geography of North Greenland. 97 species are enumerated. *Taraxacum hyperarcticum* has all shades of colour from nearly white to rich or deep yellow.

OSTENFELD, C. H. The Flora of Greenland and its Origin. Der Kgl. Danske Vidensk. Selsk. Biol. Medd. vi., 3, 1926. No one more capable could be found for preparing this work than Prof. Ostenfeld. He believes that one-eighth of the 390 species of the Greenland vascular plants were brought into the country through the old Norse colonisation and he gives the names of the plants. He thinks *Rubus Chamaemorus* may have been brought by birds from arctic America. The west coast is far more rich in species than the east coast, and this bears out the possible introduction of most species by the Norsemen. Two species are, however, known only on the east coast, *Sedum acre* and *Alchemilla*

acutidens. These may have immigrated from Iceland. The east coast has only 9 species peculiar to itself whereas the west coast has 134. North Greenland is very poor in species, 125 in all, but 8 are not found elsewhere and are naturally high arctic species. *Minuartia Rossii* and *Braya Thorild-Wulffii*, the last-named after that martyr to discovery, must be supposed to have immigrated from the west by Ellesmere Land and have found their way northward round Greenland and down the east coast to about 60° N. Lat. There are eight endemic species—*Braya Thorild-Wulffii*, *Taraxacum arctogenium*, *Potamogeton groenlandicus*, *Antennaria intermedia*, *Hieracium groenlandicum*, *H. lurido-rubens*, *H. rigorosum* and *H. hyparcticum*. The last, if correctly identified, has been recorded from two places in Scotland. Three of the four *Hieracia* are not recorded for America, and it is only recently that Prof. Fernald discovered *H. groenlandicum* in Newfoundland. The relationship of the Greenland flora is more closely American than European.

PEROLD, A. I., B.A., D.Phil. A TREATISE ON VITICULTURE. pp. 696. Macmillan & Co. London, 1927; 25/-. Dr Perold of Stellenbosch, S. Africa, has done great service to Vine-growers in our dominions of Australia and South Africa, as well as to those who live in California, since there is no other work in English which embraces the whole subject and we may say none in any language that is more thorough and exhaustive. Unfortunately in Britain, whether from climatic or other reasons, the few varieties of the grape which once ripened their fruits out of doors are diminished greatly in number so to a great extent this is a sealed book to English Horticulturists. This volume is intended however, to serve the student as well as the practical grape-grower, since there are chapters dealing with the biology, the external and internal morphology and the theory of grafting (known since the time of Theophrastus) of the Vine. There are fourteen chapters, a very good bibliography of seven pages with 132 items, an alphabetical list of grape species and varieties taking six pages, and a general index. The general introduction treats of the origin of modern Viticulture; the geographical distribution of the vine; the influences of climate, latitude, altitude and large masses of water, and the nature and constituents of the soil. Remains of fossil vines and grape seeds show that in the Tertiary period the vine flourished over a great part of Europe and even in Greenland, Iceland, North America and Japan. Later, during the Ice Age, it was driven southwards but afterwards it regained its own and spread over a large area. The Fossil grape-vines of prehistoric times, *V. teutonica*, found in Germany, *V. islandica* in Iceland, etc., resemble in outward appearance the North American, *V. cordifolia*, rather than the European *V. vinifera*. This latter, however, occurs with fossil plants of prehistoric age near Montpellier. In Egypt viticulture goes back 5000 to 6000 years. In Palestine it is of ancient origin as also in Greece, but it was not till the advent of the Christian Era that Italian vines began to acquire a reputation. To France it was probably introduced by the Ionian Greeks near Marseilles, thence

it spread up the Rhone Valley. Under the Roman conquerors, in the second century, wine making spread along the Rhine. In South Africa Viticulture as an important industry is limited to the south-western districts—the winter rain-fall area—which includes the Cape and there is a large and increasing yield of grapes for exportation. The first vines were brought to the Cape in 1655 by Jan van Riebeeck, the Commander. They included the Muscat of Alexandria, Muscatel and Stein. The culture was greatly stimulated by the French Huguenots, many of whom came from the south of France. In California the grape chiefly grown is *V. vinifera* and its varieties, the Pacific Slopes being the great home of the industry. In Eastern America *V. vinifera* is not successful so that native varieties and crosses of the Labrusca Vines are the ones grown. This, too, is the case with the Ontario grape region of Canada. The Central Lake Region of New York, as at Catawba and Delaware, forms the third largest grape growing area. In Australia the industry is most successful in the states of Victoria and South Australia. It was started in 1814 by Gregory. Bushby introduced 514 varieties into New South Wales about 1831. The influence of climate is so important in Viticulture that the author has given great attention to the subject. He shows that the proximity of the sea or of large areas of water has an inimical effect on the ripening of the grape. Grapes can be best grown on deep, cool, well drained, dark-coloured soils. Lime soils are most productive, 17 tons of grapes per acre being grown. In the Cape practically the whole of the Sultana crop is produced out there, and the grapes give fine sweet muscatel wines. Ten genera of the Vitaceae are given by Planchon but only *Vitis* gives useful crops. Some species of *Ampelocissus*, which have bunches of ten pounds weight afford a poor wine of weak alcoholic strength. Viala divides *Vitis* into 32 species. The varieties and the reasons for making them are given in great detail. The propagation of the Vine and, in connection with that, grafting is thoroughly done. Vine diseases are also exhaustively described. The great insect pest, *Phylloxera*, was discovered in the United States by Fitch in 1854. It was first named *Pamphigus Vitifolii*. It is a gall-insect and its winged form in 1867 was named *Dactylospora Vitifolii*. Our Oxford Entomological Professor, Professor Westwood, found it in the leaf-galls and roots and in 1867 called it *Peritymbia Vitisana*. In 1868 Planchon saw the winged insect formed out of the root form and called it *Phylloxera vastatrix*. This is the pest which nearly destroyed the European vineyards. Methods for its destruction are given. Chapters are devoted to detailed methods of culture and preparation for the market. The products of the Vine, including alcoholic vinegar, are mentioned and their methods of preparation detailed. Greece is still the main producer of currants, up to 135,000 tons being annually obtained.

PRESLIA. Report of the Czecho Slovak Botanical Society, 1926. Contains, p. 37, Ad Florae Serbiae Cognitionem additamentum primum by F. A. Novak of Prag. This includes the Equisetaceae and Filices

with some excellent illustrations of the varieties of *Asplenium Adiantum-nigrum*.

PUGSLEY, H. W., B.A. Further Notes on the Genera *Fumaria* and *Rupicapnos* in Journ. Linn. Soc. 427, 1927. *F. Caroliana* is a new species found between Arras and Maroeuil in North France and *Rupicapnos gaetula* is a new species from Djebel Grouz in Algeria.

QUARFORT, S. Adventive Plants, Stockholm, in Svensk Bot. Tids. xxi., 171, 1927.

READ, B. E., Ph.D., & J. C. LIU, M.S. Flora Sinensis, Ser. A. Vol. i. Plantae Medicinalis Sinensis. pp. 106, 1927. Peking. This is the Bibliography of Chinese Medicinal Plants from the pen of Ts'ao Kang Mu, 1596 A.D. 868 plants are enumerated and are classified into Families on the Engler system! But they start with the Composites and end with Filices. There is a Chinese index as well as a botanical one including English names. Copious references are given and the constituents of the drugs are often mentioned.

REHDER, ALFRED. MANUAL OF CULTIVATED TREES AND SHRUBS HARDY IN NORTH AMERICA, EXCLUSIVE OF THE SUB-TROPICAL AND WARMER TEMPERATE REGIONS. pp. xxxvii., 930. Macmillan & Co., New York, 1927; 42/-. This extremely useful volume is dedicated to Charles Sprague Sargent, LL.D., with whom the author worked in the Arnold Arboretum, "as a token of admiration and gratitude." "The arrangement," as the author says in his terse yet comprehensive Introduction, "is very much the same as that of the Manual of the Spontaneous Flora of that region to which it may serve as a supplement and companion dealing with the cultivated ligneous flora which in an ever-increasing way is going to supply economic and esthetic wants and to modify thereby greatly the aspect of the original vegetation wherever man is making his home." The term, Trees and Shrubs, is here taken in a wide sense so as to include not only woody vines but also suffruticose plants. The work, therefore, is very comprehensive including plants belonging to 112 families, 468 genera, 2350 species, with 2465 varieties. In addition there are 1 family, 30 genera, 1265 species and 507 hybrids which are briefly mentioned under their nearest allies. Engler's arrangement is followed as well as the International Rules. He, however, uses special generic names for intergeneric hybrids and his "var." signifies any sub-division below the species regardless of whether it was originally described "as a sub-species, variety, forma, lusus, etc." There is much to be said in favour of this commonsense plan for like the stars these grades differ from one another in glory. The plan is convenient and if its author's name is put in brackets when the grade is other than that of a variety the object is gained without making a man say what he has not said. The abbreviations for the sake of space are extremely brief—too brief indeed. L.A. means Loudon's Arboretum, and W.R., Miss E. Willmott's Roses, but four pages are used to explain them.

There is an excellent Synopsis of the Orders and Families as well as an Analytical Key to the Families and Aberrant Genera. Then follows the text proper which includes a clear description of the species, its varieties and synonyms, with figures. Under *Ulmus*, *U. glabra* Huds., with its hybrid *U. hollandica* is given. The name *U. procera* Salisb. is used for the English Elm, while *U. foliacea* Gilib. is employed for *U. glabra* Mill. = *U. nitens* Moench. Under this is put *Wheatleyi* = *sarniensis* Lodd. and *stricta* (Lindl.), but it is doubtful if his *U. minor* Moss (ascribed to Miller) is correctly identified. I hold that *U. minor* Mill. is *U. stricta* Lindl. Rehder's description does not appear to fit either my *Plotii* or Lindley's *stricta*. *Populus serotina* Hartig is placed under *P. canadensis* Moench, itself a hybrid of *balsamifera* and *nigra*, the latter an introduced tree in the U.S.A. before 1800. *Pyracantha* is kept as a distinct genus although *Coccinea* has a misprint for *C.* instead of *P. Crataegus Oxyacantha* = *Oxyacanthoides*. The var. *pteridifolia* of *monogyna* is wrongly attributed to Rehder. The hybrid of the two species is given as *C. media* Bechst. *Sorbus* is retained as distinct as is *Malus*. *Rubus* has 52 species. We are glad to see he puts the Sweet Brier as *R. Eglanteria*. *Amygdalus* is a section of *Prunus*. *Ampelopsis* is kept distinct from *Vitis*. The Virginian Creeper is put as *Parthenocissus quinquefolia* but does not *P. hederacea* (L.) Dr. retain the oldest trivial? *Lycium chinense* differs, it is said, from *L. halmifolium* in the corolla tube being shorter than the limb and in the broader leaves—rhombic-ovate to ovate-lanceolate, while *halmifolia* has the corolla tube longer than the limb and narrowed below the middle, while the leaves are usually lanceolate. There is a very useful glossary and the index is comprehensive. The work is well printed and the type skilfully chosen. The equivalents of the Metric measurements need correction—a millimetre is not a quarter of an inch. The author and publishers are alike to be congratulated upon so pleasing and valuable a contribution to Dendrology.

REYNOLDS, Miss K. M., 8 Darnley Road, Notting Hill, London, W.11. Flowers of the Holy Land. Parts 1 and 2, 2/- each. These little works give some very vivid and accurate paintings of ten of the Spring and Summer flowers of that wonderful district which has a flora of 3500 species.

RILSTONE, FRANCIS. Cornish Rubi. pp. 269-280. Royal Institution of Cornwall, 1927. Our member has given in these pages an amended and greatly extended account of the Cornish Rubi. Many interesting species are included. So far, *R. nemoralis*, var. *cornubiensis* R. & R., it is stated, has not been found in Devon though one of the most widespread and characteristic of Cornish Brambles.

ROHDE, ELEANOR SINCLAIR. GARDEN CRAFT IN THE BIBLE AND OTHER ESSAYS. pp. 242, with 24 illustrations in half-tone. Herbert Jenkins, Ltd., London, 1927; 10/6. This well printed and aptly illustrated work

will give pleasure to many lovers of gardens as scattered through the pages there is much information which it would take long research to obtain from original sources. The garden-craft, as shown in the pages of Holy Writ, is given at some length, and next the Gardens of the Pharaohs are described. The more one learns of the life of the Egyptians the more one is astonished at their advanced culture. Their gardens were formal and contained trees for shade and for fruit-bearing. They were well irrigated. Vines were, of course, grown, and one saw recently in an alabaster vase of early date the dried up remains of the wine it once contained. There are paintings extant showing the introduction of Frankincense into Egypt. Thirty-one trees yielding this incense resin were uprooted from the Land of Punt and brought back with the earth round their roots to Karnak. Chapter 3 deals with the traditional influence of the gardens of the East and there is a beautiful picture of Shah Jehan riding in his garden. The authoress thinks that it is at least probable that the garden carpets were the original of all carpet decorations. The chess-board arrangement of the beds in mediæval gardens is a curious instance of the force of tradition. In Chapter 4 the Mediæval Garden is illustrated by a beautiful page from the Book of Hours of Isabella of Portugal. In these gardens a solitary tree—a pine tree in the Chanson de Roland—was a marked feature. Many other examples are cited, not the least curious being the Mediæval Castle Garden from the Romance of Regnaud de Montauban. The contemporary description of the Duke of Buckingham's wonderful garden at Thornbury is given at length. Chapter v. is headed "Monastic Gardens and Gardeners" and an example of a rock garden is shown, belonging to the Thebaida Monks, in a picture now in the Uffizi Gallery. Mediæval Flower Symbolism is descanted on in Chapter vi. and there are illustrations of the Virgin in the Rose Garden and the Mary Garden with its carnations and iris—the royal lily referring to the ancestry of the Virgin—of the Royal House of David. Botticelli is said to have been the first to use the Daisy to symbolise the innocence of the Holy Child. The Elizabethan Garden is treated of in Chapter vii. At that period topiary work was fashionable although severely condemned by Bacon, and this was the period for fountains and ponds "fair receipts for water," as they were euphemistically called. Wilton was famous for its "four fountains with statues of marble in their middle" the garden being a "thousand foot long and about four hundred in breadth" and there were "arbors 300 foot long and diverse allies." Chapter viii. is devoted to William Lawson, the Izaak Walton of Gardening writers; chapter ix. to Queen Anne Gardens and early Eighteenth Century Gardening Books; chapter x. to the Old Bee Book; chapter xi. to the Making of a Herb Garden—a delightful employment which gives much scope for research and for original treatment; chapter xii. to the Mistletoe Bough and its legends; chapter xiii. to Oxford Gardens—Merton, the home of Queen Henrietta; Lincoln, celebrated for its vine dating from the 15th century and All Souls. John Goodyer is said to have been at Oxford during the Civil Wars but there is no evidence of

his being much there save as a visitor. Then there are the gardens of the New College; Pembroke College, which existed up to the nineteenth century, and in which Johnson played at draughts with John Fludyer; Wadham and St John's. There is a little confusion in the authoress's account of the Botanic Gardens. Morison, the Regius Professor, was not a successor to Jacob Bobart, the latter being only *horti praefectus*. Nor are the niches in the gateway now empty. They are still occupied with the statues of Charles I., Charles II., and the Earl of Danby. They owe their origin to a fine inflicted on Aubrey Wood for libelling the Earl of Clarendon, and that fine was used to pay for the carvings of the statues. The two last chapters are entitled The College Gardens, Garden Music and the Charm of the Sundial. Purchasers of this pleasing volume will find much in it to interest and instruct.

SANDERS, EDMUND. A BIRD BOOK FOR THE POCKET. pp. 246 with over 200 coloured plates. Oxford University Press, 1927; 7/6. This delightful little volume, although nothing to do with our subject, should not remain unnoticed because it has several unusual things to recommend it—its compactness, $6 \times 4\frac{1}{4}$ in.; its weight, 12 ounces; its, on the whole, extraordinary realistic colouring obtained by a colour process on unglazed and light paper, and its terse yet apposite descriptions. To produce such a volume at so low a price seems an impossibility. There are also many beautifully coloured illustrations of Birds' Eggs of the natural size. The nomenclature is mainly that adopted by the British Ornithological Union. The small birds are on a half scale and large birds on a one-fifth scale. There is an excellent introduction. We hope a similar work on our wild flowers may be equally well produced.

SAYRE, JASPER D. Physiology of the Stomata of *Rumex Patientia* in Ohio Nat. 233, 1926.

SCHAFFNER, J. H. Observations on the Grasslands of the Central United States in Ohio State Univ. Studies, n. 175, 1926. The author has had wide experience with the subject on which he writes so ably. He gives the constituents of the true or *Andropogon* prairie in which such plants as *Artemisia Ludoviciana*, *Grindelia squarrosa*, *Ratibida columnaris*, *Laciniaria punctata*, *Psosalea floribunda* and *Salvia Pilcheri* form a part in the western area but thin out or disappear in the east. He gives the characteristic species found in S.W. Illinois. Of the typical central prairies *Andropogon furcatus* is the dominant grass with its associate *Sorghastrum nutans*. *A. scoparius* is abundant on the drier and *Panicum virgatum* more frequent on the damper soils. Other plants are *Baptisia bracteata*, *Meibomia illinoensis*, *Psoralea floribunda*, *Amorpha canescens*, *Acuan illinoensis*, *Petalostemon purpureum*, *P. candidum*, *Silphium laciniatum*, *S. integrifolium*, *Helianthus scaberrimus*, etc. The vegetation in the clay county, Kansas, the Sloughs, Sand Hill Flora and Salt Marshes is also given, with some good photographs. The formations may be grouped into—1, Forest For-

mations of Oak-Hickory and Oak; 2, Prairie or Tall Grass Formation; and 3, Plain or Short Grass Formation.

SCHAFFNER, J. H. The Change of Opposite to Alternate Phyllotaxy and Repeated Rejuvenations in Hemp by means of Changed Photo-periodicity, in Ohio Journ. Sc., 1927. Sex-limited Characters and Allo-some-linked Heredity, *l.c.* 105, 1927. Siamese Twins of *Arisaema triphyllum* in opposite sex experimentally induced, *l.c.* 276, 1926. An undescribed Equisetum from Kansas—*E. Kanzanum* Schffn., in Ohio Nat., November 1912. Sex and Sex-determination in the Light of Observations and Experiments in Diaecious Plants, *l.c.* 319, 1927.

SCHINZ, HANS, & ALBERT THELLUNG. Weitere Beitrage zur Nomenklatur der Schweizerflora (xi.). Nat. Gesel. Zurich 72, 206, 1927. They consider Sprague's suggestions of Nomina Conservanda and suggest *Laser* Borkh. 1795 vice *Siler trilobum* Crantz and *Cephalaria* Schrad. vice *Lepicephalus* Lag. They suggest *Potamogeton oblongus* Viv. Ann. Bot. 1-2, 162, 1804, should be used instead of *P. polygonifolius* Pourret, since the original material of Pourret at Madrid is *P. alpinus* Balb. *Salix incana* Schrank, 1789, should be replaced by *S. Elaeagnos* Scop. Fl. Carn. ed. 2, ii., 257, 1772. *Stellaria Alsine* Grimm in Nova Acta Phys. Med. Nat. Cur. 17, 313, 1767, precedes *S. uliginosa* Murray Prod. Stirp. Gott. 55, 1770. They retain *Delphinium Ajacis* L. in the sense of our List. *Ranunculus obtusiflorus* (S. F. Gray) Moss in Journ. Bot. 117, 1914 is used for *Baudotii*. *Viola intermedia* Reichb. Ic. Pl. Crit. vii., 3, 1829 = *V. Riviniana* × *sylvestris* = *nemorosa* Neuman, Wahlst. & Murb. *V. persicifolia* Roth = *V. stagnina* Kit. *Chaerophyllum* Hal-ler Hist. St. Helv. i., 327, 1768, is used for *Cerefolium* Hall. and *Anthriscus* Pers. *Apium tenuifolium* (Moench) Thell. replaces *A. leptophyllum* F. v. Muell. = *A. Ammi* Urban (*Cnidium tenuifolium* Moench). They still use *Veronica Tournefortii* Gmel. *Digitalis grandiflora* Miller, 1768, replaces *D. ambigua* Murray Prod. Stirp. Gott. 62, 1770.

SETCHELL, WILLIAM ALBERT. Phytogeographical Notes on Tahiti; Land Vegetation, Marine Vegetation. Univ. Calif. Public. 240-334, 1926. The highest mountain in Tahiti—a double island, 17° south lat., 149° west long. in the Society group—is 7321 feet. The island is about 20 miles long and 10 miles wide at its greatest width. It has an area of about 350 square miles. The rainfall is over 80 inches a year. *Hibiscus rosa-sinensis* is one of its conspicuous flowers but there are *Allamanda*, *Bougainvillea*, *Cestrum*, *Ixora*, *Acalyphae*, *Crinum*, *Eucharis*, *Gomphrena* and *Corculum*, an attractive herbaceous climber, to help the brave show of blossom. Above 5000 feet *Lycopodium cernuum* and *L. volubile* are common features. *Fitchia nutans*, a tree Composite with a trunk 9 inches in diameter, growing at about 4000 feet, was found by Moseley in 1885. The flora is made up, according to Nadeau in 1873, of 289 Spermatophytes, 127 Pteridophytes and 91 Bryophytes. The estimate, as given by Setchell, is 330 Spermatophytes and 158 Pterido-

phytes, of which about 9 per cent. (144) are endemic. There is much ground unworked. The question of Dispersal is well gone into and the author thinks that the land flora of Tahiti is simple and indicates comparative youth. Two main sources seem to have supplied its constituents—southern latitude, probably from the Tertiary flora of the Antarctic and western latitude, overwhelmingly Indo-Malayan. There are 149 species of marine algae.

SHERRIN, WILLIAM ROBERT, A.L.S. AN ILLUSTRATED HANDBOOK OF THE BRITISH SPHAGNA, with Foreword by H. N. Dixon. pp. 74, tt. viii. Taylor & Francis, London, 1927; 6/-. Since Mr Horrell's European "Sphagnaceae" is out of print and the Warnstorffian system has nearly ousted Braithwaite's work the appearance of this well arranged, well printed and aptly illustrated work will be welcomed by Bryologists. As Mr H. N. Dixon in the Foreword says "The keys and the full and careful descriptions, together with the figures, each illustrating some main feature of the species, will be found eminently helpful—their special value lying in the fact that they are in every case based on Mr Sherrin's own observations of the plants themselves." The localities and distribution of the species are given.

SHIPLEY, Sir ARTHUR E., G.B.E., F.R.S. Hunting under the Microscope. Edited by C. F. A. Martin, M.A. pp. 184 with portrait. E. Benn, Ltd., London, 1927; 8/6. This work lies outside our purview, yet one feels that it is only doing justice to a fellow-worker in science who did much to popularise the unpopular and who, from the placid, if not quiescent domain of a College Don, looked deep into the common things about him and from them drew much inspiration which enabled him to send a ripple of enquiry even into the fashionable lagoons of Society. As his Editor says, "he had a singular gift for picking out the essential principles and for explaining them to the lay man." Curiously enough in this charming little volume Sir Arthur begins by describing an animalcule known as *Tardigrade*—what an appropriate name for a head, I will not say, of an Oxford College. As he remarks, they live remote from the world, remote from worldly cares—but they are very small—the Tardigrades I mean—one-third of a millimetre in length, some of them "looking like sucking pigs in plate armour so fat that you feel inclined to pat them." But there the similitude stops. Who ever wanted, even in Wonderland, to pat a college head, certainly not one belonging to the older university. In graphic terms, Sir Arthur describes the Nematodes, those parasites of parasites, and the snails and slugs, those toothsome morsels to our gallic and nepalese friends, who, the snails and slugs I mean, before they go into their winter sleep feed up. It is at that period of luscious fatness that their attraction to the gourmand is most pronounced. This opens out delightful chapters on hibernation. One might of course enter into a discussion as to how long was the hibernation of a College Don of the olden times. The Carp, a native of Persia, was introduced in the middle of the thirteenth

century into Europe, and was known in Britain in the fifteenth century. Somewhat like the Trinidad delicacy, which entombs itself in summer, it buries itself in the mud during winter time. Hibernation or resting stages; it is said, can be exercised at will, and it is this power which enables a fakir to throw himself into a trance which may last as long as six weeks, during which time no food is taken. The extraordinary case of Colonel Townsend is given to show that this power is not confined to the Hindoo. In easy and delightful language Sir Arthur shows the inner meaning of hidden things in smallest guise so that chapters on Rotifers and Cyclops are easily assimilated. One wishes once again to be a budding microscopist enthusiast who watches with an eager eye when urchins scratch their heads in order to find fresh fish for his net, or rather an object for his slide. Excellent are the accounts of the Larvae and Pupae of Mosquitoes, and the epic incident of the discovery by Ronald Ross of the malarial organism. An eloquent tribute is paid to that devotee of science. Would that Sir Arthur could have lived to have given us an equally vivifying stimulant to botanical research, which assuredly would not have been with an eye at the end of a tube.

SIM, T. R., D.Sc., etc. Check List of the Bryophyta of S. Africa. Edition 2, pp. 32. Times Printing and Publishing Co., Chancery Lane, Pietermaritzburg, Natal, 1927; 1/6. Clearly printed it contains 670 species under 54 families and 224 genera. Some Effects of Man's Influence on the South African Flora, in S. Afr. Journ. of Science, December 1926. A very readable and suggestive paper. These works are by Dr Sim, the gatherer of *Botrychium Matricariae* in Kincardineshire.

SMALL, JAMES. The Hydrion Concentration of Plant Tissues, in *Protoplasma* 324, 1926. With M. W. REA. Flowering and other Stems, *l.c.* 334, 1926.

SOMERVILLE, Sir WILLIAM, K.B.E. How a TREE GROWS. pp. 212 with 112 text figures. Oxford University Press, 1927; 10/-. We heartily congratulate our Life Member on the completion of this well written and well printed text-book. It is the expansion of some notes of lectures given to Forestry undergraduates in Oxford. The author has always been a stimulating force in any department of work which he has taken up and both Forestry and Agriculture, not to say Rock-gardening, are indebted to him. In addition to the ordinary chapters on structure and life history, one is added on the Identification of Timbers. Figures of sections are given of Ash, Elm, Robinia, Oak, Spanish Chestnut, Cherry, Walnut, Plane, Beech, Hornbeam, Hazel, Alder, Sycamore, Lime, Holly, Apple, Birch, Horse Chestnut and Willow, and some others are described in the key. The coniferous timbers are also similarly treated. The book supplies a want to students and it will prove useful to those who are neither foresters nor undergraduates.

STEFANOFF, R. Monograph na roda *Colchicum L.*, in *Svorn. na Bulg. Akad. na Nank.*, xxii., 1926.

STEP, EDWARD, F.L.S. HERBS OF HEALING. pp. 206, tt. 76, from photographs by the author. Hutchinson, London, 1927; 10/6. The author "has taken the herbs that possess acknowledged curative powers and those that have been reputed medicinal: distinguishing the true from the false and enabling the reader, by clear, non-technical descriptions and many photographs to identify them with ease." The photographs are quite charming and such plants as Sea Holly, Bear's-foot, Setterwort, Field Poppy, Sweet Violet, Common Mallow, Wood Sorrel, Purple Loosestrife, *Sedum acre*, *Sambucus*, the Daisy, *Atropa*, Henbane, White Dead-Nettle, and Juniper are beautifully reproduced. In others, and one realises the difficulties of plant photography, there is too much massing so that it is less easy to make out the individual flowers. One wishes that capitals had been used for those specific names which need them, e.g. *Atropa Belladonna*, *Solidago Virgaurea*, etc. *Erythraea* is still wrongly employed instead of *Centaurium*, but in this error the author is in a good but, one trusts, diminishing company.

SWANSEA SCIENTIFIC AND FIELD NATURALISTS' SOCIETY REPORT, edited by A. E. Trueman, D.Sc. Our valued contributor, Mr J. A. Webb, B.A., gives a Report on New County and other Plant Records, 1924-26, most of which appeared in those pages.

TAHOUDIN, C. B. SOME NOTES ON BRITISH ORCHIDS, 1926-7. *Aceras anthropophora* Br., with two lips, was found in Hampshire. Teratological forms of *Ophrys apifera* are mentioned, including one with yellow-green flowers, also a white *Trollii*. *Cephalanthera "grandiflora"* with three distinct lips has been found in Surrey. One is always glad to have these notes.

THE BRITISH FERN GAZETTE. Edited by F. W. Stansfield, M.D., F.L.S., 120 Oxford Road, Reading. This, the organ of the British Pteridological Society, of which the President is W. B. Cranfield, is a well printed and excellent organ for fern-lovers.

THELLUNG, Dr A. Die Abstammung der Gartenmöhre (*Daucus Carota* sub-sp. *sativus*) und des Gartenrettichs, *Raphanus Raphanistrum*, sub-sp. *sativus*, in Fedde Rep. 46, ii., 1927. *Amaranthus Probstii* (*retroflexus* × *Torreyi*, nov. hybr.) from Switzerland, *l.c.* 270, 1926. Nuevas Orientaciones de la Botanica Systematica (Estudu sistematico-filogenético de los cereales). Fac. Agrim. et Vet. v., 315, 1926. Buenos Aires. Treats chiefly of Oats, Wheat, and Barley.

THURSTON, E., C.I.E., & C. C. VIGURS. Notes on the Cornish Flora. Royal Inst. Cornwall, 1927. Gives some interesting additions to the Flora.

TITS, D. Le Sahara Occidental: Contribution Phytogéographique. See Bull. Soc. Roy. Bot. Belg. 391, 1925. The districts des Dayas sud-oranaise, Hammada du Guir, Grand Erg occidental and Sacura are

treated of. The Maroccan dunes have an attractive flora. There is a good bibliography and several illustrations.

TRAUSCHEL, W. The Species of *Beta*. Bull. Appl. Bot. 17, 203-220, 1927.

UNITED STATES DEPARTMENT OF AGRICULTURE, WASHINGTON. This wonderful government department continues its extraordinary output of helpful literature. The Seed Inventory n. 80, 81, is one of its important branches. One of the fruits grown was from an unexpected source. We do not look to the Polygalaceae for an article of diet, yet the seeds of *P. butyracea*, a native of South Africa, yield much oleaginous and nutritive material. A hybrid plum (61224), *Prunus domestica* × *spinosa*, was sent from Koslov, Siberia, with a fruit 1½-1¾ in. diameter, very juicy and deliciously sweet. J. H. Kempton gives a valuable paper on Age of Pollen and other factors affecting Mendelian ratios in Maize.

WATSON BOTANICAL EXCHANGE CLUB, Vol. 3, n. 9, 1925-6. Distributor, F. J. Sheldon, B.Sc. 1735 specimens were distributed by 21 contributors. One notices *Anthyllis coccinea* L. is recorded from Cornwall, but surely Linnaeus did not give it specific rank—which however it deserves. Under *Scrophularia Ehrharti* it is said to have been only once recorded for Norfolk. I have recorded it from two places in that county and it is very abundant and luxuriant round Scoulton Mere, as I pointed out to our members in 1925. I use the name *S. alata* Gilib. as it has precedence. The critical remarks on the *Salices* and *Menthae* are quite interesting. Vol. 3, n. 10, 1927. Distributor, D. G. Catcheside, Jun. 2893 plants were sent in. The remarks about *Aconitum* omit that our English Aconite was described as a species, *A. anglicum*, by Dr Stapf. See our *Report* 763, 1925. On p. 377 the *Lotus hispidus* mentioned is the var. *major* Rouy. One is not surprised to see the note on *Vicia*, p. 377-8, but it needs qualification. Other authorities take a different view as to the status of var. *inclinata*. *Hieracium praecox*, var. *castanetorum* is a varietal name not included in Zahn's Monograph. I saw it plentifully in the station mentioned in Surrey. It is a well marked and handsome species.

WEST, G. S., & F. E. FRITSCH. A TREATISE ON THE BRITISH FRESH WATER ALGAE, IN WHICH ARE INCLUDED ALL THE PIGMENTED PROTOPHYTA HITHERTO FOUND IN BRITISH FRESHWATER. New and Second Edition, pp. 534 with 207 figs. Cambridge University Press, 1927; 21/-. Nature in reviewing the first edition said "The Treatise is one of the well known and excellent Cambridge Biological Series. . . . Its aim is stated as 'to give the student a concise account of the structure, habits and life-histories of Freshwater Algae, and also to enable him to place within the prescribed limits of a genus any Alga he may find in the freshwaters of the British Isles.' To do this within the limits of an octavo volume of less than 400 pages, in which are numerous illustra-

tions, is a task possible of accomplishment only by one very familiar with the subject and skilled in concise expression; but that it has been successfully done will, we think, be the verdict after testing the book thoroughly." And if these remarks were true, as assuredly they were, at that time the same may be emphasised even in a stronger manner of the present valuable work. That it will be the standard authority for many years is undoubted and no student of these minute organisms can be without it. It is illustrated with 207 text figures and is printed in that clear and attractive type which is a characteristic of the Cambridge University Press. The foot notes are unusually copious, the arrangement and choice of type excellent, and one has nothing but praise for the labour which the authors have expended on this work. Any one who knew West could not help but appreciate and honour the manner in which he threw himself into the study. The scientific world is to be congratulated upon the very able collaboration which has produced this volume.

WICKES, DEAN D. *Flowers of Peitaiho*, No. 1. pp. 87, 1926. Peking Leader Press; 1 dollar. This charming little work is produced by the Peking Society of Natural History under the general editorship of Bernard E. Read. The arrangement is that of the "Pflanzenreich." The Latin name has the Chinese vernacular name attached. An analytical key is supplied by J. C. Liu. The Chinese Bluebell is *Platycodon grandiflorum*. *Convolvulus Soldanella* is among the plants figured. *Viola Patrini*, the Blue Violet, is illustrated, but I saw it in Manchuria with even longer leaves. The volume is quite attractively bound.

WILD FLOWER MAGAZINE, the Organ of the Wild Flower Society, edited by Mrs Dent, Flass, Maulds Meaburn, Penrith. This very popular Society is doing excellent work among many of our young and some of the older plant lovers. One notices that the list of plants sent in is much more accurate than formerly. Miss L. E. Richards, Miss H. Salmon, Miss Bacon, Lady Davy, Mrs Perrycoste, Hon. Mrs G. Baring, Mrs Hale, Mrs Godden, Mrs Davies, Mr N. Sandwith, Mr W. D. Miller, and Mr T. H. Green are able and efficient helpers.

WILSON, ERNEST H., M.A., V.M.H., Keeper of the Arnold Arboretum of Harvard University. *PLANT HUNTING*. 2 vols., pp. 248, 276, tt. 128. Stratford & Co., Boston, Mass., 1927; 15 dollars. Dedicated to "Those of every Race and Creed who have laboured in distant lands to make our gardens beautiful," these two volumes are indeed a gift to be treasured since they are the account of his own personal experiences ranging from his visit to China in 1899 to South Africa in 1922. Therefore we have delineated the floral treasures of Africa, Australia, the Tropics, and the Orient in the first and the Tropics and the Orient in the second volume. His travels led not only "off the beaten tracks" but "over ground hallowed by memories of early plant hunters" to

whom he does justice and pays his homage. The author has often been asked which of the countries visited he liked the best. He has found no ready answer. He looks back with pleasure and gratitude to each and every country visited for in all he has "found handsome trees and beautiful flowers." Once I remember going through a volume of replies made to many questions as to personal likes or dislikes. These had been filled up by eminent people for an album belonging to a daughter of a British Foreign Secretary. In reading it one was struck with the repetition of the name of Ceylon as the reply to the question of "which is the most beautiful land you have seen," and I hope it is not committing *lèse-majesté* to say that our present King in his naval days was among those who gave this island precedence. Not having seen Java or Hawaii it is the reply I should make. As Mr Wilson says, to enjoy scenery to the full the observer must be a botanist. This was Charles Darwin's opinion—"group masses of naked rocks, even in the wildest forms, may for a while afford a sublime spectacle but they will soon grow monotonous. Paint them with bright and varied colours and they become fantastic, clothe them with vegetation and they must form a decent, if not a beautiful, picture." A more descriptive word than decent might have been used. Wilson truly concludes a charming preface by writing "There are not happier folk than plant-lovers and none more generous than those who garden." It is truthfully said that "a congenial companion doubles the pleasure and halves the discomfort of travel and so it is with the brotherhood who love plants." Among the pioneers in plant-hunting the author mentions Plumier, who wrote about West Indian plants in 1689. The fragrant temple-flower, *Plumiera*, perpetuates his name. Cornuti still earlier, in 1635, gave an account of some American species. Both were Frenchmen. Then there were Clayton, who visited the Virginias in 1705 (the pretty *Claytonia* was named after him), Catesby, who went to Carolina in 1712, the Swedish Kalm, who visited America in 1748 (the ericaceous genus, *Kalmia*, commemorates him), and John Bartram, some of whose plants are beside me while I write. He was born in Pennsylvania and became the King's Botanist. There were among the earliest of the brotherhood. Wilson does not mention such names as Alexander Brown, D. Du Bois, and Dr Edward Bulkeley who sent rich gatherings from the Cape and India prior to 1700, and whose plants are contained in the Du Bois Herbarium at Oxford, but of course it is not in the scope of the book to give more than a glance at the seventeenth century collectors. He feelingly alludes to the difficulty accompanying acclimatisation—some plants are so pernicious. South Africa is appropriately illustrated with a portrait of Francis Masson. He was the discoverer of *Centaurium Scilloides* in the Azores. In the review on Viticulture in these pages it is mentioned that the Dutch Commander, Van Riebeeck, introduced the Grape Vine to the Cape. The Dutch were great gardeners and wrote Gargantuan books on gardening such as the "Hortus Eystettensis." Paul Hermann, he says, in 1672 made a herbarium of Cape plants and as we know Petiver figures "one hundred elegant plants" in 1709 from that place

in his "Gazophylacii." These include 8 species of *Pelargonium* and *Amaryllis Belladonna*. The view which Mr Wilson gives of *Ornithogalum Thyrsoides* covering the plain, and the fine range of mountains beyond, forms a beautiful picture of one of the earliest known Cape flowers. He relates how he was stirred by seeing for the first time in its native home a wild clump of the blue *Agapanthus umbellatus* as he was traveling by railway through Natal and how he "longed to get out and fondle his old favourite." The *Kniphofias* too were singularly attractive. *Helipterum eximium*, an "everlasting," with its six inch broad corymbs of ruby-red flowers, was a striking feature, but the wealth of flora is so great that volumes even larger than these could not do them adequate justice. It may be added that the Scarlet Geranium grows wild around Port Elizabeth; indeed the coastal belt of South Africa has probably the richest flora of the world. An excellent account is given of the various zones, and a vivid description of the flora around Cape Town and of the extraordinary Table Mountain with its unique Silver Tree and the glorious orchid, *Disa*, perhaps the most spectacularly beautiful terrestrial orchid in the world. Succulent plants, bulbous plants, Proteas and heaths form four dominant types. Three of these are found in other parts of the world but in less beauty, but the glorious Proteas are peculiarly South African, and a good illustration is supplied of *Protea Cynaroides*. A chapter is devoted to heather-bells which "in beauty are not excelled by any group of shrubs the world over," and exquisite pictures are given of them. The weird succulents are vividly described and aptly illustrated. But to me the Bulbous plants have an ever greater attraction—*Gladiolus*, *Ixia*, *Freesia*, *Babiana*, *Tritonia*, *Antholyza*, *Watsonia*, *Verme*, *Vallota*, *Haemanthus* (how the first I saw near Durban startled me) and *Amaryllis*. What visions of splendour they arouse! Central Africa, described in chapter 10, is called a Happy Hunting Ground and Kenya is rightly so named. There Wilson saw "floating on the distant horizon the rounded mass of Kilimanjaro while to the north the jagged peaks of Kenya peaked the heavens." The wonderful red Cedar, *Juniperus procera*, is well shown on plate 19, as are the striking spikes of *Lobelia Gregoriana*, 10 to 20 feet high, the giant Ragwort, *Senecio keniensis*, 25 feet high, and here too he saw *Brayera anthelminca*, a relative of *Alchemilla*, although of a height of fifty feet. It was originally discovered in Abyssinia by Bruce, and its flowers form the well known anthelmintic Koussou. In Kenya the natives call it Kimondo. The Cradle of the Nile and the Victoria Falls, with delightful illustrations, are well described. At the latter place he saw *Gladiolus primulinus* growing among the spray on the very verge of the cataract. Part 2 describes Australia "Home of Brilliant Blossoms or Giant Eucalyptus, or Fragrant Acacias" and New Zealand "Scenic Isles mantled in green." Alan Cunningham is fitly figured at the beginning and allusion is made to William Dampier, whose name is connected with the wonderful blue Pea, *Olianthus Dampieri*, which can be grafted on *Colutea arborescens*. Other workers include Joseph Banks, Robert Brown and Ferdinand Bauer, the draughtsman, who took part

in the Flinders Expedition when, from King George's Sound alone, 500 species were sent home. Western Australia was also visited by Wilson and arresting pictures of the *Xanthorrea reflexa* are given. The Eucalyptus trees, which cast no shadow, are well described as are many other trees. On the Sand-Plains which he says are really rare gardens where numberless species riot in colour, the glistening flowers of the Everlastings are conspicuous. Western Australia has no epiphytic orchids but already 4000 species of plants are known to be indigenous, of which four-fifths, he says, are endemic. The tale of Botany Bay, at first aptly so designated, afterwards a name of ill-omen, with its strange history, is tersely told, and full justice is done to other parts of the island continent with its 10,700 species of which not more than a thousand are grown in northern gardens. That grand Wattle, *Acacia Melanoxylon*, has a charming photograph. A fitting chapter of tributes is devoted to those "who paid the price of exploration in that thirsty land." Tasmania is rightly called the Isle of Enchantment, and a dainty view is given of *Richea* with a graceful waterfall as a background, and there is another of the rain-forest in which *Nothofagus* and *Anadopetalum biglandulosum* are conspicuous features. New Zealand has "green—intense green for its keynote," but it is not wholly green as the beautiful Tea tree, *Lithospermum scoparium*, evidences. The Kauri Pine is "one of the noblest of existing trees," its clear trunk stands above the forest undergrowth like a granite pillar in a vast cathedral," and there are wondrous pictures of *Haastii*, the Vegetable Sheep, and Tree ferns which to have glimpsed is sufficient to make a nature-lover's heart throb with delight and gratitude. The frontispiece to Vol. 2 is a portrait of the eminent horticultural explorer, J. G. Veitch. The first chapter treats of some of the more conspicuous flowering trees of the Tropics such as the vivid scarlet-flowered *Poinciana regia*, the glorious orange-yellow blossomed *Colvillea*, the African *Spathiodes*, the Palms in all their great variety, *Dipterocarpus* and Mangroves. There are very readable chapters on the "gifts bestowed" in the form of fruits, food, and flowers, the last including an *Aristolochia* with a blossom "2 feet wide and 2-2½ feet long with a tail over a yard in length and an odour almost as long." The orchids are illustrated by many plates. Chinese and Japanese plants receive due attention. The former country he calls the "Kingdom of Flowers" although when I went through it in early spring few were in evidence. Wilson was more fortunate for, although his journey up the Yangtse river for 1800 miles was the way I went, he proceeded up its tributary the Min for 250 miles to the confines of Thibet, to a region where mighty empires met—I say met, because one of the rivers now lies in the trough of degradation. It was here in June that he saw in tens of thousands the regal lily, 2 to 4 feet high, with flowers pure lustrous white on the upper side and tinted with wine-purple on the under side, and exhaling the most delicious fragrance. From there he sent home 6000 or 7000 bulbs but this depredation exacted its price since on his return he was nearly killed by a landslide which shattered his leg. However there are now growing in Ameri-

ca from this stock millions of these lilies. One cannot write in cold blood of these wonderful alpine meadows of the hinterland of China. Farrer could picture them in all their vividness and splendour, but Wilson is by any means inarticulate, and his lovely pictures often speak for themselves. The most gorgeous alpine plant extant he claims for *Meconopsis Heirici*. The visits to Korea, Japan and Formosa and the ascent of the highest mountain in Formosa, Mount Morrison, the loftiest elevation between the Californian Sierras and Western China, and the description of the highest sea cliff in the world (8000 feet) have thrilling points of floral interest. To the armchair traveller, alike to the foot-sore veteran, these volumes will prove most attractive reading.

WILSON, ERNEST H. MORE ARISTOCRATS OF THE GARDEN, pp. ix., 288, tt. 43. The Stratford Company, Boston, Massachusetts, 1928, five dollars. This is an addition—a notable addition—to his previous work with a similar title which was published in 1917. He says of the former in the preface to this work that it “fell largely on barren soil and passed out of print,” but the author secured the moribund rights, made additions and changes, and issued a second edition in 1926. That work met with a very different reception, and its success has induced him to bring before the public this important volume, which treats of hundreds of new Aristocrats available for American gardens, many of which would flourish well in Britain. About these he has given wise advice, such as could only have been obtained by years of experience, and in gaining this knowledge he had the enormous advantages of practical study in the Arnold Arboretum. Among the species figured are the beautiful *Cornus Nuttallii*, which grows well in Britain but does not become such an object of beauty as it presents in British Columbia. There is the Chinese Witch-Hazel, *Hamamelis mollis*; the Asiatic *Magnolia stellata*; the Bearberry, *Arctostaphylos Uva-ursi*; the English Elm, *Ulmus procera*, in its winter state, which the author says has been grown for nearly two centuries in the States, and of which fine specimens are grown in Boston. This is the *Ulmus sativa* Mill. of the British Plant List. He considers it one of the best of trees for town planting. *U. americana* is also figured, as are, among others, *Fagus sylvatica* and *Cytoneaster horizontalis*. Very many other species are mentioned in the text (the type of which is good for tired eyes) and wise hints as to what to select and where and how to plant them are given. He says *Ulex europaeus* is less hardy than the broom in America. Ground cover-plants are not forgotten, and he gives a well-deserved meed of praise for this purpose to the *Unifolium (Maianthemum) canadense*. As for street trees he recommends the English Elm and *Ailanthus glandulosa*. What a range of soils and climate that plant can endure. It was one of the chief ingredients in the street avenues in Cyprus, and Mr Wilson says it seems to prefer brick and mortar or ash-heaps to good soil in the States. He gives a bad name to the Lime and Horse-Chestnut for street planting. For the colder parts of the States he prefers *Quercus rubra* and *Q. coccinea*, which have grand autumnal colouring, also the Norway Maple.

Why is this not more planted in Britain? It was a great joy to see it about Swedish towns and villages, as it also puts on a glorious autumnal garb. As an avenue tree he rightly says that *Ulmus americana* is one of the most beautiful trees in the world. The narrow and short-sighted vision of the curators, a quarter of a century ago, rejected the offer of a present of 100 of these trees for the Oxford Parks. Had they been accepted, by this time it should have had an avenue of splendid proportions and of great charm. The book teems with good material, and should be in the library of every tree lover.

WORLD LIST OF SCIENTIFIC PERIODICALS PUBLISHED IN THE YEARS 1900-21. Vol. 2. Abbreviated Titles and Locations of Sets. pp. xii., 344. Oxford University Press, 1927; 25/-. About 25,000 periodical titles are included, as well as where the periodical may be consulted. The original edition was by Dr. A. W. Pollard, assisted by W. A. Smith, but this second volume is undertaken by Mr W. A. Smith helped by Dr P. Chalmers Mitchell and Dr Pollard.

WOLFF, HERMANN. UMBELLIFERAE. See Das Pflanzenreich iv., 228, pp. 398, 1927. In the *Report* for 1926 (pp. 82-3) a review appeared of Dr Albert Thellung's excellent Monograph of the Umbelliferae of Central Europe and comment was made on the excellent illustrations, many of the species being shown in their natural surroundings. In this portion of "Das Pflanzenreich" Dr Wolff treats of a portion of the family, e.g. the Ammineae which include *Apium* L. into which is merged *Helosciadium*, as in Bentham and Hooker's "Genera." The cultivated form of *A. graveolens* is *A. dulce* Mill. = *A. Celleri* Gaertn., here put as a variety of *graveolens*. Under *A. nodiflorum* are given (1) *ochreatum* (DC.) Lange, (2) *pseudo-reptans* H. C. Wats. = *Sium repens* Sm. = *A. nodosa*, var. *ochreatum* Bab. non DC. = *Helosciadium nodosum*, var. *repens* Syme, and (3) *longipedunculatum* (F. Schultze) Dr. in Brit. Pl. List, 1907. *A. repens* (Jacq.) Reichb., which is found in England, Sweden, Belgium, Holland, Denmark, Germany, etc., is kept as a distinct species. *A. Moorei* (Syme) Dr is also kept as a distinct species. However it may be a more or less fixed hybrid which is very local in England. *A. inundatum* has vars. *isophyllum* and *heterophyllum* not yet recorded from Britain. Under *A. Ammi*, an Australian species, *A. leptophyllum* F. v. Mueller, is cited as a synonym (see Addenda 362) but Schinz & Thellung have shown that it is *A. tenuifolium* (Moench) Thell. *Petroselinum* is kept apart from *Carum* and *P. hortense* Hoffm. = *Apium Petroselinum* L. The typical plant is *latifolium* (Mill.) and *crispum* is used for the crisped variety. In this genera *P. segetum* is retained. In this group are *Sison*, and *Cicuta* with three varieties, the British plant being var. *classica*. The adventive *Ammi* has three varieties, the type and *glaucofolium* occurring with us. *Falcaria* of 1800 is chosen instead of the earlier *Prionitis* Adans. Had tautonyms been used the name *Falcaria Sioides* might have been avoided, but *Prionitis Falcaria* is at once the older name retaining the original trivial and

is used by the expert Koso-Poljauski. *Carum* is a much narrower genus as treated by Wolff. *Carvi* is given as British. *Bulbocastanum*, following Linnaeus, is put into *Bunium*. *Pimpinella* includes *P. Anisum*, *P. major*, and *P. Saxifraga*. The var. *dissecta* was established in *Fl. Oxford*, 1886, prior to the authority cited. Many forms of *P. Saxifraga* are given. The type (*integrifolia*) *P. Saxifraga* Mill. is said to be equal to *poterifolia*. Sprengel is given as the authority for var. *dissecta* (Retz.) but Withering, 1796, precedes Sprengel, 1818. Var. *nigra* has been recorded as British but without sufficient evidence. The root of the true *nigra* when cut or bruised turns bluish-black. The garden pest, *Aegopodium*, has 12 forms described, not one of which would not be anathema. *Sium erectum* is put in the genus *Berula*. There are five forms described. In the Addenda Thellung's views on the forms of *Apium nodiflorum*, *Moorei*, etc., are cited. The Index is copious and unlike some of our English publications is put in the proper place at the end of the text. What an enormous amount of time is wasted in trying to find it in a volume where two or three supplements are inserted after it.

OBITUARIES.

BRANDEGEE, TOWNSEND STITH. Born at Berlin, Connecticut, 1843; died April 7, 1925, at Berkeley, California. He explored the Great Cañon of Arkansas and the Santa Barbara Islands. He obtained trunks of *Larix Lyallii* from the top of Mt. Stewart, Washington, and *Abies venusta* from the Santa Lucia Mountains. The latter cost him 400 dollars to get out. He did much exploring in Mexico. He and his wife were associated in Botanical work in California and they left their Library and Herbarium to Berkeley University. Mary Katharine Brandegee, his wife, died at San Diego on May 29, 1889. She took a medical degree, but eventually became Curator of the Californian Academy of Sciences and in 1891 founded a Botanical Club. Her bitter and caustic criticism of Edward Lee Greene ruffled the placid pond of Botanical amenities of the Golden West. See obituary notice by W. A. Setchell in University of California Publications, vol. xiii., 1926.

CAMUS, EDMOND GUSTAVE. Born 1852; died August 22, 1915. He studied at the Ecole de Pharmacie de Paris, and qualified with a diploma of the First Class. He threw himself into field botany with zeal and in 1891 founded a Society whose chief object was to be the study of the French Flora. In 1885 he published an "Iconographie des Orchidées des Environs de Paris" with 40 plates and in 1908 a "Monograph of the European Orchids" of 484 pages. In 1921, with A. Camus, he published an "Iconographie des Orchidées de l'Europe et du Bassin Méditerranéen," the latter botanist preparing the anatomical details. Coloured plates of most of the European Orchids with numerous varieties and hybrids are given. Although good they cannot rank as of the first-class in botanical engraving. Compare the orchids in the "Flora Londinensis." Unfortunately the greater segregation of the Palmate Orchids of the Maculata series had not then been brought to the notice of the authors. The absence of printed particulars on the plates is a great disadvantage. The sheet labelled *O. latifolia* is really made up of aggregate *O. maculata* L., thus perhaps aiding in the confusion respecting the former plant. Very many of these hybrids are described by Camus for the first time. The book stands out as a most important contribution to our knowledge of the European Orchids. He also monographed the Willows under the titles of "Classification des Saules de l'Europe," 1904, "Monographie des Saules de France" and the "Classification et Monographie des Saules de l'Europe," 1905. With Rouy he collaborated in the production of vol. vi., 1900, and vol. vii., 1901, of the "Flore de France." He prepared the Cyperaceae for the Flora of Indo-China in 1912, and a Monograph of the Bamboos in 1913. In 1922, M. Lecomte issued "The Cypéracées and Graminées of Indo-China," and in 1927 a volume treating of the Orchids with text and supplement.

tary plates, most of the material of which had been prepared by him. His energy and industry were amazing, no fewer than 600 plates being drawn by him. As M. Lecomte in his Memoir truly says, "On se demande ce qu'il faut le plus louer, de la sagacité et de l'étendue des connaissances du Botaniste; de l'activité inlassable du travailleur ou du talent consommé de l'artiste. Ces diverses qualités réunies assurent à la mémoire E. Gustave Camus une légitime et durable notoriété." This biographical notice was reprinted in 1927 and it is to Mlle. Aimée Camus, his devoted daughter and collaborator, a Laureate de L'Institut, that we owe this account which is accompanied by a full list of Camus's publications occupying three quarto pages.

DILLWYN-LLEWELYN, Sir J. T., Bart., V.M.H. Born in 1835; died at Penllergaer, Glamorgan, 1927. He went to Eton in 1846 and then to Christ Church, Oxford, where he took honours in Natural Science. He came of a botanical family and was himself an enthusiastic gardener serving on the Council of the Horticultural Society in 1891. He was Victorian Medallist in 1907. In 1890 he was created a Baronet. He served as Mayor of Swansea in 1891 and in 1895 he became its representative in Parliament.

FITCH, JOHN NUGENT. 1840-1927. He was the nephew of the great botanical artist, Walter Hood Fitch (1817-1892), and received much instruction in drawing from his uncle. He prepared about 2500 lithograph plates for the Botanical Magazine, 1878-1920, when he lost the use of his fingers. He was born in Glasgow, became F.L.S. in 1877, and died at East Finchley in 1927.

JACKSON, BENJAMIN DAYDON. Born at Stockwell, London, April 3, 1846; died, on October 13, 1927, in Westminster Hospital from injuries received by being knocked down by a motor car twelve days earlier in Buckingham Palace Road. Educated at Private Schools, he was occupied in business for some years. Becoming interested in botany and microscopy, he joined the Quekett Club in 1869. There are many specimens of Salices in my herbarium collected by him. His first published botanical contribution was the life of William Sherard, the founder of the Sherardian Chair of Botany at Oxford, where Sherard's very large Herbarium is preserved. The biography appeared in the Journal of Botany for 1874, and was followed by the Life of John Gerarde, 1876,¹ and of Dr William Turner in 1872.² Then he prepared for the Index Society's Publications the "Guide to the Literature of Botany," which was begun in 1878. This, although still largely used, is not very satisfactory owing to the over-elaborated arrangement. It includes an Index of over 6000 titles supplemental to Pritzel's "Thesaurus," which was the basis of his work. In 1880 he became

¹Catalogue of Plants cultivated in the Garden of John Gerarde in the years 1596-1599.

²William Turner Libellus de re Herbaria Novus 1538.

Secretary (Botanical) to the Linnean Society, an office which he held to 1902, when he became its General Secretary, an office which he held till 1926. During this long period he acted with great fidelity to the Society, to which his literary attainments added lustre and afforded assistance. Tall in stature and pleasant in demeanour, he favourably impressed strangers, while his ready help to all enquiries earned for himself a large circle of friends who quite recently showed their esteem and affection by presenting him with his portrait, painted by Ernest Moore. A reproduction appeared in *Gard. Chron.*, June 6, 1926. It now hangs in the Rooms of the Society, whose minutes he read for many years. He prepared an "Index to the Linnean Herbarium" in 1912, and an excellent Catalogue of the Library in 1925. For many years he wrote the obituaries of its members, and edited its Journal, Transactions, and Proceedings. Even when relieved of the Secretaryship at the age of 80 he became the Curator of the Linnean collections, not by any means an Honorary office. In 1923 he published the English edition of the "Life of Linnaeus" which had been prepared by T. M. Fries. A copy was accepted by the King of Sweden on his visit to the library. In 1882 he published "Vegetable Technology: a Contribution towards a Bibliography of Economic Botany." He was a born indexer, and therefore no one more suitable could be found to produce an Index of Plant Names—a work which Charles Darwin had the prescience to see was a *sine qua non*, and to the carrying out of which he generously contributed. Jackson (*Journ. Bot.* 67, 1887) gave some particulars of what the preparation of the Index involved. Each genus was enclosed in a stout cover, inscribed on the outside, and these were placed in strong boxes with a falling front. Rather more than 36,000 covers were required for the genera, and the whole of the MS. is accommodated in 178 boxes, and weighs rather more than a ton. The preliminaries consumed 18 months with the help of from two to four assistants. It was found that to prepare an Index on the lines of Steudel was quite impossible, and that a reduction of species without examination would only create confusion. It was understood that Jackson, having drawn up an estimate of its cost, which was approved by Darwin, "was commanded to commence his labours under the direction of Sir Joseph Hooker who was, at Mr Darwin's request, responsible for the work." The title page to the First and Second Fascicles, dated 1893, says "compiled at the expense of the late Charles Robert Darwin, under the Direction of Sir Joseph Dalton Hooker by B. Daydon Jackson." Fascicle three appeared in 1894 and Fascicle four in 1895. Despite the omission of the date of the publication of the various works cited, of its not including under each valid name its various synonymys, and of the absence of the Cryptogamic species, the work is of immense value, and is a permanent memorial to his unrivalled powers as a Botanical lexicographer. It has been said that his knowledge and unwearied industry received somewhat too scanty acknowledgment from the Editor of the Index, but those most qualified to judge know how to apportion the credit, and there is no fear that posterity will overlook his great ser-

vices to Botanical literature. Jackson, in conjunction with the great Belgian botanist, Theophilus Durand, compiled the First Supplement to the Index of nearly 50,000 names, for the years 1886-1895 inclusive. Owing to the failure of eyesight of his colleague, the major portion of this work fell to Jackson. As the work was printed and published in Brussels (1901-6), which made collaboration with his co-author more difficult, its typography and freedom from small errors are less satisfactory than the earlier portion printed by the Clarendon Press. Field-workers are indebted to him for editing Reginald Pryor's "Flora of Hertfordshire." The author died before its publication, bequeathing the MS. to the Hertfordshire Natural History Society, of which Jackson was at one time President. The biographical matter in the published work is due to the pen of Dr Jackson. Botanists, too, owe to him the biography of "George Bentham," published in 1906 in the English Men of Science Series. His "Glossary of Botanic Terms" went into three editions, and he revised the proofs for a fourth just before he died. At the bicentenary of Linnaeus' birth, which was celebrated at Upsala, Dr Jackson received the Hon. Ph.D. of that University and was made Knight of the Polar Star in 1907. In 1900-1 he was Secretary to the Departmental Committee of H.M. Treasury on Botanical work. There are many most valuable notes scattered through the pages of the "Journal of Botany" chiefly on nomenclatorial subjects, in which he took great interest. It may be remembered that an attempt was made to bring the "Flora Anglica," one of the dissertations prepared by a student of Linnaeus, into the area of citation so that *Ulmus campestris* could be used for an English elm, overlooking the fact that the name had been given in the "Species Plantarum" for a tree or trees, which are certainly not English. I showed in the "Journal of Botany" how dangerous it would be to admit this essay into the area of citation and how vague and unsatisfactory it was since the identifications were merely guesses at the names given by Dillenius in the "Synopsis" of 1724, and that it teemed with errors. Jackson, writing of the theses in 1912, says "Many years ago I thought well of the 'Flora Anglica,' resp. Grufberg, but I soon found out the unsatisfactory character of it. Though Linné dictated his theses to the candidates, the 'Flora Anglica' belongs to a group of them, in which the respondents had to do some compilation, and the Praeses probably cast only a hurried glance through the completed work." His funeral was largely attended by representative botanists at Golders Green on October 17, and this Society would have been represented but for an important meeting which I could not neglect. Only a few days before his death I saw him, when he gave me some very interesting and indeed humorous details about George Bentham and of the historic meeting at the Linnean Society which led to Bentham's withdrawal from its meetings.

JOHNSTON, Sir HARRY HAMILTON. Born at Kensington, 1858; died at Woodletts House, Notts, July 31, 1927. At first he studied at the

Royal Academy Schools intending to become an artist. Some of his pictures have been exhibited in the Royal Academy. Having visited Tunis in 1879, he went to Southern Angola in 1882 and proceeded later to the Congo, where he met Stanley in 1883. Of this journey he published an account under the title of "The River Congo." In 1884, helped by the Royal Society and the British Association and backed by Sir J. D. Hooker, an expedition to Kilimanjaro was planned and he was made its leader. Of this journey in 1886 he published an account under the title of "The Kilimanjaro Expedition." The plants collected on this journey were sent to Kew, as well as those he collected in the Cameroons in 1887. The next year he became Consul in Portuguese East Africa and made a journey to Lake Nyasa. The large collections he made have been incorporated in the "Flora of Tropical Africa" and Burkill describes others in Johnston's "British Central Africa." It will be remembered that he discovered the Okapi in Uganda. He also explored Ruwenzori and on his return to England he published "The Uganda Protectorate" in 2 volumes. Liberia was visited in 1904-06, and another 2 volumes about that Republic appeared. He received the K.C.B. in 1896 and G.C.M.G. in 1901. He was also a D.Sc. of Cambridge.

LAWSON, ABERCROMBIE ANSTRUTHER. Born in Fife in 1874; died at Sydney, March 26, 1927. He was educated at the University of Glasgow and later studied in California, Chicago, and Bonn. He became Instructor of Botany at Stanford University in 1904, assistant professor in 1905-6, and Lecturer in Botany at Glasgow University, 1907-12. In 1912 he went to Australia as Professor of Botany at Sydney University. His published works included "The Morphology of the Gymnosperms," "Cytology," "Psilotaceae" and "The Pollen Mother-Cells of Cobaea." He was selected as a Fellow of the Royal Society in January 1927, but died before he could be formally admitted.

O'MALLEY, LADY. Born, Essex, 1847; died, June 25, 1927. Emma Winifred, second daughter of the late Joseph Alfred Hardcastle, for many years M.P. for Bury St Edmunds, by his first wife, Frances, daughter of the late W. Lambirth, Esq., was born in Essex in 1847. In June 1869 she married Sir Edward L. O'Malley, Attorney General for Jamaica, 1876-80, and for Hongkong, 1880-89; Chief Justice of the Straits Settlements for four years subsequently; and afterwards for British Guiana till 1898. She was well known for her botanical tastes, chiefly affecting the Ferns, and published in 1869 in the pages of "Science Gossip" an account of those of Hongkong and China. She also prepared an account of "Some Ferns of Jamaica," which unfortunately was never published. However, her fine collections were accepted by the British Museum authorities as a welcome gift with thanks, especially as they were made in the early days of these countries (especially Jamaica), being studied scientifically, and were considered more valuable on this account. She died, June 5, 1927, much lamented by all who

knew her. She is survived by her husband, and four of her five children. She had for years resided at Denton House, Cuddesdon, Oxford.

J. C. MELVILL.

PEGLER, LOUIS WELLESLEY HEMINGTON, M.D. Born at Colchester, November 18, 1852. He practised as a nose, throat, and ear specialist in Harley Street. For many years he lived at Exeter, where he was greatly respected and beloved. He was a member of our Society for a short time, but his chief interest was in Bryology. He died at Exeter on February 26, 1927, "having borne much suffering with great patience."

POWER, Dr FREDERICK BELDING. Born at Hudson, New York, in 1853; died at Washington, March 30, 1927. He took the Ph.D. of Strasbourg in 1880. For many years he was director of the Wellcome Research Laboratory and worked assiduously, chiefly on the constituents of plants. In 1913 he received the Hanbury Medal for his valuable research work. He was a pleasing companion and one who was a mine of information on his own subjects. It was a real loss to me when, before the war, he returned to the United States to carry on similar work in the phytochemical laboratory of the U.S. Department of Agriculture.

RADLKOFER, Dr LUDWIG. 1829-1927. Born at Munich on December 29, 1829, where he took his degree of M.D., this distinguished botanist became Professor there in 1863. He monographed *Serjania* in 1875. He was interested in Sapindaceae, of which he wrote a synopsis in "Die Natürliche Pflanzenfamilien" in 1895. In that year also he wrote a monograph of *Paullinia*, which appeared in the Bavarian "Abhandlungen."

ROFFEY, Rev. JOHN. Died 1927. He graduated at Oxford in 1884, was ordained in 1885, and became Curate at Long Eaton, Notts. In 1894 he came to London, and in 1924 became a licensed preacher in the diocese of Southwark. At the time of his death, which occurred suddenly at Riva-sul-Garda, he was attached to St Alphege's, Southwark. He took up the study of the British Hieracia, and on these I had some correspondence with him: in fact, he undertook to give us revised material for our new List. He published very little, save, in the "Journal of Botany," his "Explanation of the Hieracia" in the 11th Edition of the "London Catalogue," for which he was responsible. His herbarium is to find a home in the Natural History Museum at South Kensington.

St JOHN MARRIOTT. 1870-1927. He was the third son of Thomas Hyde Marriott, of Sandbach, Cheshire. In his early days he was a good athlete, a capital sprinter, a keen shot, a skilful angler, and a sturdy boxer. He explored the Grampians for Mosses and visited New Zealand, penetrating the great forests of that delightful country. On taking up residence in Kent he became an energetic member of the

Woolwich Scientific and Historical Society. He also collaborated with the South London Botanical Institute, the Selborne Society, the South Eastern Union of Scientific Societies, and the Metropolitan Field Clubs. To the beauties of Dartford Heath he was always a willing and inspiring guide, and in doing this he was most careful to do no damage to the flora met with. Of the Dartford Field Club he was a most valued member. He was busy to the last in investigating the Hepaticae with a view for the S.E. Congress at Rochester in 1928. He had already contributed Notes on the Bryophyta of Essex as a Handbook to the meeting at Chelmsford in 1926. The Dartford Museum owes him gratitude for a collection of Mycetozoa. He was the first chairman of the Plumstead Natural History Society, and Hon. Secretary to the Woolwich Historical and Scientific Society. His chief contribution to Botanic Literature was "British Woodlands; as Illustrated by Lessness Abbey Woods," published in 1925. It is a survey of the flora and fauna of that Kentish woodland. We reviewed it in our *Report*, p. 826, 1925. In it he enumerated 328 species of Flowering Plants, 3 Ferns, 111 Mosses, 32 Hepatics, 241 Fungi, 12 Lichens, and 46 Mycetozoa, a sufficient evidence of his industry and ability. He frequently supplied us with specimens as the pages of our Reports show. Alas, some of these will be published posthumously, for he kept at his work to the last. For some time he had been indisposed with throat trouble, and a journey to Scotland did not relieve him, as it proved to be malignant. He went to a nursing home on October 3 for an operation and died only four days later, on October 7. He was buried in Plumstead Cemetery, where the large gathering of friends testified to the respect and affection in which he was borne.

SARGENT, CHARLES SPRAGUE. 1841-1927. Born at Boston, April 24, 1841; died there on March 22, 1927. See Notice by Alfred Redher in "Journal of Arnold Arboretum," 69-87, 1927. His father, whose ancestors came from England before 1678, was a merchant in the East India trade. Charles Sargent graduated from Harvard in 1862, entered the Military Service and became First Lieutenant in the Second Louisiana Infantry and subsequently Aide-de-Camp at the headquarters of the Department of the Gulf at New Orleans. He took part in the campaign against Mobile, and on August, 26, 1865, he was honourably mustered out. Then for three years he travelled in Europe, returning in 1868 to take up the practice of horticulture and the study of botany. In 1872 he became the director of the Harvard Botanic Garden, and on November 23, 1873, he was appointed director of the newly created Arnold Arboretum. He married in 1873, his wife being an ideal companion, sharing his tastes, his love of trees and of nature. She accompanied him on his cruises along the Florida Coast and went with him to Mexico. A skilful artist, she painted the drawings illustrating the flowers and fruits of the trees represented in the collection of American woods prepared by her husband for the American Museum of Natural History in New York. The New Arboretum when Sargent went to it

was a "worn-out farm, partly covered with natural plantations of native trees, nearly ruined by excessive pasturage. It had to be developed into a scientific garden with less than 3000 dollars available for the purpose." However, Sargent was equal to the task, and he overcame difficulties which would have retarded or would have proved insurmountable to the ordinary individual. What the Arnold Arboretum is now is owing to his knowledge and courage. What an asset it is to his State. In 1882 he was approached by Professor S. F. Baird to undertake the preparation of a *Silva* of North America. This was to be published by the Smithsonian Institution. The regulations as to payments laid down were, however, of such a nature that Sargent estimated the publication would take 75 years to complete. He, therefore, made another arrangement, and engaged a botanical artist, C. E. Faxon, to prepare the plates. The first of the fourteen volumes was ready in 1891, and the last of the 740 plates appeared just 21 years after Faxon had made the first drawing. Riocreux and Picart engraved the copper plates. Thus was carried out the "*Silva* of North America" which is renowned for the accuracy and clearness of the plates and the extraordinarily complete and vivid plant descriptions, a book of which any country might well be proud. In 1882 and 1883 he was a member of the Northern Pacific Transcontinental Survey, on which the magnificent and extensive glaciers in Northern Montana were discovered. At that time Sargent advocated that this region should be declared a National Park. Even in that rapidly moving country it took 30 years for Congress to make an Act to carry this project into effect. In 1892 he visited Japan, and published an account of its Forest Flora in 1893. In 1900 he began the study of the genus *Crataegus*, which he continued for 20 years, describing and naming about 730 new species. Like an English boy who, if the weather is favourable, is supposed to have said, "It is a fine day, let us go out and kill something," so it was stated that if nothing else had to be done Sargent said "Let us go out and find a new Hawthorn." His publication "*Trees and Shrubs*" was started in 1902, and in the eleven years of its existence 2000 plates were published. In 1903 he circumnavigated the globe, bringing much material for the Arboretum. In 1905 he issued his "*Manual of the Trees of North America*." A second edition appeared in 1922, which was reviewed in these pages (*Report* 125, 1923) and a reprint in 1926. It is splendidly executed, a marvel of compactness and excellence, in which 783 species of trees are described. In the winter of 1905-6 he collected chiefly in Peru and Chile on his South American journey. From 1911 to 1917 he was busy editing the three volumes of "*Plantae Wilsonianae*" from plants collected for the Arboretum by E. H. Wilson in China. This is one of the most important contributions to the flora of that unsettled country. In January 1924 he had a severe attack of herpes, and from this and intestinal trouble he never recovered, although until the end came he attended from time to time the Arboretum, which was the child of his industry. The Library connected with it, of more than 37,000 volumes and nearly 9000 pamphlets, is almost entirely his

gift. More than 1000 species of trees and shrubs were introduced to the United States through the Arboretum, besides 570 new species of *Crataegus*. Honours were showered upon him, and he deserved them all, but his great monument is the Arboretum and the "Silva," which will be enduringly connected with his name.

SMITH, MATILDA, A.L.S. 1854-1926. A cousin of Sir Joseph Hooker, it was my good luck to make her acquaintance at his hospitable board when he was Director of Kew Botanic Gardens. Under his tuition she was initiated into the mysteries of Botanic draughtsmanship. Having already some experience, she rapidly became a careful and pleasing delineator, so that she was enabled to take up the pencil which had dropped from the fingers of Fitch. Her first drawing for the Botanical Magazine appeared in the 104th volume of that magazine. In 1881 she became the artist and lithographer for Hooker's "Icones." She was a very pleasing conversationalist, and had a keen sense of humour. In 1898 she was somewhat tardily put on the Kew Staff as its artist. Many other Botanical works benefited from her excellent drawings. Among these are Sir George Watt's "Cotton Plants," Collett's "Flora Sinensis," Cheeseman's "Illustrations of New Zealand Plants," Bayley Balfour's "Flora of Socotra," Aitcheson's "Botany of Afghanistan," and Stapf's "Aconites of India." These services fully justified her election as A.L.S. in 1921, and more recently the award of the Veitchian Medal from the Royal Horticultural Society. Mr S. T. Dunn named an Urticaceous genus, *Smithiella*, in her honour. She deserved to be connected with a more beautiful family of plants.

NEW COUNTY AND OTHER RECORDS.

ABBREVIATIONS.—*Rep. B.E.C.* = *Report of the Botanical Society and Exchange Club*; *Trans. Bot. Soc. Edin.* = *Transactions of the Botanical Society of Edinburgh*; *Wats. B.E.C.* = *Report of the Watson Botanical Exchange Club*; *Devon. Tr.* = *Transactions of Devonshire Association of Science, &c.*; *Journ. Bot.* = *Journal of Botany*; *Nat.* = *Naturalist*; *N.W. Nat.* = *North Western Naturalist*, ed., A. A. Dallman; *W.F. Mag.* = *Wild Flower Magazine*, ed., Mrs Dent; *Fern. Gaz.* = *British Fern Gazette*, ed., F. W. Stansfield; *Rep. Marl.* = *Report of the Marlborough College Natural History Society*; *R.I.C.* = *Journal of the Royal Institute of Cornwall*; † = 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 or before a binomial 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 we have also to thank the Director of the Royal Botanic Gardens, Kew; Mr J. Fraser, Mr W. O. Howarth, Prof. C. H. Ostenfeld, Dr Ronniger, Dr J. Murr, Dr E. Almquist, M. Jaquet, Mr A. Bennett, Dr Drabble, Mrs Gregory, Mr C. E. Britton, Dr Dahlstedt, M. Paul de Riencourt, Mr C. E. Salmon, Mr W. H. Pearsall, Rev. J. Roffey, Mr D. Lumb, Mr C. V. Marquand, Rev. H. J. Riddelsdell, and others who have rendered critical assistance.

†1/2. *CLEMATIS FLAMMULA* L. Quite naturalised on the shingle at Sandwich, Kent, Hon. Mrs GUY BARING.

*†3/12. *ANEMONE HEPATICA* L. On the Ousdale Burn flowing from the Scaraven range, on the Ord of Caithness, near Latheron, 1925, S. MANSON, ex JAMES SUTHERLAND. Full particulars are needed as to its surroundings and possible source of introduction.

5/1. *MYOSURUS MINIMUS* L. Constant in its occurrence for ten years on the Straight Points Field, Budleigh Salterton, Devon, C. E. L. GARDNER.

6/3. *RANUNCULUS ACER* L., var. *MULTIFIDUS* DC. Side of Loch Maree, W. Ross, DRUCE. Dr Thellung, this year, says in *litt.* "cf. *multifidus*." The leaves are divided into narrow segments.

6/7. *R. FLAMMULA* L., var. *ALISMIFOLIUS* Glaab. Culeaze, Dorset, DRUCE.

6/10. *R. SARDOUS* Cr. As the type at Ridge, Dorset, DRUCE. Var. *TUBERCULATUS* Celak. Waste ground, Woking, Surrey, DRUCE.

6/20. *R. FLUITANS* Lam. In the Teifi, Tregaron Bog, Cardigan, J. H. SALTER.

6/21. *R. CIRCINATUS* Sibth. Llangorse Lake, Brecon, Miss I. M. ROPER.

6/22. *R. TRICHOPHYLLUS* Chaix. Moel Ynas Pool, Cardigan, J. H. SALTER.

6/28. *R. BAUDOTII* Godr., f. *MARINUS*. Aberdovey, Merioneth, J. H. SALTER.

6/33. *R. FICARIA* L. At present Herr Winkler has not reported on the plants sent to him. This season the plant fruited freely at Culeaze, Dorset, DRUCE. The var. (?) *SINUATUS* Horw. was noticed at Downton, Wilts, and Redhill, Northants.

†13/3. *DELPHINIUM AJACIS* L. Hackney Marshes, Middlesex, DRUCE and MELVILLE.

†14/1. *ACONITUM ANGLICUM* Stapf. Ripon, Yorks, Miss Todd; Pont Flocksman, Carmarthan, WEBB.

†14/3. *A. CAMMARUM* L. Wood at New Dalry, Ayrshire, 1908, H. E. FOX, as *Napellus*.

†17/2. *BERBERIS AQUIFOLIUM* Pursh. Abundant, but no doubt planted, Wexcombe, Wilts, DRUCE and Hon. Mrs BARING.

20/1. *CASTALEA ALBA* Wood, var. *MINOR* DC. Pevensey Marsh, Sussex, Miss I. M. ROPER.

21/2. *PAPAVER RHOEAS* L., var. *TROWERIAE* Dr. Steephill, Isle of Wight, DRUCE.

†22/1. *MECONOPSIS CAMBRICA* Vig. On rubbish dumps near Dundee, Angus, DRUCE and CORSTORPHINE.

†23/2. *GLAUCIUM CORNICULATUM* Curt. Burton-on-Trent, Staffs, DRUCE and Sir ROGER CURTIS; very fine at Splott, Cardiff, Glamorgan, DRUCE and SMITH.

†24/1. *ROEMERIA HYBRIDA* DC. Splott, Glamorgan, in some quantity and in good flower, SMITH.

*†29/3. *HYPECOUM PENDULUM* L. Splott, Glamorgan, SMITH.

†31/4. *CAPNOIDES LUTEA* Gaertn. Walls, St Martin's, Jersey, ARSENE.

(Mr Pugsley has kindly identified the *Fumarias*.)

32/1. *FUMARIA CAPREOLATA* L. Ballast, Old Hartlepool, Durham, 1867, M. A. LAWSON, in *Hb. H. E. Fox*, as *confusa*; Polperro, Cornwall, Mrs PERRYCOSTE.

32/4. *F. PURPUREA* Pugsl. Howtown, Westmorland, 1880, B. KING.

32/5. *F. BORAEI* Jord. Selkirk, Miss I. M. HAYWARD and DRUCE.

32/10. *F. OFFICINALIS* L., var. *ELEGANS* Pugsl. Limpsfield, Surrey, H. E. FOX; Hook, N. Hants, ST JOHN MARRIOTT; Galafoot, Selkirk, Miss I. M. HAYWARD. Var. *WIRTGENI* Hausskn. Crayford, W. Kent, ST JOHN MARRIOTT.

35/2. *RADICULA SYLVESTRIS* Dr. On waste ground, in some plenty, Invergowrie, Angus, DRUCE and CORSTORPHINE; Christchurch, S. Hants, L. B. HALL.

35/3. *R. AMPHIBIA* Dr. Marsh below Morriston and Llansamlet, Glamorgan, I. SKIRROW, ex WEBB.

†36/2. *BARBAREA VERNA* Asch. Kingsdown, Kent, 1920, H. E. FOX, as *Brassica*.

36/3. *B. BARBAREA* (L.), var. *TRANSIENS* Dr. Flitwick, Beds, H. PHILIPS.

†36/5. *B. INTERMEDIA* Bor. Dymchurch, Kent, Miss CABLE.

39/4. *CARDAMINE FLEXUOSA* With., var. *UMBROSA* (Gr. & Godr.) Dr. Tintern Woods, Monmouth, DRUCE.

†42/10. *ALYSSUM MARITIMUM* L. The shore, Cummertrees, Dumfries, Miss R. BRIGHT.

†48/3. *WILCKIA AFRICANA* F. v. M. Splott, Glamorgan, SMITH.

†49/3. *SISYMBRIUM ALTISSIMUM* L. Marlborough, Wilts, G. PIERSON.

†49/4. *S. ORIENTALE* L. Didcot, Berks, DRUCE; Ware, Herts, DRUCE and Miss TROWER; Westbourne Poole, Dorset; Lynton, S. Hants, L. B. HALL.

49/6. *S. OFFICINALE* (L.) Scop., var. *LEIOCARPUM* DC. Urban District Council Dump, Hitchin, 1927, perhaps casual; White Hall Farm, Littleport, Cambs, 1927, LITTLE.

†49/13. *S. LOESELII* L. Dagenham, Essex, MELVILLE and DRUCE; Mardley Heath, Herts, H. PHILIPS.

†54/9. *BRASSICA ELONGATA* Ehrh. Avonmouth, W. Gloster, C. SANDWICH.

†54/16. *B. JUNCEA* Coss. Didcot, Berks; Ware, Herts, DRUCE; Dundee, Angus, DRUCE and CORSTORPHINE.

†54/17. *B. DISSECTA* Lag. Port Talbot, Glamorgan, 1910, RIDDELSDELL.

(Dr E. Almquist has kindly identified the Bursas.)

59/3. *BURSA ANGLICA* (E. At.). Longforgan, E. Perth, DRUCE and CORSTORPHINE.

59/7. *B. BRITTONII* (E. At.). Henley, Oxon; Kettering and Cosgrove, Northants, DRUCE.

59/9. *B. DRUCEANA* (E. At.). Lyndhurst, S. Hants; Glynde, Sussex; Fishguard, Pembroke; Barry, Glamorgan; Burton-on-Trent, Staffs; Charwelton, Northants; near Patshull, Salop; Drayton, Didcot, etc., Berks; Dundee, Angus, DRUCE; Guilford, Surrey [31], Miss TODD. [Laguna, Tenerife] DRUCE.

59/10. *B. GALLICA* (E. At.). Yardley, Northants, DRUCE.

59/11. *B. GERMANICA* (E. At.). Aldbourne, Wilts, Miss TODD.

59/17. *B. MEDITERRANEA* (E. At.). Burton-on-Trent, Staffs; Banchory, Kincardine, DRUCE.

59/25. *B. SINUOSA* (E. At.). Didcot, Berks, DRUCE; Invergowrie, Angus, DRUCE and CORSTORPHINE.

59/26. *B. TREVIRORUM* (E. At.). Galashiels, Selkirk, DRUCE and Miss I. M. HAYWARD; Garford, Berks; Byfleet, Surrey; Shiplake, Oxon; Culeaze, Dorset, DRUCE.

59/27. *B. TURONIENSIS* (E. At.). Basingstoke, N. Hants; Garford, Berks; Charwelton, Northants; Tamworth, Staffs; Culham, Oxon; Waterville, Kerry; [Lagunetta, S. Bartolemeo, Grand Canary] DRUCE.

59/. *B. LAEVIGATA* (E. At.). Barry, Glamorgan, DRUCE.

†61/8. *LEPIDIUM PERFOLIATUM* L. Stort towing path by Himsdon, Essex, Rev. W. KEBLE MARTIN; Glasgow, Lanark, GRIERSON.

†61/10. *L. CHALEPENSE* L. Burton-on-Trent, Staffs, DRUCE and Sir ROGER CURTIS.

†61/22. *L. DENSIFLORUM* Schrad. Port Meadow, Oxon, DRUCE, as a forma; Burnham, Somerset, W. D. MILLER; Christchurch, Hants; Aberystwyth, Cardigan, J. H. SALTER.

†61/24. *L. NEGLECTUM* Thell. Splott, Glamorgan, MELVILLE.

64/2. *THLASPI PERFOLIATUM* L. Benborough, Worcester, J. HARRIS.

†65/2. *IBERIS UMBELLATA* L. Hortal. By the railway, Banchoy, Kincardine, DRUCE.

†72/1. *MYAGRUM PERFOLIATUM* L. Hackney, Middlesex, MELVILLE.

†76/1. *RAPISTRUM PERENNE* All. Malvern railway, Worcester, TOWNDROW.

†76/2. *R. ORIENTALE* (L.) DC. Waste ground, Holy Island, Northumberland, 1885, H. E. FOX; Beaconsfield, Bucks, Mrs WEDGWOOD; Hythe Quay, Colchester [2381], BROWN and DRUCE, det. THELLUNG; Barry Glamorgan, DRUCE and SMITH, det. THELLUNG.

†78/1. *ENARTHROCARPUS LYRATUS* DC. Hackney, Middlesex, MELVILLE, det. KEW.

*80/2. *RAPHANUS MARITIMUS* Sm. Shore at Marshside, just north of Southport, S. Lancs. Long known to grow in W. Lancs on the opposite side of the Ribble between Lytham and St Anne's. It occurs in good quantity. *Crambe* also occurs there, but very sparingly. W. G. TRAVIS in *N.W. Nat.* 181, 1927.

†80/4. *R. SATIVUS* L. Abundant and variable, Burton-on-Trent, Staffs; Dagenham, Essex; Ware, Herts; Splott, Cardiff, Glamorgan; Didcot, Berks, DRUCE.

†85/1. *RESEDA ALBA* L. Southport, Lancs, 1927, F. W. HOLDER.

88/1. *VIOLA PERSICIFOLIA* Roth. Near Woodhall Spa, Lincolnshire, Mrs STEWART. This should replace the record of *montana* on p. 107 of last Report.

88/6. *V. CANINA* (L.) (ERICETORUM). Aston-le-Walls, Northants, rare in the county, DRUCE. Var. *PUSILLA* Greg. Snowdon, Carnarvon, DRUCE. Var. *SABULOSA* Reichb. Snowdon, Carnarvon, DRUCE. Var. *CALCAREA* Reichb. Tenby, Pembroke, DRUCE and Mrs WEDGWOOD. ×*RIVINIANA*. Redhill, Northants, DRUCE. ×*LACTEA*. Dropmore, Bucks, 1927, DRUCE; Budleigh Salterton, Devon, in company with *Carex pulicaris*, *C. flava*, and other marsh plants as a strong-growing plant with ascending stems far stouter than any other violet I have seen, very plentiful in the drier parts of the marsh, Major ORME.

(The Pansies have been kindly determined by Dr Drabble.)

- 88/14. *V. CONTEMPTA* Jord. Bucklebury, Berks, DRUCE.
- 88/15. *V. VARIATA* Jord. Inchnadamph, W. Sutherland, DRUCE.
- *88/15c. *V. VECTENSIS* F. M. Will. Near Burghfield Common, Berks [Y.129], LOUSLEY. Dr DRABBLE says it is less hairy than the Wight plant but otherwise typical.
- *88/17. *V. MONTICOLA* Jord. On pebbles, Tweedside, Selkirk, July 25, 1911, Miss I. M. HAYWARD. Now identified as this by Dr DRABBLE. Odiham, N. Hants, 1896, Miss C. E. PALMER.
- 88/19. *V. LEJEUNII* Jord. Bute, Miss THOMSON; Harleston, Northants, H. G. ALLEN.
- 88/20. *V. LLOYDII* Jord. Yspytty Cynfyn, Cardigan, J. H. SALTER.
- 88/22. *V. AGRESTIS* Jord. Bury St Edmunds, Suffolk, DRUCE.
- 88/23. *V. SEGETALIS* Jord. Wolvercote, Oxon, DRUCE; Tothill, Headley, Surrey, LOUSLEY and WALLACE.
- 88/24. *V. OBTUSIFOLIA* Jord. Ballater, S. Aberdeen, DRUCE; Lizard, Cornwall, AMHERST.
- 88/25. *V. LATIFOLIA* Drabble. Sandbanks, Poole, Hants, LOUSLEY and HALL.
- 88/26. *V. RURALIS* Jord. Faringdon, Berks; Highworth, Wilts, DRUCE.
- 88/28. *V. DESEGLISEI* Jord. Near West Wickham, Kent, SWAIN, ex LOUSLEY.
- 88/31. *V. LEPIDA* Jord. Barrington, Northumberland; Cyfarllwyd, Cardigan; Cross Michael, Kirkcudbright, H. E. Fox; Thetford, W. Norfolk, DRUCE; Tunbridge, Kent, 1700, *Hb. Du Bois*; Angus; Banchory, Kincardine; Braemar, Ballater, S. Aberdeen, DRUCE.
- 88/33. *V. LUTEA* Huds., var. *AMOENA* Hensl. Kerry Hills, Montgomery and Radnor; Strata Florida, Cardigan, WEBB.
- 88/34. *V. CURTISII* Forst. Bed of River Shee, Spital of Glenshee, E. Perth, 1885, H. E. Fox, as *lutea*. Det. Dr DRABBLE. It is the first inland locality in Scotland known to me. Fields near the sea, Strath Carron, W. Ross, H. E. Fox.
- 88/35. *V. PESNEAUI* L. & F. Combs, N. Aberdeen, FRASER.

89/4. *POLYGALA DUBIUM* Bell. Porne, N. Somerset, June 1927; plentiful on the dunes at Birkdale, S. Lancs, Eclipse Day, 1927; near Winchester, S. Hants; near Kenfig, Glamorgan, DRUCE.

93/1. *TUNICA PROLIFERA* Scop. Near Northwood, W. Norfolk, 1927. NICHOLSON remarks "no recent records," LITTLE.

†94/1. *GYPSOPHILA PORRIGENS* Bois. Par Harbour, Cornwall, MEDLIN, det. THELLUNG.

†94/2. *G. PANICULATA* L. Old Hartlepool, Durham, H. E. Fox.

†94/5. *G. ELEGANS* M. Bieb. Waste ground, Galashiels, Selkirk, DRUCE and Miss I. M. HAYWARD.

†96/7. *SILENE GALLICA* L. In a field at Corfe, Dorset, Miss TODD; Par, Cornwall, MEDLIN; near Petersfield, Hants, B. J. BROOKS, det. THELLUNG.

†96/16. *S. DICHOTOMA* Ehrh. Near Leicester, O. BEMROSE; Grays, Essex, MELVILLE; *Splott, Glamorgan, SMITH. Now diminishing in Britain.

†96/31. *S. SCHAFTA* Gmel. Portland, Dorset, RAYNER.

*†98/5. *LYCHNIS MACROCARPA* B. & R. Splott, Glamorgan, SMITH.

*†98/6. *L. PRESLII* Sekera. Appeared in my garden at Ely, Glamorgan, flowering profusely, SMITH.

100/6. *CERASTIUM VISCOSUM* L., var. *ROTUNDATUM* Dr. Saltash, Cornwall, Canon VAUGHAN. Var. *ELONGATUM* R. & F. Saltash, Cornwall, Canon VAUGHAN.

†100/12. *C. TOMENTOSUM* L. On rubbish near Bristol, W. Gloster; St Donat's, Glamorgan, DRUCE.

*†102/14. *ARENARIA BALEARICA* L. St Aubin's, Grouville, etc., Jersey, ARSENE; Church Road, Holywood, Co. Down, PRÄGGER in *Ir. Nat.* 181, 1927.

*103/9. *SAGINA REUTERI* Lange. Burnham, Somerset, MILLER, det. PEARSALL.

105/4. *SPERGULARIA BOCCONEI* (Sol.) Steud. = *ATHENIENSIS* Asch. = *RUBRA*, var. *ATHENIENSIS* Heldr. & Sart. = *DIANDRA* Lebel = *CAMPESTRIS* Willk. & Lange, non Asch. = *SARATOI* Lebel = *DIANDRA*, var. *ATHENIENSIS* Druce = *LEPIGONUM DIANDRUM* Kindb. Hythe Quay, Colchester, Brown and MELVILLE; in the stable yard at Newport House, Countess Wear, S. Devon, the situation close to the River Exe high water mark.

The plant appeared shortly after the ground had been dressed with agricultural salt in 1912, and increased until in 1915 the ground was thickly covered, D'URBAN *in litt.*; Barry Docks, Glamorgan, August 1927, DRUCE.

†106/1. *POLYCARPON TETRAPHYLLUM* L. A single plant. Repeated search failed to produce another. Hitchin, Herts, 1927, LITTLE.

†108/1. *CLAYTONIA SIBIRICA* L. In a copse by the road between Steep and Petersfield, Hants, C. SANDWICH; still at Bakewell, Derby, 1898, Miss I. M. ROPER.

112/15. *HYPERICUM HUMIFUSUM* L., var. *AMBIGUUM* Gillot. Brecon, Miss I. M. ROPER.

115/2. *ALTHAEA HIRSUTA* L. Reappeared, after 8 or 9 years' absence, near Somerton, Somerset, MILLER.

†116/5. *LAVATERA THURINGIACA* L. Dundee, Angus, DRUCE and CORSTORPHINE, det. THELLUNG.

117/1. *MALVA MOSCHATA* L., var. *HETEROPHYLLA* Lej. Nash Point, Glamorgan, Miss E. VACHELL.

117/2. *M. SYLVESTRIS* L., var. *ACUTILOBA* Cel. Near Nash Point, Glamorgan, Miss E. VACHELL.

†117/6. *M. AMBIGUA* Guss. Belgrave Station, Leicester, 1925, G. J. V. BEMROSE.

†117/7. *M. NICAENSIS* All. Barry, Glamorgan, DRUCE, det. THELLUNG.

†117/9. *M. PARVIFLORA* L. Burton-on-Trent, Staffs, DRUCE and Sir ROGER CURTIS; Ware, Herts, DRUCE. Var. *MICROCARPA* (Pers.) LOSCOS. Burton-on-Trent, Staffs, DRUCE and Sir ROGER CURTIS; Splott, Glamorgan, DRUCE and SMITH.

*†117/11. *M. HISPANICA* L. Splott, Glamorgan, SMITH.

†127/5. *GERANIUM PHAENUM* L. Roadside near the common, Marianglas, Anglesey, Miss R. BRIGHT; Hoe, Gomshall, Surrey, HALL; Rotherwick, N. Hants, Miss I. M. ROPER.

†127/6. *G. ENDRESSI* Gay. This is the *G. nodosum*, teste THURSTON, of Davey's *Flora of Cornwall*, of which specimens are in Herb. Kew.

127/14. *G. ROBERTIANUM* L. Plants with petals notched at Studland and Cosgrove, Dorset, HALL.

†131/1. *LIMNANTHES DOUGLASHII* Br., var. *SULFUREA* (Loud.) Dr. Cannock, Staffs, Sir ROGER CURTIS.

†132/9. *OXALIS LATIFOLIA* H.B.K. La Haute and in two adjacent fields in great plenty, Jersey, ARSENE.

†133/2. *IMPATIENS BIFLORA* Walt. Shapwick, Dorset; Christchurch, S. Hants, HALL.

†133/4. *I. GLANDULIFERA* Royle. In profusion on the banks of the Usk, Abergavenny, Monmouth, Miss E. POST; roadside near Hedge Court Pond, Surrey, LOUSLEY and WALLACE; Tolpuddle, (*candida*), Dorset, Miss I. M. ROPER.

142/2. *ACER CAMPESTRE* L., var. *INCISIFOLIUM* Dr. Dudley, Worcester; Redhill, Northants. Var. *LOBATUM* Pax. Marlborough, Wilts, Mrs WEDGWOOD.

†145/2. *LUPINUS ALBUS* L. Burton-on-Trent, Staffs, DRUCE. Probably this, THELLUNG.

†145/4. *L. ANGUSTIFOLIUS* L. Christchurch, S. Hants, DRUCE.

151/2. *ONONIS REPENS* L., var. *MITIS* (L.). (*PROCURRENS* Wallr.). Slapton Sands, Devon; Kenfig and Barry, Glamorgan; Albury, Oxon, DRUCE.

151/3. *O. SPINOSA* L. (*CAMPESTRIS*), *ALBIFLORA*. Between Marlborough and Chippenham, Wilts, H. B. WILLOUGHBY SMITH.

153/1. *MEDICAGO FALCATA* L. Near Aylesford, Kent, Mrs DAVIES; Cromer, Norfolk; Rhyl, Flint, Miss B. ALLEN.

†153/4. *M. LAPPACEA* Desf. Abingdon, Berks, DRUCE.

153/4. *M. APICULATA* Willd. Shipston-on-Stour, Worcester, J. H. SALTER.

153/7. *M. LUPULINA* L., var. *UNGUICULATA* Ser. Parkstone, Dorset, HALL.

155/2. *TRIFOLIUM PRATENSE* L., var. *PARVIFLORUM* Bab. Barry, Glamorgan, Miss I. M. ROPER.

155/3. *T. OCHROLEUCON* Huds. Great Casterton, Rutland, BEMROSE.

†155/15. *T. HYBRIDUM* L. (*FISTULOSUM*). Ashby-de-la-Zouch, Leicesters, DRUCE. Var. *PHYLLANTHUM*. Portishead Dock, N. Somerset, Miss TODD; Cardiff, DRUCE.

†155/15. *T. ELEGANS* Savi. Dagenham, Essex, MELVILLE; Barry, Glamorgan; Dundee, Angus, DRUCE. The two latter have hollow stems.

155/16. *T. REPENS* L., var. *RUBESCENS* Seringe. Walton, Yorks, Miss TODD.

+155/19. *T. AGRARIUM* L. Bute; Dundee, Angus, DRUCE.

+155/37. *T. RESUPINATUM* L. Buriton, Surrey, BIDDISCOMBE; Bristol, W. Gloster, C. SANDWITH.

+155/38. *T. TOMENTOSUM* L. Bristol, W. Gloster, C. SANDWITH.

160/6. *LOTUS TENUIS* Kit., var. *SABULICOLA* Rouy. Besilsleigh, Berks, DRUCE.

*+160/7. *L. HISPIDUS* Desf. Barry, Glamorgan, SMITH.

+166/6. *ASTRAGALUS BOETIUS* L. Par, Cornwall, MEDLIN.

+170/1. *CORONILLA VARIA* L. Barmouth, Merioneth, H. WALKER. Still existing at Ware, Herts, and Dundee, Angus, DRUCE; Prestatyn, Flint, Miss B. ALLEN.

+170/3. *C. SCORPIOIDES* Koch. Par, Cornwall, MEDLIN.

*+171/1. *ORNITHOPUS COMPRESSUS* L. Barry, Glamorgan, SMITH.

*+171/5. *O. PINNATUS* (Mill.) Dr. Barry, Glamorgan, SMITH.

+176/2. *VICIA TENUIFOLIA* Roth. Leith, Midlothian, DRUCE.

176/4. *V. OROBUS* DC. On Mendip as the violet-coloured form, and one plant with pure white flowers, on the Society's excursion, June 1927, DRUCE and MILLER. In Forfarshire the flowers have a pinkish-purple tint, f. *rubescens*, DRUCE.

+176/9. *V. LUTEA* L., var. *CAERULEA* Archangeli. Ware, Herts, DRUCE.

+176/12. *V. SATIVA* L., var. *CORDATA* Wulf. Salthouse, Norfolk, 1890, T. A. COTTON. Var. app. *TRIFLORA* Rouy. Christchurch, S. Hants, DRUCE.

176/13. *V. ANGUSTIFOLIA* Reich., var. *SEGETALIS* Koch. Hackney, Middlesex; Birkdale, S. Lancs, DRUCE. Var. *BOBARTII* (Forst.). Christchurch, S. Hants, DRUCE.

*+176/16. *V. BENGHALENSE* L. Iver, Bucks, MELVILLE.

+177/1. *LENS LENS* (L.). Aylestone gas works, Leicester, G. J. V. BEMROSE.

+178/1. *LATHYRUS LATIFOLIUS* L. Relic of a garden, St Donats, Glamorgan, DRUCE.

†178/3. *L. TUBEROSUS* L. Waste ground, Rhyl, Flint, DALLMAN. In a field adjoining Sedbury Park, Chepstow, T. W. BRISCOE in *Gard. Chron.* 73, 1927. It was recognised by our member, Dr Shoolbred [not Schoolbred] in a nosegay of wild flowers which were on exhibition at the Tidenham Flower Show in August 1926. On p. 136, Mr W. E. Wright says it is pretty well known through the Wye Valley around Monmouth and the Forest of Dean, and it is often exhibited in the village shows. Mr White (*The Bristol Flora*, 253) considers it an alien in his area. Our member, Mrs Thatcher, on p. 167, adds the Keynsham locality in Somerset, and to those may be added Burton-on-Trent, Staffs, and Peppard, Oxon, DRUCE.

†178/23. *L. ODORATUS* L. Garden relic, St Donats, Glamorgan; Banchory, Kincardine, DRUCE.

†178/26. *L. NIGER* L. Planted in the Park at Great Tew, Oxon, June 1927, DRUCE.

183/4. *PRUNUS CERASUS* L. (*CERASUS ACIDA* Bork.). Wild near Marlborough, fruiting freely, Mrs WEDGWOOD. A distinct species from *avium*. Near Cross Hands, Carmarthen, WEBB.

†183/8. *P. CERASIFERA* Ehrh. In some plenty about Salisbury, Wilts, Miss E. H. STEVENS. The glossy varnished stems distinguish it, *inter alia*, from the Sloe and Plum.

†184/10. *SPIRAEA SALICIFOLIA* L. Abundant along Telford's Road, Denbighshire, WEBB; Loch of Skene, S. Aberdeen, FRASER.

184/11. *S. ULMARIA* L., var. *DENUDATA* Boenn. Dundee, Angus, DRUCE and CORSTORPHINE; Culworth, Northants, DRUCE.

†185/156. *RUBUS SPECTABILIS* Pursh. Lessennan, Donegal, RAYNER.

†185/158. *R. NUTKANUS* Moc. Craigmore, near Rothesay, Bute, GRIERSON. An older name is *parviflorus* Nuttall.

*188/1. *FRAGARIA MOSCHATA* Duch. Naturalised at Great Tew, Oxon, DRUCE.

188/2. *F. VESCA* L., var. *ALBESCENS*. In some plenty at Wroughton, N. Wilts, E. W. M. MAGOR.

189/4. *POTENTILLA ARGENTEA* L. Ryton, E. Gloster, HAINES.

*189/6. *P. VERNA* L. Bouley Bay, Jersey, 1927, GAMBIER-PARRY.

†189/11. *P. NORVEGICA* L. Portishead, N. Somerset, Miss TODD; Burton-on-Trent, Staffs, DRUCE.

†189/13. *P. RECTA* L. Par, Cornwall, REES.

189/25. *P. PALUSTRIS* (L.) Scop., var. *VILLOSA* (Lehm.) Dr. (*SERICEA* Wolf). Wareham, Dorset, Miss I. M. ROPER.

190/2. *ALCHEMILLA PRATENSIS* Schmidt. Harlington, Derby; Stodday, Broughton, Lancs; Banchory, Kincardine, DRUCE; Pitsligo, N. Aberdeen, FRASER.

*190/3. *A. CURTILOBA* Buser. Banchory, Kincardine, DRUCE.

190/4. *A. MINOR* Huds. Windermere, Westmorland, DRUCE.

*190/5. *A. PASTORALIS* Buser. In the grounds of Arley Castle, Worcester, Lady JOAN LEGGE and DRUCE.

190/8. *A. ALPESTRIS* Schmidt. Brecon Beacon; near Boughrood, Radnor; Giffnock, Renfrew; Penrith, Cumberland; Ingleborough, Fountain's Abbey, Yorks; Stodday, Lancs; Feugh, Banchory, Kincardine; Waterville, Kerry, DRUCE; Tummel, Perth, THORNTON; Clapham, Yorks, Miss TODD.

†191/3. *AGRIMONIA AGRIMONOIDES* L. Still going strong at Welbeck, Notts, GOULDING.

193/4. *POTERIUM OFFICINALE* A. Gray. Penderyn, Brecon, Miss I. M. ROPER.

(Lt.-Col. A. H. Wolley-Dod has kindly named the Roses.)

194/5. *ROSA STYLOSA* Desv. Under the type, Graffham, Hunts, 1885, E. F. LINTON. Var. *CHLORANTHA* Rouy? Shillingston, Dorset, 1915, W. M. ROGERS.

194/6. *R. CANINA* L., var. *SPHAERICA* (Gren.) Dum. Cwm Nes, Radnor, CUMMING. Var. *NEMOPHILA* (Déség. & Ozan.) R. & C. Rugby, Warwick, CUMMING. Var. *SENTICOSA* Baker (? of Ach.), f. *OXYPHYLLA* W.-D. Lane near How Hill Quarry, N.W. Yorks, 1886, BAILEY. Var. *MUCRONULATA* (Déség.) R. & C. Culworth, Northants, DRUCE. Var. *INSIGNIS* (Déség. & Rip.) R. & C. Cwm Nes, Radnor, CUMMING. Var. *STIPULARIS* Mérat. Brinklow, Warwick, CUMMING.

194/7. *R. SQUARROSA* Rau (*DUMALIS*), var. *ADSCITA* (Déség.). Cerrig Haffes, Brecon, LEY. Var. *STIPULARIS* Mér. Brinklow, Warwick, CUMMING.

194/8. *R. ANDEGAVENSIS* Bast. Bracklinn Falls, Callander, W. Perth, BAILEY; Byfleet, Surrey, Lady DAVY. Var. *SCHOTTIANA* (Ser.). Chambercombe, N. Devon, 1891, BAILEY.

194/9. *R. BLONDAEANA* (Rip.). Woldingham, Runnymede, Surrey, FRASER. Var. *VINACEA* Baker, f. *BEATRICIS*. Near Tenbury, Worcester, 1892, BAILEY, as *dumalis*; Chinnor, Oxon, 1927, DRUCE.

194/10. *R. DUMETORUM* Thuill., var. *HISPIDULA* (Rip.). Kintbury, Berks, DRUCE. Wolley-Dod will probably segregate this from *dumetorum* in his next paper. Var. *CALOPHYLLA* Rouy. Storey Arum, Brecon, Miss I. M. ROPER.

194/11. *R. DESEGLISEI* (Boreau), var. *MERCICA* (W.-D.). Manyfold valley, opposite Wetton Mill, Staffs; near Darly Dale, Derby, 1891, BAILEY, as *caesia*.

194/12. *R. GLAUCA* Vill. Gairloch, W. Ross, 1883, BAILEY, as *dumalis*. Var. *SUBCANINA* (Christ). Between Ayton and Cairncross, Berwick, BAILEY, as *dumalis*; St Andrews, Fife, DRUCE; Cwm Nes, Radnor, CUMMING. ? var. *COMPLICATA*, i.e. *COMPLICATA* with reflexed sepals, Aviemore, Easternness, Miss I. M. ROPER, teste W.-D. Var. *SUBCRISTATA* (Baker). Cwm Nes, Radnor, CUMMING. Var. *REUTERI* (Godet), f. Brookham Common, Surrey, FRASER.

194/13. *R. CAESIA* Sm. (*CORIIFOLIA* Fr.). Cwm Nes, Radnor, CUMMING. Var. *IMPLEXA* (Gren.). Near Lake Sawrey, Lancs, 1883, BAILEY, as *Reuteri*. Var. *BAKERI* (Déség.), f. *SETIGERA* W.-D. Shandon, Dumbarton, 1897, BAILEY, as *Watsoni*. Var. *CELERATA* (Baker). Between Hartington and Scaldersitch, Staffs, 1894, BAILEY.

194/14. *R. MIGRANTHA* Sm., var. *OPERTA* Pug. Crabwood, near Winchester, S. Hants, DRUCE and Rt. Hon. H. BAKER.

194/15. *R. EGLANTERIA* L., var. *ROTUNDIFOLIA* (Rau). Strathpeffer, E. Ross, BAILEY. A record for Scotland. Var. *APRICORUM* (Rouy). Magilligan, Londonderry, BAILEY; near Peebles, BAILEY.

194/16. *R. ARVATICA* W.-D. Hogsback, Surrey, Lady DAVY; near Ayton Wood House, Berwick, 1900, BAILEY. The latter may be *sclerophylla* (Schultz), teste W.-Dod.

194/18. *R. TOMENTELLA* Lem. Newark Abbey, Surrey, Lady DAVY. Var. *CARIONII*. Field by Brandon Wood, Warwick, CUMMING.

194/19. *R. PSEUDO-CUSPIDATA* (Crép.). Mill of Boyndlie, N. Aberdeen, FRASER.

194/20. *R. OMISSA* Déség. Rothiemurchus, Easternness, towards PSEUDO-MOLLIS E.G.B., Miss I. M. ROPER. Var. *RESINOSODES* Crép. Aviemore, Easternness, Miss I. M. ROPER; near Melrose, Roxburgh, BAILEY. Var. *SUBMOLLIS*. Kenmare, Kerry, DRUCE.

194/21. *R. VILLOSA* L. Railway cutting between Great and Little Cheverhill, near Devizes, Wilts, DRUCE and Rev. W. KEBBLE-MARTIN. Var. *GLANDULOSA* W.-Dod. Mill of Boyndlie, N. Aberdeen, FRASER.

194/23. ×*R. SABINI* (Woods). Den of Aberdour, N. Aberdeen, FRASER; Loch Ranza, Arran, Mrs WEDGWOOD. ×*R. LAEVIGATA* (Baker). Den of Aberdour, N. Aberdeen, FRASER.

†194/26. *R. RUGOSA* Thunb. Penrice, Glamorgan; Keswick, Cumberland, WEBB.

†197/2. *COTONEASTER MICROPHYLLA* Wallich. In some plenty and naturalised at Derrynane, Co. Kerry, DRUCE; Hucknall, Notts, BULLEY.

†197/3. *C. SIMONSI* Baker. In a hedge, on a chalk slope with Buckthorn, near Highclere, N. Hants, Rev. C. E. CRUTTWELL.

198/4. *AMELANCHIER VULGARIS* Moench. Crag above Longrigg Brow, Westmorland, Rev. W. KEBLE-MARTIN.

*199/10. *SAXIFRAGA HYPNOIDES* L. Lugnaquilla, Co. Wicklow, at 2000 feet altitude, J. P. BRUNNER in *Ir. Nat.* 254, 1927.

*207/7. *RIBES SANGUINEUM* Pursh. Charwelton, Northants; Banchoy, Kincardine, DRUCE.

210/1. *COTYLEDON UMBILICUS* L. Grew at 1800 ft. on the crags N.E. of Pistyth Rhainon, Berwyn Mountain, Denbighshire, WILSON.

†211/7. *SEDUM ALBUM* L. Established on limestone between Prestatyn and Meliden, Flint, J. D. MASSEY.

211/12. *S. VILLOSUM* L. Near Grantown, Elgin, alt. 1500 ft., Miss WILKINSON.

220/2. *EPILOBIUM HIRSUTUM* × *MONTANUM*. Lambridge, Oxon, DRUCE and Mrs WEDGWOOD.

220/6. *E. LAMYI* F. Schultz. Willesborough Lees, Ashford, Kent, FOGGITT, Lady DAVY and Miss BACON; Beaconsfield, Bucks, N. SANDWITH and Mrs WEDGWOOD, the second locality in the county.

220/8. *E. ROSEUM* Schreb. Ware, Herts; Boughrood, Radnor; Burton, Staffs, DRUCE.

*220/13. *E. ALPINUM* L. (with *ALSINIFOLIUM*). Slopes of Mickel Fell, N.W. Yorks, just within the Yorkshire boundary, LOUSLEY.

†221/1. *LUDVIGIA PALUSTRIS* Ell. Manchester Docks, S. Lancs, LESLIE ADAMS.

†223/3. *OENOTHERA ODORATA* Jacq. Coverack, Cornwall, 1910, H. E. FOX, as *biennis*.

†223/7. *OE. SINUATA* L. (*LACINIATA*). Kidderminster, Worcester, Rev. J. ADAM; Bristol, W. Gloster, C. & N. SANDWICH; Par, Cornwall, THURSTON.

†224/1. *FUCHSIA RICCARTONI* Hort. Berehaven, Co. Cork, quite naturalised, DRUCE.

†245/6. *BUPLEURUM LANCIFOLIUM* Hornem. Burnham-on-Sea, Somerset, MILLER.

247/5. *APIUM INUNDATUM* Reichb., f. *FLUTANS* (Fr.). Burghfield Common, Berks, very large and floating in islands some yards from the shore, LOUSLEY. Rather a condition than a true variety.

261/1. *CHAEROFOLIUM SYLVESTRE* (L.) (*ANTHRISOUS*), var. *ANGUSTISECTA* Dr. Dundee, Angus; Ballater, S. Aberdeen, DRUCE.

265/3. *OENANTHE CROCATATA* L. Caused deaths of a boy and girl at Bryncoch, Glamorgan, in 1927, WEBB.

270/1. *MEUM ATHAMANTICUM* Jacq. In plenty at the head of the Lime Valley, Westmorland, FOGGITT.

†277/1. *HERACLEUM MANTEGAZZIANUM* S. & L. Iver, Bucks; Dagenham, Essex, MELVILLE. See plate. Still abundant at Dundee, Angus, overlooking the railway, DRUCE.

*†283/8. *CAUCALIS LATIFOLIA* L. Barry, Glamorgan, SMITH.

284/1. *HEDERA HELIX* L., var. *SARNIENSIS* Dr. Sheen, Kenmare, Kerry, DRUCE, similar to the Guernsey plant; Nash Point, Glamorgan, DRUCE and Miss VACHELL. Miss TODD sends from Ingleborough a form [15] approaching var. *BOREALIS* Dr., but the leaves are broader. It differs, too, in the long acuminate point to the leaves of the barren stems, DRUCE.

286/1. *ADOXA MOSCHATPELLINA* L. T. A. SPRAGUE gives the morphology and taxonomic position of this species which he puts in the family Adoxaceae, allied to the Saxifragaceae. Other botanists have placed it near the Caprifoliaceae. See *Journ. Linn. Soc.* 471, 1927.

†296/5. *GALIUM PUMILUM* Murr. Near Wellington College, Berks, 1925, H. P. MONCKTON; near Sapperton, E. Gloster, HAINES. It is an increasing colonist.

†298/6. *ASPERULA CILIATA* Rochel. Near St Donats, Glamorgan, June 1927, DRUCE; Magilligan, Co. Derry, ex Hon. Mrs A. LEITH; Presatyn, Flint, Miss B. ALLEN.

304/2. *VALERIANELLA ERIOCARPA* Desv. Hayle, Cornwall, MELVILLE.

+306/1. *DIPSACUS SYLVESTRIS* Huds. Near Newport, Isle of Wight, for several years, J. W. LONG.

+311/1. *GRINDELIA SQUARROSA* Dunal. Beaconsfield, Bucks, in a chicken run, Mrs WEDGWOOD.

312/1. *SOLIDAGO VIRGAUREA* L., var. *LANCEOLATA* Dr. Banchory, Kincardine, July 1927, DRUCE; Bolton Abbey, Yorks, 1863, HAYNE. Var. *CORYMBOSA* Dr. Near Roundstone, Galway Bay, Galway, DRUCE.

314/1. *BELLIS PERENNIS* L., var. *vel lusus PROLIFERA*. The Hen and Chicken Daisy. The Common, Marianglas, Anglesey, Miss R. BRIGHT.

(The Asters are named by Dr Thellung.)

+318/1. *ASTER SALIGNUS* Willd. By the Esk, Stracathro, Angus, 1919, R. & M. CORSTORPHINE.

+318/3. *A. LONGIFOLIUS* Lam. Banks of Tay below Perth, BOSWELL SYME.

+318/4. *A. NOVI-BELGII* L. Derwentwater, Cumberland, M. EDWARDS.

+318/6. *A. LANCEOLATUS* Willd. Marston, Oxon, DRUCE.

+318/9. *A. PUNICEUS* L. Dundee, Angus, 1926, R. & M. CORSTORPHINE.

+318/11. *A. VERSICOLOR* Willd. By the Esk, Brechin, Angus, R. & M. CORSTORPHINE.

+318/14. *A. PRENANTHOIDES* Muhl. Winchester, Hants, Miss TODD.

318/19. *A. TRIPOLIUM* L., var. *LONGICAULIS* Rouy, Fouc. & Camus. Poole, Dorset, WADE.

+320/5. *ERIGERON ANNUUS* (L.) Pers. Erith, W. Kent, ST JOHN MARIOTT. Det A. THELLUNG.

324/2. *FILAGO APICULATA* G. E. Sm. Parkstone, Dorset, HALL.

*+328/1. *GNAPHALIUM LUTEO-ALBUM* L. Barry, Glamorgan, SMITH.

+328/6. *G. UNDULATUM* L. Par Harbour, Cornwall, MEDLIN.

333/1. *INULA HELENIUM* L. St Ives, Cornwall, AMHERST; in a field between Melksham and Westbury, Wilts, E. JENKINSON.

+339/4. *AMBROSIA TRIFIDA* L. Burton-on-Trent, Staffs, DRUCE and Sir ROGER CURTIS.

†351/1. *GUIZOTIA ABYSSINICA* (L. f.) Cass. Ballast, Old Hartlepool, Durham, 1867, H. E. FOX.

353/2. *BIDENS TRIPARTITA* L., var. *INTEGRA* Koch. Near Winchester, Hants, RAYNER.

†353/4. *B. PILOSA* L. Hortal. Waste places, St Helier, Jersey, ARSENE.

†354/1. *GALINSOGA PARVIFLORA* Cav., var. *ADENOPHORA* Thell. Bristol, E. Gloster, C. & N. SANDWITH.

†356/1. *HEMIZONIA PUNGENS* T. & G. In Flint, near the Cheshire border, E. J. HAYNES THOMAS; Didcot, Berks, DRUCE.

†362/2. *TAGETES MINUTA* L. Newport, Isle of Wight, LONG.

†364/1. *ANACYCLUS CLAVATUS* (Desf.) Pers. Par, Cornwall, MEDLIN.

†364/2. *A. RADIATUS* Lois. Dagenham, Essex, MELVILLE.

365/1. *ACHILLEA MILLEFOLIUM* L., var. *LANATA* Koch. Holwick, N.W. Yorks, LOUSLEY. Var. *CONSPICUA* Dr. This wet year of 1927 has been marked by the profuse flowering of the Yarrow which has been a prominent feature in Britain. The variety with larger ligules has necessarily created the more striking effect. It has been noted near Southborne, S. Hants; Wareham, etc., Dorset; Abingdon, etc., Berks; Culham, Tetsworth, etc., Oxon; Byfield, Northants; Walsall, Staffs; Dudley, etc., Worcester; near Bristol, W. Gloster, etc. The forma *ROSEA* grows with it and occurs in remarkably pretty tints, DRUCE.

367/1. *DIOTIS MARITIMA* Cass. H. W. KEW has found this rare British species near Penzance this year.

†368/1. *ANTHEMIS TINCTORIA* L. Waste ground near Walsall, Staffs, Sir ROGER CURTIS; Easthaven, Angus, R. & M. CORSTORPHINE.

368/2. *A. NOBILIS* L., var. *DISCOLDEA* Boiss. Barden Lane, Burnley, S. Lancs, TRAVIS.

†369/1. *CLADANTHUS ARABICUS* (L.) Cass. Par, Cornwall, MEDLIN.

371/1. *MATRICARIA INODORA* L. As a proliferous condition, Cardiff, Glamorgan, DRUCE.

†371/3. *M. SUAVEOLENS* Buch. Hambledon, Bucks; Eye, Wortham, Stuston, Suffolk, H. L. GREEN.

†371/5. *M. DECIPIENS* (F. & M.) C. Koch. Burton-on-Trent, Staffs, 1926, DRUCE.

- †378/16. *ARTEMISIA ANNUA* L. Iver, Bucks, MELVILLE.
- †378/18. *A. GNAPHALODES* Nutt. Edington Junction, Somerset, MILLER.
- †380/2. *PETASITES ALBUS* Gaertn. Plentiful near Banchory, Kincardine, DRUCE.
- †381/1. *DORONICUM PARDALIANCHES* L. Great Tew, Oxon, naturalised; several places about Banchory, Kincardine, DRUCE.
- †383/1. *SENECIO SARRACENICUS* L. Killycreen Hill, Ramelton, Donegal, F. R. BROWNING.
- 383/3. *S. AQUATICUS* × *JACOBAEA* = *OSTENFELDII* Dr. Swaythling Camp, S. Hants, RAYNER.
- 383/4. *S. ERRATICUS* Bert. Holmesby, S. Hants; Southcote, Berks; not quite typical; Shefford, Berks, 1887 (? *intermedius* Dr.), DRUCE.
- †383/7. *S. SQUALIDUS* L. Rapidly spreading in Staffordshire and Worcestershire, DRUCE. × *VULGARIS*. Portishead, Somerset, Miss TODD; Didcot, Berks; Burton-on-Trent, Staffs, DRUCE; Avonmouth, Bristol, West Gloster, C. & N. SANDWICH.
- †383/8. *S. VISCOSUS* L. Plentiful on waste ground, Didcot, Berks, the most northerly station in the county yet noticed. Here it is adventive, DRUCE.
- 383/9. *S. SYLVATICUS* L., var. *AURICULATUS* Meyer. Silchester Common, N. Hants, LOUSLEY.
- 383/12. *S. DORIA* L. In a hedge at Colonsay, far from houses, but not typical, Hon. Mrs GUY BARING.
- †383/15. *S. VERNALIS* W. & K. × *VULGARIS*. Barry, Glamorgan, DRUCE. Cf. *vernalis* × *vulgaris*, teste THELLUNG.
- †386/1. *CRYPTOSTEMMA CALENDULA* (L.) Dr. Bristol, W. Gloster, C. SANDWICH; *Barry, Glamorgan, SMITH.
- 393/1. *ARCTIUM MAJUS* Bernh. Wretton Ferry, W. Norfolk; White Hall Farm, Littleport, Cambridge, LITTLE.
- 395/2. *CARDUS ACANTHOIDES* L. × *NUTANS*. Shapwick, Dorset, HALL; Loddon, Norfolk, Miss TODD.
- †395/3. *C. PYCNOCEPHALUS* L. Hackney, Middlesex, MELVILLE.
- *†396/1. *CIRSIUM ERIOPHORUM* Scop. A solitary specimen in a field at Banchory, Kincardine. This handsome species was first recorded for

Scotland by Sibbald in *Scotia Illustrata* 15, 1684, as *Carduus tomentosus* = *Corona fratrum dictus*, by the seaside betwixt Blackness and Queensferry. But it is not a native species of Scotland and is of very rare adventive occurrence, DRUCE.

396/8. *C. SETOSUM* M. Bieb. St John's Graveyard, Jersey, ARSENE; Christchurch, Hants, HALL.

396/9. *C. PALUSTRE* Scop., var. *FEROX* Dr., f. *ALBA*. Ridge, Dorset; Berkhamstead, Herts. Type *FEROX* also grew at Banchory, Kincardine, and Brecon, DRUCE.

402/1. *SERRATULA TINCTORIA* L., var. *ALBUS*. Among stones in river bed Upper Teesdale, Durham, Miss A. WILKINSON; by the Spey, Aviemore, Easternness, Miss I. M. ROPER.

†404/3. *CARTHAMUS TINCTORIUS* L. St Cyrus, Kincardine, R. & M. CORSTORPHINE; St Dennis by Padstow, Cornwall, DRUCE.

(Mr C. E. Britton has kindly identified the *Centaureas*.)

*405/7. *CENTAUREA PRATENSIS* Thuill. Crabtree, S. Hants; Ivinghoe, Bucks, DRUCE; L'Eree, Guernsey, 1888, M. DAWBER.

405/8. *C. NIGRA* L., var. *OBSCURA* Jord. Kenmare, Kerry; Berehaven, Co. Cork; Wexford; Boughrood, Radnor; Brecon; Nash, Glamorgan, DRUCE; Ripon, Yorks, Miss TODD. f. *RADIATA*. Cunningmaker, Dumfries; Culeaze, Dorset, DRUCE.

*405/9. *C. DRUCEI* C. E. Brit. Burghfield, Berks, LOUSLEY.

405/11. *C. NEMORALIS* Jord. Polzeath, Cornwall, H. E. FOX; Bardfield, Essex, DRUCE. Narrow leaved form, Blewbury, Berks, DRUCE. f. *RADIATA*. Rheidol, Cardigan; Dumfries. f. *ALBA*. Strome Ferry, W. Ross, DRUCE. Var. *DIVERSIFOLIA* C. E. Brit. Ashmansworth, N. Hants, BARTON. f. *RADIATA*. Ottery St Mary, Devon, H. E. FOX. Var. *SUBINTEGRA* C. E. Brit. S. Tawton, Devon, H. E. FOX.

†405/31. *C. SOLSTITIALIS* L. Burton-on-Trent, Staffs, DRUCE and Sir ROGER CURTIS; Prestatyn, Flint, Miss B. ALLEN.

*†408/2. *SCOLYMUS MACULATUS* L. Splott, Glamorgan, SMITH.

†409/1. *CICORIUM INTYBUS* L., var. *GLABRATUM* (Presl). Banchory, Kincardine, DRUCE.

410/1. *ARNOSERIS MINIMA* Schw. & Koerte. Near Pocklington, East Riding, Yorkshire. F. A. Mason, Leeds, hon. secretary of the Yorkshire Naturalists' Union, has made one of the most important discoveries of recent years in the phanerogamous plants of the county of Yorkshire. On the excursion of the Union to Allerthorpe, East Riding

of Yorkshire, on the 2nd July 1927, he found *Arnoseris minima* on a sandy stretch of land near the Common. The first specimen Mr Mason gathered was inadvertently lost, so early in September he revisited the locality and noted this plant well-established there. I received specimens on the 6th September in full flower, and also specimens of the ground flora associated with *Arnoseris*. The plants were *Crepis capillaris*, *Calluna vulgaris*, *Gnaphalium sylvaticum*, and *Filago minima*, the larger plants being *Cytisus scoparius* and *Ulex europaeus*. Neither Baker's "Flora of North Yorkshire" nor Fraser Robinson's "Flora of the East Riding" makes any mention of this plant, but in Lees' "Flora of West Yorkshire" there is a very old and unconfirmed record of its occurrence in some barren fields in Yorkshire. As this statement is so extremely indefinite and has not been verified for nearly 300 years we must consider that Mr Mason's discovery establishes a new record not only for the East Riding but for the county. *Arnoseris* is recorded from twenty-four Watsonian vice-counties in "Topographical Botany." R. J. FLINTOFF.

415/2. *PICRIS HIERACIOIDES* L. var. *UMBELLATA* Schultz (var. *ARVALIS* (Jord.)). Jersey, ARSENE.

416/5. *CREPIS CAPILLARIS* Wallr. Type, Cardiff Docks, Glamorgan, 1926, DRUCE. Var. *ANGLICA* Druce & Thell. Coverack, Cornwall, H. E. Fox; Corbière, Jersey; Splott, Glamorgan; Angus; Selkirk; Didcot, Berks, DRUCE. Sub-var. *GRISEOLA* Thell. Big Sand and Mellon Charles, W. Ross, DRUCE; Burnham-on-Sea, Somerset, MILLER; Reading, Berks; Banchoy, Kincardine, DRUCE.

417/1. *TOLPIS BARBATA* Gaertn. Alien, Europe. Barry, Glamorgan, SMITH.

†419/8. *HIERACIUM AURANTIACUM* L. Dolwyddelan and Pontypant, Carnarvon, WEBB.

*419/218. *H. STICTOPHYLLUM* Dahlst. Lechwidd Mawr, Cardigan, SALTER.

419/229. *H. CANTIANUM* F. J. H. Angley Wood, Kent, FOGGITT.

423/. *TARAXACUM OFFICINALE* L., aggr. An abnormal form with 2-3 bracts on the scape, Sewage Farm, Hitchin, Herts, 1927, LITTLE.

(The *Taraxaca* have been kindly determined by Dr H. Dahlstedt.)

423/1. *T. BRACHYGLOSSUM* Dahlst. Burton-on-Trent, Staffs; Penarth, Glamorgan, DRUCE; Machen, Monmouth [135], WADE.

423/2. *T. DECIPIENS* Raunk., forma. Pennard, Glamorgan, DRUCE; Morlais Castle, Glamorgan [146], WADE; Mynydd Machen, Monmouth [124], WADE.

423/4. *T. FULVUM* Raunk. Burton-on-Trent, Staffs; Kettering, Northants, DRUCE; Leckwith, Glamorgan [138, 140], WADE.

423/6. *T. LACISTOPHYLLUM* Dahlst. Dagenham, S. Essex; Didcot, Berks; Aston-le-Walls, Northants; near Denshanger, Bucks; Cardiff, Glamorgan, DRUCE.

423/9. *T. LIMBATUM* Dahlst., modif. Swansea, Glamorgan, DRUCE; Leckwith, Glamorgan [135], WADE.

423/19. *T. CROCEIFLORUM* Dahlst. Nearly allied to this, Cardiff, Glamorgan; *Garford, Berks, DRUCE.

423/20. *T. CROCEUM* Dahlst. Interesting form allied to this, Brecon, DRUCE.

423/21. *T. DEVIANS* Dahlst. in Arkiv. för Bot. 57, 1904. A form closely related to this [P.67]. Tackley, Oxon, DRUCE.

423/23. *T. FAROENSE* Dahlst. Penally, Pembroke, DRUCE.

423/26. *T. MACULIGERUM* Lindb. f., forma. Taf Fechan, Brecon, WADE.

423/29. *T. NORDSTEDTII* Dahlst. Snowdon, Carnarvon; Kenfig, Glamorgan; Swallowfield, Berks, probably this; Ouse meadows, Denshanger, Aston-le-Walls, Charwelton, Northants, DRUCE; Merthyr Mawr, Glamorgan [149]; Talgarth, Brecon [148], WADE; Friezland, Yorks, 1891, WHELDON.

423/30. *T. OXONIENSE* Dahlst. Baldon, Oxon; Burghfield, Berks, DRUCE.

423/34. *T. SPECTABILE* Dahlst., modif. Maen Madoc, Brecon [108], WADE.

423/37. *T. ALATUM* Lindb. f. Shellingford, Berks; Thame, Oxon; Cothill, Berks, modif.; Biddesden, Wilts, DRUCE.

423/39. *T. AMBLYCENTRUM* Dahlst., modif. Cherry Hinton, Cambridge; *Burghfield, Berks; Redhill, Northants, as forma; *Merton, Oxon; *Buckingham, Bucks, DRUCE.

423/40. *T. ANCISTROLOBUM* Dahlst. Cardiff [103, 104, 106, 120]; Cathays Park, Cardiff [103, 104, 106]; Cardiff Castle, Glamorgan [120], WADE.

423/51. *T. CYANOLEPIS* Dahlst. Swansea, Glamorgan, DRUCE.

423/51. *T. DAHLSTEDTII* Lindb. f., modif. Tredegar Park roadside, Newport, Monmouth [128], WADE.

423/52. *T. DILATATUM* Lindb. f. Wansford, Northants; *Coombe Wood, Oxon, modif.; Winton, S. Hants, nearly related; Burghfield, Berks; *Hambleton, Bucks; Stibbington, Hunts, forma; Banchory, Kincardine, DRUCE.

*423/55. *T. EXPALLIDIFORME* Dahlst. Caerphilly, Glamorgan, WADE; Cathays Park, Cardiff [102]; Shellingford, Berks, modif.; Culham, Oxon, DRUCE.

423/59. *T. GELERTII* Raunk. Baldon, Oxon, "seems to be a form of this," DRUCE.

423/61. *T. HAMATUM* Raunk. Caerphilly, Cathays Park, Cardiff [101]; Sully [121]; Leckwith, Glamorgan [126], WADE; Redhill, Northants, DRUCE.

423/63. *T. INTRICATUM* Lindb. f. Very nearly related to this, Tackley, Oxon; Radyr, Glamorgan, DRUCE.

423/64. *T. KJELLMANNII* Dahlst., forma. Tenby, Pembroke; Invergowrie, Angus, related to this; Banchory, Kincardine; Garford, Berks, DRUCE.

423/66. *T. LACINIOSUM* Dahlst., modif. Charwelton, Redhill, Northants; Cosgrove, Northants, forma, DRUCE; a small form at Marshfield, Monmouth [112], WADE.

423/67. *T. LAETICOLOR* Dahlst. Probably this at Biddesdon, Wilts, DRUCE; nearly allied to this at Marshfield, Monmouth, WADE.

423/72. *T. LONGISQUAMBUM* Lindb. f., forma. Charwelton, Northants; Roydon, Herts; a somewhat allied form at Tackley, Oxon, DRUCE.

423/75. *T. MUCRONATUM* Lindb. f. Allied form at Garford, Berks; St Giles, Oxon, DRUCE.

423/77. *T. PALLESCENS* Dahlst. Marshfield, Monmouth [111, 112, 115, 116], WADE; Tackley, Oxon, modif. [PP.40]; Aston-le-Walls, Northants [P.51], a related form; Stow Wood, Baldon, Oxon, DRUCE; Leckwith, Glamorgan [121], WADE

423/80. *T. POLYODON* Dahlst., modif. Barry Docks, Cardiff, Glamorgan [167], WADE; Tackley, Oxon [PP.67], DRUCE.

423/82. *T. PRIVUM* Dahlst., forma. Caerphilly [101], Tredegar, Glamorgan [129]; Roade, Northants [PP.22], DRUCE.

423/93. *T. TENEBRICANS* Dahlst., modif. Ouse meadows, Bucks and Northants, DRUCE.

425/1. *LACTUCA VIROSA* L., var. *INTEGRIFOLIA* S. F. Gray. Portishead, Somerset, Miss TODD.

425/2. *L. SERRIOLA* L., var. *INTEGRATA* Gren. & Godr. Cardiff, Glamorgan, October 1926, DRUCE and SMITH.

†425/8. *L. MACROPHYLLA* A. Gray. Near Goathland, N. Yorkshire, FLINTOFF.

425/10. *L. SATIVA* L. Many seedling plants on waste ground near the Goods Depot of the G.W.R. near Bristol, W. Gloster, September 1927, DRUCE.

427/2. *SONCHUS ARVENSIS* L. Wretton Fen, W. Norfolk, 1927. A very large plant, up to 5 feet, with a largely fistular stem; leaves broad, up to 9 cm., not deeply cut, but only crenately or dentately undulate at the margins; achenes slightly compressed, narrowed at both ends, about 13 ribbed, the ribs very rough. I hope to see this plant again but did not keep a specimen. LITTLE.

427/3. *S. ASPER* Hill, var. *INTEGRIFOLIA* Lej. Winchester, S. Hants; Odiham, N. Hants, Miss C. E. PALMER; Welwyn, Herts, typical, 1820. W. BLAKE; Wilsford, Wilts, 1917; Berkeley, W. Gloster; Marlborough, N. Wilts; Scousburgh, Zetland, 1924; Botley, Oxon; Hambledon, Bucks, 1915; St Neots, Hunts; Bangor, Carnarvon; Kenmare, Kerry; Shrawley, Worcester, DRUCE.

†428/1. *TRAGOPOGON PORRIFOLIUS* L. Christchurch, S. Hants, large examples, DRUCE.

430/1. *SCORZONERA HUMILIS* L. In some quantity but mostly over flower on June 20 at Ridge, Dorset (Sandwith's locality). I see not the slightest reason to doubt its indigenuity, DRUCE.

†434/2. *PHYTEUMA SPICATUM* L. A plant in a shrubbery at Lanarth, Cornwall, P. D. WILLIAMS.

435/5. *CAMPANULA ROTUNDIFOLIA* L., var. *ELONGATA* Hampe. Crowell Hill, Oxon, October 1927, Sir M. ABBOT-ANDERSON. This is a tall plant nearly 2 feet high with very narrow stem leaves, small flowers, and shorter calyx teeth, but it may be only a condition and not a true variation, DRUCE.

*†435/6. *C. PERSICIFOLIA* L. Gidleigh, S. Devon, seven or eight plants on a hedgebank but some distance from houses, E. E. JENNER, v. sp. Quite naturalised in Shiplake Churchyard, Oxon, and by the Dee, Banchory, Kincardine, DRUCE; hedge near Sclder between Iooe and Polperro, now disappeared, Mrs PERRYCOSTE.

445/1. *CALLUNA VULGARIS* Hull, var. *ERIKAE* Graebn. Near Waterville, Co. Kerry, as the forma *ALBA*, DRUCE, the MARCHIONESS OF LANS-

DOWNE, and Lady K. LAMBTON. Var. SPECIOSA Dr. Near Newton Stewart, and New Galloway, Kirkcudbright, H. E. FOX; near Wareham, Dorset; Tighnabruaich, Argyll, DRUCE.

446/1. ERICA CINEREA L. Sunningdale, Berks, 1926, as a monstrous condition, probably induced by a mite, BIDDISCOMBE. Forma ROSEA. Near Falmouth, Cornwall, Dr J. HAUGHTON. He finds it keeps true in cultivation. The corollas are of a rose-pink colour. I have the same plant from Derrybane, Co. Kerry, and Aldermaston, Berks, DRUCE.

446/2. E. TETRALIX L., var. FISSA Dr. Studland, Parkstone, Dorset; Hinton Admiral, Christchurch, S. Hants, HALL.

†449/1. BORETTA CANTABRICA O.K. Between West Tiphouse and Glynn Valley, near G.W.R. line, THURSTON.

†451/2. LEDUM LATIFOLIUM Jacq. See *Journ. Bot.* 178, 1925, where it appears under the heading of *L. palustre*. It has now been definitely diagnosed as *latifolium*. Of course the *Ledum* is not a native of Britain, its home being North America.

*453/2. PYROLA MEDIA Sw. Near Prestatyn, Flint, a N.C.R., J. D. MASSEY and Miss ALLEN in *N.W. Nat.*, September 1927.

456/1. HYPOPHYTES HYPOPHYTES (L.), var. GLABRA (Roth) Dr. This plant was found in July 1927 growing somewhat sparingly in the damp shacks of sandhills near Kenfig Pool, Glamorgan, associated with *Salix repens*, *Equisetum palustre*, *Hydrocotyle vulgaris*, etc. The plant was first noticed in this locality about 18 years ago by Mr Hallett, F.E.S., but the information concerning its occurrence there was unfortunately discredited at the time owing to the fact that practically every botanical text-book states that it occurs only "in woods, at the foot of beeches and firs." "The British Flora," by Hooker & Arnott, adds "where the soil is dry." To these descriptions should surely be added "the damp hollows of sandhills," for it is now well known to occur in similar situations in several other localities both in Britain and on the Continent. In all cases, no doubt, when decaying vegetable matter is present. The plant is usually considered saprophytic. Careful investigation failed to detect that the mycorrhiza had any definite connection with, though it was interwoven round, the adjacent roots of *Salix repens* and *Equisetum palustre*. The flowers of *Hypophytes* emit a delicious honey-like scent, a fact which is not generally stated. E. VACHELL. Hawby Bank, N. Yorks. FOGGITT; Glamorganshire, E. A. DAVIES, ex Prof. R. C. McLEAN.

460/2. PRIMULA VULGARIS Huds., var. VIRIDIFLORA. Alkham, Kent, H. HOLLIDAY. On the Pollination of. See E. M. MARSDEN JONES in *Journ. Linn. Soc.* 367, 1926.

478/1. *CENTAURIUM CENTAURIUM* (L.) Dr., var. *CONFERTUM* (vel *SUBLITORALE*), teste C. E. SALMON. Loch Ranza, Arran, Mrs WEDGWOOD.

478/2. *C. VULGARE* Rafn., var. *LITTORALIS* Turner. Ross Links, Northumberland, FOGGITT.

480/4. *GENTIANA AMARELLA* L. Attacked with the mite, *Eriophyes Kernerii* (teste E. W. SWANTON), Portland, Dorset, RAYNER; near Leicester, O. BEMROSE.

480/6. *G. PRAECOX* (Raf.). Downs above Dancing Ledge, Dorset, Dr H. SMITH; on downs near Wilton, S. Wilts, abundant, Miss CAMPBELL.

480/9. *G. SUERICICA* Murb. Little Sand, W. Ross, 1926, DRUCE, teste LINDMAN.

†485/1. *GILIA ACHILLAEFOLIA* Benth. Burton-on-Trent, Staffs, DRUCE; Abingdon, Berks, GAMBIER-PARRY.

†493/2. *LAPPULA LAPPULA* (L.). (*ECHINOSPERMUM*.) Newport, Isle of Wight, LONG.

†496/5. *BENTHAMIA (AMSINCKIA) MENZIESII* (Lehm.). Campbeltown, Argyll, Miss M. BROWN; Little Cherwell, Wilts, GWATKIN; Abingdon, Berks, DRUCE.

†498/1. *BORAGO ORIENTALIS* L. Naturalised on Selborne Hanger, Hants, F. R. BROWNING *in litt.*

†500/4. *ANCHUSA OCHROLEUCA* M. Bieb. Hayle, Cornwall, Miss WALKER; probably this, THELLUNG.

506/1. *MYOSOTIS PALUSTRIS* Hill, var. *STRIGULOSA* (Reichb.). Near Wraxall, N. Somerset, Miss I. M. ROPER.

506/2. *M. BREVIFOLIA* C. E. S. Mickle Fell, alt. 1900 ft., and below Cronkley Fell, 1500 ft., N.W. Yorks, LOUSLEY.

†509/2. *ECHIMUM PLANTAGINEUM* L. Avonmouth, W. Gloster, C. SANDWICH.

513/1. *CONVOLVULUS ARVENSIS* L., var. *LINEARIFOLIUS* Choisy. Brainridge, Hants, Miss TODD. This has long linear leaves with small auricles and smaller flowers and answers to the description in the *Flore de France*, but it may not be the true plant of Choisy, DRUCE. Mr J. F. Botteril has sent me from Aston Clinton a form in which in the centre of the pale pink corolla is a well defined star of reddish purple.

515/3. *CUSCUTA EPITHYMUM* Murr. On *Scabiosa Succisa*, Co. Clare, P. B. O'KELLY.

†515/7. *C. SUAVEOLENS* Ser. On *Polygonum aviculare*, Bristol, W. Gloster, C. SANDWITH.

†517/2. *SOLANUM NIGRUM* L., var. *LUTEO-VIRESCENS* (Gmel.). Studland Heath, Dorset, SALMON and HALL.

†517/9. *S. TRIFLORUM* Nuttall. Bristol, W. Gloster, C. SANDWITH.

517/15. *S. CAPSICASTRUM* Lam. Splott, Glamorgan, SMITH.

†518/7. *PHYSALIS PERUVIANA* L. Iver, Bucks, MELVILLE.

527/8. *VERBASCUM NIGRUM* × *THAPSUS*. Field near Redgrave Fen, Suffolk, H. L. GREEN.

†527/18. *V. PHOENICEUM* L. On a wall at edge of wood, Welbeck, Notts, GOULDING.

†532/2. *LINARIA PURPUREA* Mill. Corfe, Dorset, HALL.

†542/1. *ERINUS ALPINUS* L. Heallan, Flint, Miss B. ALLEN.

543/3. *VERONICA OFFICINALIS* L., var. *INTEGRA* Dr. Glen Fiagh, Angus, 1926, DRUCE.

543/4. *V. CHAMAEDRYIS* L., var. *LAMIFOLIA* Beck. Stansteadbury, Herts, June 1927, DRUCE.

*543/12. *V. HUMIFUSA* Dicks. Cronkley pastures, N.W. Yorks, LOUSLEY, not mentioned in Lees' "Flora of West Yorks" or "Top. Bot."

†543/22. *V. (HEBE) LONGIFOLIA* L. Great Crosby, S. Lancs, TRAVIS.

†543/31. *V. PEREGRINA* L. Letterkenny, Donegal, BROWNING.

†544/1. *ORTHOCARPUS PURPURASCENS* Benth. Hythe Quay, Colchester [2382], BROWN, det. THELLUNG.

(Mr D. Lumb has kindly determined the Euphrasias.)

545/1. *EUPHRASIA STRICTA* Host. Yetholm, Roxburgh, Miss I. M. HAYWARD, plants which might be referred here, of which it has the habitat, teste D. LUMB; Glen Docharty, Gairloch, W. Ross, DRUCE, plants nearer to *stricta* than to *nemorosa*; from Thirlmere, Cumberland; Wrotham, Kent, H. E. FOX.

545/2. *E. BOREALIS* Wettst. Golf Links, Bunrana, Donegal, H. E. FOX; Pease Cottage, W. Sussex (mixed with *curta*, var. *glabrescens*), J. W. WHITE; Port Henderson, Gairloch, W. Ross, DRUCE; Deerness, Orkney, 1884, IRVINE FORTESCUE; Sedbergh, Yorks, TRAPNELL.

545/3. *E. BREVIPILA* Burn. & Gremli. Red Bridge, Miss I. M. HAYWARD; Kewstoke, N. Somerset [3232], 1907, E. S. MARSHALL, as *borealis*; Gruinard, Longa Isle, Big Sand, Gairloch, W. Ross; Kenfig, Glamorgan; Kenmare, Kerry; Banchory, Kincardine, DRUCE; Black Hall, Durham, H. E. FOX; Sedbergh, Yorks, TRAPNELL.

545/5. *E. NEMOROSA* Pers., var. *CILIATA* Drabble. Hills above Tibbie's, Selkirk, Miss I. M. HAYWARD; Mynach Valley, Cardigan, H. E. FOX; Penhallows Moor, Cornwall, VIGURS, as *brevipila*; Glen Docherty, Braemore, W. Ross, DRUCE; Sedbergh, Yorks, TRAPNELL; Thirlmere, Cumberland; Wrotham, Kent, H. E. FOX.

545/7. *E. HIRTELLA* Jord. Gyfarllwyd, Cardigan, at 1000 ft. in dry hilly pasture, July 30, 1918, H. E. FOX; Gairloch, W. Ross, New to Scotland, DRUCE.

545/10. *E. OCCIDENTALIS* Wettst. Derrynane, Kerry, DRUCE; Mochras, Llanbedr, Merioneth, J. H. SALTER.

545/11. *E. SEPTENTRIONALIS* Dr. & Lumb. Downreay, Caithness, 1885, H. E. FOX. Townsend in *B.E.C. Report*, referring to these plants, says, "It is an unusual form of *nemorosa*, teeth of leaves remarkably blunt." But this handsome plant does not recall *nemorosa*. I saw it there and at Farr, W. Sutherland. Lumb says of certain robust specimens that though there are "few glands on the stem, and in three instances there are much larger flowers than any previously seen," they are *septentrionalis*. He has also no hesitation in naming some plants gathered by Mr Barton in 1918 and 1919 from a sandy roadside, Cornwall, as *septentrionalis*.

545/14. *E. ATROVIOLACEA* Dr. & Lumb. Glen Fiagh, Angus, July 1926, new to the Mainland of Scotland, as it was hitherto for Orkney only, DRUCE; Merrow Down, Guildford, Surrey; Ballard Down, Studland, Dorset, H. E. FOX, with more prominent flowers than the Orkney plant.

545/15. *E. MICRANTHA* Fr. Gairloch, W. Ross; Strachan, Kincardine, DRUCE.

545/16. *E. SCOTICA* Wetts. Gyfarllwyd, Cardigan; Handa Isle, W. Sutherland, Loch Maree, Sands, W. Ross (*minima* looking plants), DRUCE; above Gwrydd, Plynlimmon, Cardigan, 2000 ft., J. H. SALTER.

545/19. *E. ROSTKOVIANA* Hayne. Little Frensham pond, Surrey, TRAPNELL; Banchory, Kincardine; Mellon Charles, W. Ross, DRUCE; Ballyvaughan, Co. Clare, 1927, O'KELLY; Gyfarllwyd, Cardigan; Ayrshire, H. E. FOX; very small plants, Lossiemouth, Elgin [2080], E. S. MARSHALL, as *brevipila*; Fisherbriggs, N. Aberdeen, FRASER.

545/21. *E. KERNERI* Wetts. In beautiful condition, flowering most freely, on the slopes of Crowell Hill, Oxon, both the large and small-flowered forms; Derrynane, Kerry; Stibbington, Hunts; on Brecon Beacon, Brecon, DRUCE; Faldon Side, Peebles, Miss I. M. HAYWARD; Crantown Chase, Dorset; Woody Bay, N. Devon, H. E. Fox; Ballyvaughan, Co. Clare, O'KELLY; Jedburgh, Roxburgh, Preb. BURDON; Sedbergh, York, TRAPNELL. Forma GLANDULOSA D. Lumb. Limestone Down near Dovedale, Staffs, 1926, DRUCE.

*546/4. *BARTSIA VISCOSA* L. Dog's Bay, Galway, C. D. CHASE; Six Towns, Londonderry, BARNETT and STENDALL; near Edenbridge, W. Kent, found by Mr MEADE WALDO, and identified by Mr JUSTICE TALBOT, a most interesting extension of its range.

549/3. *MELAMPYRUM PRATENSE* L. (EUPRATENSE), var. ALPESTRE (Brugg.) Beauv., var. SCOTIANUM Beauv. Altnaharra, W. Sutherland, 1919, DRUCE; Alnwick Moor, Northumberland, 1869, W. RICHARDSON. Var. ERICETORUM D. Oliv. Bellsyde, Linlithgow, 1834; Loch Earn, St Fillans, Perthshire; Berriedale, Caithness, W. R. LINTON; Hope Mountain, Flint, C. WAKEFIELD; Aberglaslyn, Carnarvon, Miss C. E. PALMER and H. E. FOX. Var. MONTANUM Johnst., f. DEBILE. Watendlath, Cumberland, June 1920, WATERFALL; Braemar, S. Aberdeen, DRUCE; Llanrwst, Carnarvon, 1887, BAILEY; Abergynolwyn, Merioneth, H. E. Fox. Var. COMMUTATUM Tausch, caulis basi ramosis medio folio intercalaria (2-5 paria) gerens, sub-var. CONCOLOR Beauv. Upton Wood, Warwick, 1920; Silverdale, Lancs, DRUCE. Var. DIGITATUM (Schm.), f. LANCEOLATUM Spenn. Marchwood, New Forest, S. Hants, PIQUET; Wellington College, Berks, as a robust form; Madeley, Staffs, DRUCE; Wrotham, Kent; Hardwick, Suffolk, 1869, H. E. Fox; New Forest, S. Hants, DRUCE; Farley, Surrey [2095], June 1919; Horsley, Surrey [2125], 1919, BRITTON; the latter "ad sub-var. *laurifolium* vergens;" Wakerly, Northants, DRUCE, "ad *britannicum* vergens." Sub-var. OVATUM Spenn., 1826. Weston in Gordano, N. Somerset, 1920, Miss I. M. ROPER; New Forest, S. Hants, DRUCE; Watton, Norfolk, ROBINSON, not very typical. Var. BRITANNICUM Beauv. Alton, Hants, DRUCE. Var. INTEGERRIMUM Döll. Welwyn, Herts, LITTLE and SHERRIN; Frankland Wood, Durham, H. E. FOX, the latter "ad var. *hians* vergens;" probably the same from Mynach Falls, Cardigan, DRUCE. Var. HIANS Druce. Banchory, Kincardine, DRUCE, "ad *platyphyllum* vergens."

550/4. *OROBANCHE MAJOR* L. (ELATIOR). Wimborne, Dorset; Dean Hill, Wilts, HALL.

550/6. *O. RETICULATA* Wallr., var. PROCERA Dr. Specimen 22 in. high, inflorescence 9 in. long, Linton Common, York, A. MALINS-SMITH.

550/10. *O. MINOR* Sm. Growing on *Crepis capillaris*, Crewkerne, Somerset, H. DOWNES.

- 552/2. *UTRICULARIA MAJOR* Schmid. Near Hurn, S. Hants, HALL.
- †558/1. *MENTHA ROTUNDIFOLIA* × *SPICATA* = *M. CORDIFOLIA* (Opiz) Fraser. Garden origin, Torquay, S. Devon, W. HERRIDGE; Sholing, S. Hants, RAYNER. Var. *DOURENSIS* Fraser. Aberdour, N. Aberdeen, FRASER.
- †558/2. *M. ALOPECUROIDES* Hull. Gruinard, W. Ross, DRUCE; roadside near Llanfihangel, Brecon, Miss I. M. ROPER; Elveden, W. Suffolk, Miss CABLE.
- 558/3. *M. LONGIFOLIA* Huds. × *ROTUNDIFOLIA* = *VILLOSA* Huds. Portquin, Cornwall, 1910, H. E. FOX, as *Alopecuroides*; Yarnton, Oxon, DRUCE. × *NILIACA* Jacq., var. *NEMOROSA* (Willd.). Newton Loan, Perth, Miss YOUNG.
- 558/6. *M. PIPERITA* L. Callander, W. Perth, Miss YOUNG; Kenmare, Kerry; Boughrood, Radnor, DRUCE; Water of Fyvie, etc., N. Aberdeen, FRASER.
- 558/7. *M. AQUATICA* L. As a small form at Kenfig, Glamorgan; with a varying number of verticillasters, Wytham, Berks, DRUCE. Var. *SUBGLABRA* Baker. Aberthin, Glamorgan, 1926, DRUCE and Miss VACHELL. Var. *ORTMANNIANA* H. Braun. Wytham, Berks, DRUCE. Var. *MINOR* Sole. Watcombe, St Mary Church, S. Devon, Miss LARTER; Kenmare, Kerry, DRUCE; Holmwood, Surrey, LOUSLEY. Var. *MAJOR* Sole (*ACUTA* Briq.). Cheltenham, W. Gloster; Walsall, Staffs, DRUCE; Coldharbour Village, Surrey, LOUSLEY. × *LONGIFOLIA* = *M. PALUDOSA* Sole. Applecross, W. Ross, 1893, DRUCE, as *rubra*.
- 558/8. × *M. HIRCINA* Hall, var. *HIRSUTA* Fraser. The Dour Burn, Aberdour, N. Aberdeen, FRASER.
- 558/9. × *M. VERTICILLATA* L. Wytham, Berks, DRUCE, as the Linnean type which is very rare. Var. *OVALIFOLIA* H. Braun. Whitewell, Lydstep, Pembroke, ARNOTT; Boughrood, Radnor; Kenfig, Glamorgan; Wytham, Berks; Dour Burn, etc., N. Aberdeen, FRASER; Kenmare, Derrynane, Kerry; Sidmouth, Devon; Wood Perry, Oxon; Dovedale, Staffs and Derby, DRUCE; Wynde Park Lake, Hereford, Miss E. ARMISTAGE. Var. *RIVALIS* Briq. Berehaven, Co. Cork; Callander, M. Perth, DRUCE; Fingringhoe, N. Essex [2346], BROWN.
- 558/10. × *M. GENTILIS* L. Tay side, Perth, DRUCE.
- 558/13. *M. ARVENSIS* L., var. *DENSIFOLIOLATA* Briq. S. Tawton, Devon, DRUCE; Buncrana, Donegal, H. E. FOX. Var. *CUNEIFOLIA* Lej. & Court. Near this, Galashiels, Selkirk, Miss I. M. HAYWARD. Var. *PRAECOX* Sole. Barrington Combe, N. Somerset, Miss TODD. Var. *AUSTRIACA* Briq. Berwick-on-Tweed, Northumberland, DRUCE.

- 558/14. *M. PULEGIUM* L. Gorley, S. Hants, HALL.
- 559/1. *LYCOPUS EUROPAEUS* L., var. *GLABRESCENS* Schimideley. Ware, Herts, 1927, DRUCE.
- 561/5. *THYMUS PYCNOTRICHUS* Ronn. Fishguard, Pembroke, DRUCE.
- 561/11. *T. BRITANNICUS* Ronn. Glen, Peebles; Derrynane, Co. Kerry, DRUCE.
- *†562/1. *SATUREIA HORTENSIS* L. Splott, Glamorgan, SMITH.
- 562/5. *S. ADSCENDENS* Jord. A small-leaved form, near Barnstable, Devon, Countess FORTESCUE.
- 562/8. *S. ACINOS* Scheele. Banchory, Kincardine, DRUCE.
- †565/1. *MELISSA OFFICINALIS* L. Strachan, Kincardine; Kenmare, Kerry, DRUCE.
- *†570/3. *DRACOCEPHALUM PARVIFLORUM* Nutt. Splott, Glamorgan, SMITH.
- 573/1. *PRUNELLA VULGARIS* L., var. *NEMORALIS* Bég. Woody Bay, N. Devon, H. E. FOX; St Brelade's, Jersey, PIQUET; growing with the type, Shrawley Wood, Worcester; Crabtree, Winchester, Hants, DRUCE; Edinburgh, 1848, SKENE.
- 573/2. *P. LACINIATA* L. In a pasture, with *P. vulgaris*, Great Wymondley, Herts, 1927, new to this district though recorded by C. E. Moss for Royston, LITTLE.
- 577/1. *STACHYS ALPINA* L. Found in July last (1927) in some quantity a few miles from Cerrig-y-Druidion, Denbighshire. It was growing in three or more places on the edge of a wooded bank, in partial shade, on limestone. Its associates were *Agrimonia odorata*, *Origanum vulgare*, *Stachys sylvatica*, and *Urtica dioica*. The locality is away from houses, and there does not seem any reason to doubt that the plant is indigenous, A. WILSON.
- †577/9. *S. SALVIFOLIUS* Ten. Walton, S. Lancs, TRAVIS, teste THELLUNG.
- †577/10. *S. LANATA* Jacq. St Aubin's, Jersey, DRUCE.
- 579/1. *LEONURUS CARDIACA* L. By the Medway, Stoke, Kent, Miss STEVENS.
- 581/4. *LAMIUM HYBRIDUM* Vill. Growing with *purpureum* and *amplexicaule* at Kenfig, Glamorgan, Miss VACHELL; White Hall Farm, Littlefoot, Cambridge, 1927, in a crop of sugar-beet, LITTLE.

*581/10. *L. GALEBODOLON* Cr. Near Kilcarty Bridge, Co. Carlow, A. W. STELFOX in *Ir. Nat.* 203, 1927.

583/1. *BALLOTA NIGRA* L., var. *MOLLISSIMA* Druce. Very typical near Kenfig, Glamorgan, June and August 1927, probably a sub-species, DRUCE. Var. *ALBA*. Walsall, Staffs, DRUCE and Sir ROGER CURTIS.

588/3. *PLANTAGO CORONOPUS* L., *lusus FOLIACEA*. Spikes almost replaced by leafy bracts, Perranporth, Cornwall, TRESIDDER.

588/8. *P. LANCEOLATA* L., var. *ALTISSIMA* (L.). A form with compound head, Swanage, Dorset, Miss TODD, det. THELLUNG. A prolific form at Cummertrees, Dumfries, Miss R. BRIGHT.

588/10. *P. MAJOR* L., var. *vel lusus ROSEA* (Ger.). Near Ballyvaughan, Co. Clare, O'KELLY. This monstrosity is figured in Gerard's *Herbal* 420, 1633, as *Plantago rosea spicata*.

+594/1. *CORRIGIOLA LITTORALIS* L. Barry, Glamorgan, SMITH, MELVILLE and DRUCE. A curious adventive.

(The Amaranths have been identified by Dr Thellung.)

+596/1. *AMARANTHUS CAUDATUS* L. Iver, Bucks, MELVILLE.

+596/2. *A. HYBRIDUS* L., sens. lat., probably *A. QUITENSIS* H.B.K. Splott, Glamorgan, 1926, DRUCE and SMITH.

+596/4. *A. CHLOROSTACHYS* Willd. Itchin Abbas, Hants, C. SANDWICH. Var. *ARISTULATUS* Thell. Dagenham, Essex, MELVILLE.

+596/6. *A. RETROFLEXUS* L. Very abundant at Ware, Herts, DRUCE; Wool, Dorset, HALL. Var. *DELLEI* Thell. Splott, Glamorgan [2611], MELVILLE.

+596/11. *A. SYLVESTRIS* Desf. Dagenham, Essex, MELVILLE, det. KEW.

+596/11. *A. ANGUSTIFOLIUS* L., var. *POLYGONOIDES* (Moq.) Thell., forma *INTERMEDIUS* Thell. Barry, Glamorgan, DRUCE.

(The Chenopods have been kindly named by Dr Murr.)

600/3. *CHENOPODIUM BONUS-HENRICUS* L. Kirkstone Pass, Westmorland, 1480 ft., WEBB.

600/4. *C. HYBRIDUM* L. Brambridge, Hants, Miss TODD; Wilton, Wilts, Miss CAMPBELL.

600/7. *C. OPULEFOLIUM* Schrad., var. *MICROPHYLLUM* Murr. Didcot, Berks; [Funchal, Madeira, 1909], DRUCE.

600/8. *C. ALBUM* L., var. (sub-sp.) *PAUCIDENS* Murr. Abingdon, Berks, DRUCE. Var. (sub-sp.) *LANCROLATIFORME* Murr. Abingdon, Berks; Burton-on-Trent, Staffs; Ware, Herts, DRUCE. Var. (sub-sp.) *SUBFICIFOLIUM* Murr. Bristol city tip, W. Gloster, Miss TODD; Cardiff, Glamorgan, DRUCE. Var. *VIRIDESCENS* St Am. Waterville, Co. Kerry, DRUCE; Leicester, BEMROSE. f. *PAUCIDENTATA* Murr. Didcot, Berks, DRUCE. Var. *PEDUNCULARE* Bert. Bristol city tip [26], W. Gloster, Miss TODD; Ware, Herts, DRUCE. [Var. *PSUEDO-BORBASII* Murr. Funchal, Madeira, 1909, DRUCE]. × *OPULIFOLIUM* = *C. PREISMANNI* Murr. Barry, Glamorgan, DRUCE, SMITH and MELVILLE. × *STRIATUM* = *C. SUBSTRIATUM* Murr. Near the G.W.R. Goods Depot, Bristol, W. Gloster, DRUCE.

+600/11. *C. LEPTOPHYLLUM* Nutt. Hitchin, Herts, Miss CABLE.

600/13. *C. GLAUCUM* L. var. *MICROPHYLLUM* Murr. Syston Common, Mangold field, W. Gloster, C. SANDWITH. To this rather than to *ambiguum* R. Br. Murr refers Mrs Sandwith's specimen from St Anne's, Bristol.

600/14. *C. VULVARIA* L., f. *RHOMBOIDALE* Murr. Southwold, Suffolk, 1890, Miss C. E. PALMER.

600/15. *C. POLYSPERMUM* L., var. *SPICATUM* Moq., and var. *CYMOsum* Moq. Growing together, with intermediates, White Hall Farm, Littlefoot, Cambs, 1927, LITTLE.

+600/36. *C. CAPITATUM* Asch. Dry Sandford, Berks, GAMBIER-PARRY; Newtimber, Sussex, Lady ALETHEA BUXTON.

606/3. *ATRIPLEX PATULA* L., var. *BRACTEATA* Westerl. Coast, Newcastle, Co. Down, Col. SANDERSON; Ware, Herts; Burton-on-Trent, Staffs; Bristol, W. Gloster, DRUCE.

606/6. *A. DELTOIDEA* Bab. Ware, Herts; Didcot, Berks, DRUCE.

+606/11. *A. TATARICA* L. Studland, Dorset, Miss TODD.

+607/1. *AXYRIS AMARANTOIDES* L. Par, Cornwall, MEDLIN; waste ground, Queen Street, Hitchin, Herts, LITTLE, det. WILMOTT.

611/5. *SALICORNIA RAMOSISSIMA* Woods. Flats below Hengistbury Head, S. Hants, LOUSLEY and HALL, det SALISBURY.

611/7. *S. PROSTRATA* Pallas. Mylor Creek, Falmouth, Cornwall, TRESIDDER, det. SALISBURY.

615/11. *POLYGONUM MINUS* Huds. Wareham, Dorset, HALL.

†615/19. *P. PATULUM* M. Bieb. Ware, Herts, DRUCE and Miss TROWER.

†615/28. *P. AMPLEXICAULE* Don. Bridge End, Ramelton, Donegal, BROWNING. Var. *oxyphyllum* Don. Fort Stewart, Donegal, BROWNING.

†615/31. *P. POLYSTACHYUM* Wall. Mardley Heath, Herts, H. PHILIPS and Miss CABLE.

†615/32. *P. CUSPIDATUM* S. & Z. Waste ground, Diss, Norfolk, H. L. GREEN.

†615/33. *P. SACHALINENSE* Schmidt. Dagenham, Essex, DRUCE and MELVILLE.

†616/2. *FAGOPYRUM TATARICUM* Gaertn. Colwick, Notts, H. H. MATHER.

618/1. ×*RUMEX WEBERI* Fisch.-Benz. (*HYDROLAPATHUM* × *OBTUSIFOLIUS*). Shefford, Berks; Culeaze, Dorset; Wilsford, Wilts, DRUCE.

618/12. *R. PALUSTRIS* Sm. Peat moor near Glastonbury, N. Somerset, Col. G. WATTS. *R. limosus* Thuill. is a hybrid of *maritimus* and *conglomeratus*, and thus differs from *palustris*, which is a true species.

618/13. *R. MARITIMUS* L. 1. Typical. White Hall Farm, Littleport, Cambs, 1927, LITTLE. 2. Dwarf form, the whole plant only 2 in. high, Ringmere, S. Norfolk, 1926, E. F. D. BLOOM, ex LITTLE. Ascher-son & Graebner (*Fl. des N.O. deutschen Flachlandes*, 267) give a form "*humilis* Peterm. Fl. Lips. 267 (1838). Zwergform Setten." But as they place it after *R. palustris*, which they make the hybrid *R. conglomerato-maritimus*, it is doubtful whether a dwarf plant of *R. maritimus* or of *R. palustris* Sm. is intended, LITTLE. Type also from Swansea foreshore, Glamorgan, WEBB.

†618/17. *R. SCUTATUS* L. In the grounds at Godolphin House, Cornwall, J. W. HARTLEY.

†618/19. *R. SALICIFOLIUS* Weinm. Newport, Isle of Wight, LONG.

†618/20. *R. PATIENTIA* L. In great plenty and forming a conspicuous feature at Dagenham, Essex, shown to me by R. MELVILLE, DRUCE.

†618/21. *R. BUCEPHALOPHORUS* L. Newport, Isle of Wight, LONG; Barry, Glamorgan, DRUCE and SMITH.

†618/29. *R. OBOVATUS* Danser. Lambridge, Oxon, Mrs WEDGWOOD. This came from the street refuse of Henley.

628/9. *EUPHORBIA VIRGATA* W. & K. Newhaven, Sussex, Miss PICKARD.

628/11. *E. CYPARISSIAS* L. Welbeck, Notts, GOULDING.

628/11. × *E. VIRGATA*? Hulme, Northumberland. This is from Syme's locality for *pseudo-Cyparissias* Jord., which is a doubtful British plant, DRUCE, det. THELLUNG.

631/1. *BUXUS SEMPERVIRENS* L. In great quantity, Wexcombe, Wilts, DRUCE and Mrs BARING.

632/1. *MERCURIALIS PERENNIS* L., var. *OVATA* Mitten, ? of Stendal, Ingleborough, Yorks, Miss TODD.

*+632/2. *M. ANNUA* L. Burton-on-Trent, Staffs, DRUCE.

633/6. *ULMUS MINOR* Mill. (*STRICTA* Lindl.), var. *SARNIENSIS* Loud. Near Ware, Herts, DRUCE.

+636/1. *FICUS CARICA* L. On the cliffs at Mumbles, Glamorgan, far out of reach, WEBB.

637/1. *URTICA DIOICA* L., var. *ANGUSTIFOLIA* W. & G. Eastleigh, S. Hants, Miss TODD, a form with exceptionally large teeth.

637/2. *U. URENS* L., var. *PARVIFLORA* Wedd. Marston brickyards, Oxon, August 1927, perhaps adventive, DRUCE.

+639/1. *HELIXINE SOLEIROLII* Req. By a stream side running down a cliff about 3 miles east of Sidmouth, S. Devon, no house within a mile, F. A. SOWTER; found by Père Burdo on old walls in St Peter's Valley, Jersey, ex ATTENBOROUGH.

+643/2. *ALNUS INCANA* Willd. Ellercow, Winskill, Cumberland, H. BRITTEN in *N.W. Nat.* 100, 1927.

+646/3. *QUERCUS CERRIS* L. Near Ware, Herts, DRUCE.

650/1. *SALIX PENTANDRA* L. Nant Glyn, Denbigh, WEBB; Verwood, Dorset, J. H. SALTER.

650/2. *S. FRAGILIS* L., var. *DECIPIENS* (Hoffm.). Den of Aberdour, N. Aberdeen, FRASER. × *TRIANDRA* = *ALOPECURIROIDES*. Den of Aberdour, N. Aberdeen, FRASER.

650/3. *S. ALBA* L. A large number of seedlings, 1-2 years old, growing upon mud and peat dredged from the bed of the River Wissey, near Stoke Ferry, W. Norfolk, 1927, LITTLE. Var. *VITELLINA*. Den of Aberdour, N. Aberdeen, FRASER.

650/4. *S. TRIANDRA* L. St Neots, Beds, as *speciosa* Host? but Mr Fraser gives it the above name. Specimens of this, *viminalis*, *triandra*

and *fragilis* were seeding in thousands on mud, dredged from the River Lea at Hertford in October last, DRUCE.

650/5. *S. PURPUREA* L. At Wretton Fen, and near Denver Station, W. Norfolk, 1927. There is a good deal of this with narrow and small leaves, small enough leaves, I think, for Smith's type, but the bushes are erect, instead of drooping in habit, LITTLE. Var. *LAMBERTIANA* (Sm.). Den of Aberdour, N. Aberdeen; Loch of Skene, S. Aberdeen, FRASER.

650/6. \times *S. ACUMINATA* Sm. Wallington Hall and Wretton Fen, W. Norfolk, 1927, LITTLE; Old Pitsligo, N. Aberdeen, FRASER.

650/8. *S. CAPREA* \times *VIMINALIS* = *S. MOLLISSIMA* (Sm.). Red Hill, Northants, DRUCE; Water of Fyvie, N. Aberdeen, FRASER.

650/9. *S. AURITA* \times *CINEREA* = *S. LUTESCENS* Kern. Red Hill, Northants, July 1927, DRUCE; Skene, S. Aberdeen, FRASER.

650/9. *S. AURITA* \times *VIMINALIS*. Den of Aberdour, N. Aberdeen, FRASER.

650/10. *S. CINEREA* \times *VIMINALIS* = *S. FERRUGINEA* (G. And.). Shillingford, Berks, DRUCE.

650/11. *S. REPENS* L., var. *INCUBACEA* (L.). Roseheath, N. Aberdeen. Sub-form. *SERICEA* Fraser with above and with var. *ARGENTEA* (Sm.) FRASER.

660/1. *LIPARIS LOESELII* Rich., var. *OVATA* Riddels. Sandhills east of Port Talbot, Glamorgan. Over 100 plants were seen by Miss Insole and myself in July 1927. They were in excellent condition and were fruiting well. The discovery of this plant in a place far removed from the only other locality in which it is known to occur in the county is of considerable interest, E. VACHELL. Conducted by Miss David and Miss Vachell, I saw it *in situ* last August and counted about a hundred specimens. It was then of course in fruit. The plants bore from two to three seed-bearing capsules, DRUCE.

663/2. *LISTERA CORDATA* Br. Near Carberry, Midlothian, Lady ELPHINSTONE.

667/3. *CEPHALANTHERA LONGIFOLIA* Fritsch. Yowlas Valley, N. Yorks, FOGGITT.

668/1. *HELLEBORINE PALUSTRIS* Schrank (floribus albis). The white-flowered form occurs in considerable abundance near Kenfig Pool, Glamorgan, with hundreds, if not thousands, of normally-coloured flowers. The white flowers show a tendency to become slightly larger than the others and the crenations on the labellum rather more defined.

My attention was drawn to both forms during the summer of 1927 by the number of flies and aphides which they had entrapped by means of the sticky fluid secreted in the cavity of the labellum. The bodies of the dead flies (a species of *Limnophora*) blocked up the entrance to the nectary thus preventing cross-pollination, while the aphides, once entangled, were seen to remain for many hours imprisoned, finding it practically impossible to free their legs. By far the greater proportion when first observed were dead. I sent specimens of the aphid to Mr H. Hallet, F.E.S., who submitted them to the best authorities. Mr Laing stated that he and Professor Theobald had decided that the aphid was new, and that a description of it should, all being well, be included in the appendix of Professor Theobald's "Monograph of the British Aphidae" as *Aphis epipactisi*. One analogous case can be quoted—a botanist while searching in 1926 for *Orchis clodes* in a Surrey bog found that "nearly every blossom had a little fly in the top of the spur but when the flies were removed they were dead or else intoxicated with nectar." E. VACHELL.

669/4. *ORCHIS USTULATA* L. Meadows near Thirsk, Yorks, FOGGITT.

669/7. *O. INCARNATA* L. Type, Southwick, Northants; Culeaze, Dorset, DRUCE. Var. *PULCHRIORA* Dr. Southwick, Northants, DRUCE. Var. *DUNENSIS* Dr. Plentiful at Kenfig, Glamorgan; Birkdale, S. Lancs. very beautiful, gathered with Hon. Mrs Adeane and Hon. Mrs Guy Baring on Eclipse Day, 1927, DRUCE. ×*PRAETERMISSA*. Culeaze, Dorset, rare, DRUCE.

669/8. *O. PRAETERMISSA* Dr. Essex, Lady RAYLEIGH; Wareham and Ridge, Dorset; also as very slender and as very robust forms, Culeaze, Dorset; Derrynane, Co. Kerry, DRUCE; Oughton Head, Norfolk, Miss CABLE; Corfe, Dorset, HALL; Ham Ponds, Kent, H. WALKER.

669/10. *O. MACULATA* L. The true plant in varying shades of colour, and hybridising with *praetermissa* at Culeaze, Dorset, June 1927, DRUCE; Linn Gill, Yorks, Miss TODD; Kenfig, Glamorgan; Kenmare, Kerry, DRUCE. Var. *CANDIDISSIMA* (Weber) Dr. (*LEUCANTHA*). Very small specimens, Corfe, Dorset, DRUCE; Moors, Linnfad, Yorks, Miss TODD. ×*PRAETERMISSA* = *O. HALLII* Dr. Culeaze, Dorset, DRUCE and Major GUTHRIE WATSON. ×*PURPURELLA*. Widdycombe Fell, Durham, DRUCE.

669/11. *O. FUCHSII* Dr. Cowleaze, Dorset, DRUCE. ×*MACULATA* = *TRANSIENS* Dr. Culeaze, Dorset, DRUCE. ×*PRAETERMISSA* = *O. MORTONII* Dr. Culeaze, Dorset; Southwick, Northants, DRUCE.

669/17. *O. PYRAMIDALIS* L. Derrynane, Kerry, on sea sand, and of a darker colour (purple-red rather than rose-red) than our English form, August 1927, DRUCE.

- 669/18. *O. HIRCINA* Cr. Offham, Lewes, Sussex, ex Miss COTTES.
- 672/3. *OPHRYS APIFERA* Huds., var. Near Westbury, Wilts, E. JENKINSON.
- 672/4. *O. TROLLII* Heg. & Heer. Hardwicke, E. Gloster, J. W. HAINES.
- 672/5. *O. MUSCIFERA* × *SPHEGODES* (with *O. MUSCIFERA*). Wye Down, Kent, Miss B. BRIGHT.
- 674/4. *HABENARIA VIRIDIS* Br., var. *VAILLANTII* (Ten.) Fernald. On Ivinghoe Beacon, Bucks, abundant, with the type, 1927, DRUCE; Avingdon and Winchester, Hants, 1910, Canon VAUGHAN.
- †677/1. *HERMODACTYLUS TUBEROSUS* (L.). On the edge of a sand-hill, near the lifeboat house, Woolacombe, N. Devon, 1927, ex W. D. MILLER.
- †680/1. *SISYRINCHIUM ANGUSTIFOLIUM* Mill. Near Water Eaton Manor, Oxon, FILSELL; Ainsdale dunes, S. Lancs, F. W. HOLDER.
- †681/2. *GLADIOLUS COMMUNIS* L. Alien. A single specimen in the herbage alongside the road, Strensall Common, Yorks, no house within half-a-mile, A. WENTWORTH PING.
- †683/1. *TRITONIA CROCOSMIFLORA* Nich. Derrynane, Co. Kerry; on a rubbish heap at Christchurch, S. Hants, DRUCE.
- †684/3. *NARCISSUS BIFLORUS* Curt. In great plenty in a pasture field near Kenfig, Glamorgan, shown to the Botanical Excursion members in June 1927, Miss VACHELL.
- †686/1. *LEUCOJUM VERNUM* L. Meadow, East Dereham, Norfolk, EDWARD ANDERSON.
- 700/1. *PUBILARIA PLANIFOLIA* Melv. Fruiting fairly freely, Derrynane, Co. Kerry, August 1927, DRUCE.
- *702/4. *ALLIUM VINEALE* L. Mull of Galloway, Wigton, see *Trans. Bot. Soc. Edin.* 337, 1927.
- 706/3. *SCILLA NONSCRIPTA* (L.) H. & L., var. *BRACTEATA* Dr. Wood at Aldbourne, Wilts, Miss TODD. Forma *STUARTIÆ* Dr. Rock Hill, Worcester, increasing in its original locality and sent by its discoverer on May 2, 1927. See *Rep. B.E.C.* 49, 1920.
- 707/2. *ORNITHOGALUM UMBELLATUM* L. Fields at Redenham, Hants, in very great quantity, Hon. Mrs G. BARING and Mrs HILL DILLON.

†707/3. *O. NUTANS* L. Forge Wood near Worth, ~~Kent~~, WALLACE and LOUSLEY. 124

†709/2. *FRITILLARIA PYRENAICA* L. In a lane near Stock Gaylard, Dorset, 1924, E. F. HALL, as *Meleagris*.

718/4. ×*JUNCUS DIFFUSUS* Hoppe. Culceaze, Dorset, DRUCE; East Lulworth, Dorset, HALL.

†718/16. *J. TENUIS* Willd. Cwm Bycham, Brecon, 1927, GILMOUR; *Avonmouth Dock, W. Gloster, Miss I. M. ROPER; Broadcath, Cheshire, H. DE W. MARRIOTT in *N.W. Nat.* 29, 1927.

†720/1. *PHOENIX DACTYLIFERA* L. Christchurch, S. Hants; Burton-on-Trent, Staffs; near Bristol, W. Gloster, etc., DRUCE.

†726/1. *CALLA PALUSTRIS* L. In Aydon Dene, above the village of Corbridge, S. Northumberland, 1927, ex O. BEMROSE.

732/1. *SAGITTARIA SAGITTIFOLIA* L. Canal, Briton Ferry. The third locality in Glamorgan, WEBB.

*739/1. *ZANNICHELLIA REPENS* Boenn. Canal at Muckley Corner, Staffs, DRUCE and Sir ROGER CURTIS.

†746/10. *SCIRPUS HOLOSCHOENUS* L. Avonmouth, W. Gloster, C. SANDWITH.

753/4. *CAREX VESICARIA* L. Mynydd y Glu, Glamorgan, DRUCE and Miss VACHELL.

753/7. ×*C. PANNEWITZIANA* Figg. = *C. INFLATA* × *VESICARIA*. Mynydd y Glu, Glamorgan, DRUCE and Miss VACHELL.

753/12. *C. STRIGOSA* Huds. Near Nelson, Lancs, A. TURNER.

753/13. *C. HELODES* Link. Cwm Bycham, Brecon, GILMOUR; near Stockport, Lancs, Canon H. H. CLAYE; near Nelson, Lancs, A. TURNER; near Petersfield, Hants, BROWNING.

753/19. *C. FULVA* Good. Glandyfi, Cardigan, Mrs DEBENHAM; near Nelson, Lancs, A. TURNER.

753/21. *C. LEPIDOCARPA* Tausch. Derrynane, Co. Kerry; Brecon Beacon, Brecon, DRUCE.

753/23. *C. EXTENSA* Good. Penrice, Glamorgan, DRUCE and Miss VACHELL.

753/34. *C. PALLESCENS* L., var. *UNDULATA* Kunze. Near Nelson, S. Lancs, A. TURNER; Budleigh Salterton, Devon, Major ORME.

753/45. *C. ELATA* All. A rather slender form at Southwick Bog, Northants. Rare and confined to the east of the county, DRUCE.

753/51. *C. CONCOLOR* R. Br. (*C. RIGIDA* Good.). Mickle Fell, N.W. Yorks, LOUSLEY.

753/57. *C. REMOTA* × *VULPINA* = *C. AXILLARIS* Jord. Near Magpie Green, Northam, Suffolk, H. L. GREEN.

753/58. *C. CANESCENS* L. Typical at Mynydd y Glu, Glamorgan, DRUCE; near Nelson, S. Lancs, A. TURNER. Var. *FALLAX* Kurtz. Cautley Crag, N.W. Yorks, TRAPNELL. The finder says it is much later in flowering than the true *canescens* which grows 8 miles away but at an altitude only slightly lower. I do not remember seeing it from England before. Var. *ROBUSTIOR* Blytt. Between Mickle and Cronkley Fell, N.W. Yorks, LOUSLEY.

753/61. *C. PAIRAKI* Schultz. Lizard, Cornwall, H. T. DEVIS.

+754/5. *PANICUM LAEVIFOLIUM* Hack. Coup near Airdrie, Lanark, GRIERSON, det. THELLUNG.

+754/8. *P. CRUS-GALLI* L., var. *LONGIARISTATUM* Lej. Dagenham, Essex, MELVILLE.

+754/10. *P. SANGUINALE* L. Fine examples on waste ground, Didcot, Berks, DRUCE.

+756/2. *SETARIA VIRIDIS* Beauv., var. *WEINMANNI* (R. & S.). Iver, Bucks, MELVILLE.

+763/2. *SORGHUM HALEPENSE* Pers. Avonmouth Docks, W. Gloster, H. J. GIBBONS; Didcot, Berks, DRUCE.

+765/3. *PHALARIS AQUATICA* L. (*CAERULESCENS* Desf.). Bristol, W. Gloster, C. SANDWITH.

+765/6. *P. BRACHYSTACHYS* Link. Hackney, Middlesex, MELVILLE, teste KEW.

*+765/8. *P. ANGUSTA* Nees. Bristol, W. Gloster, C. SANDWITH; Splott, Glamorgan, SMITH.

766/1. *ANTHOXANTHUM ODORATUM* L. A kneed form was found at Marlborough by Mrs WEDGWOOD, but it is not *Foucaudii*, which is a Corsican plant with large panicles and leaves 5-7 mm. broad, DRUCE. Forma vel var. *INTERRUPTUM* Dr. Hull Docks, S.E. Yorks, WATERFALL.

+766/2. *A. ARISTATUM* Boiss. (*A. PUELLI* Lec. & Lam.). Ballast, Barry, Glamorgan, Miss E. VACHELL.

770/1. *ALOPECURUS PRATENSIS* L., var. *CAESIUS* Schwarz. Marlborough, Wilts, Mrs WEDGWOOD.

†773/1. *PIPTATHERUM MULTIFLORUM* Beauv. Bristol, Avonmouth, W. Gloster, C. SANDWITH.

777/1. *PHLEUM PRATENSE* L., var. *LONGIARISTATUM* PARN. Didcot, Berks, DRUCE; Welwyn, Herts, W. BLAKE.

†777/7. *P. MICHELII* All. Bristol, W. Gloster, C. SANDWITH.

†777/8. *P. SUBULATUM* A. & G. (*P. TENUE* Schrad.). Bristol, W. Gloster, C. SANDWITH.

†780/1. *AGROSTIS VERTICILLATA* Vill. Kingsbridge, Devon, C. SANDWITH.

780/2. *A. ALBA* L., var. *MAJOR* Gaud. Glasgow, Lanark, GRIERSON; Ware, Herts, DRUCE.

780/3. *A. CAPILLARIS* L., var. *PUMILA* (L.). Sherford Bridge, Dorset, HALL.

†788/1. *LAGURUS OVATUS* L. Blackpill, Glamorgan, WEBB.

794/1. *AVENA FATUA* L., var. *PILOSA* Syme. Didcot, Berks, DRUCE. Var. *GLABRATA* (Peterm.). Burton-on-Trent, Staffs, DRUCE, det. MARQUAND. Var. *INTERMEDIA*. Didcot, Berks, DRUCE.

†794/5. *A. LUDOVICIANA* Dur. Abingdon, Didcot, Berks, DRUCE, det. THELLUNG; Barry, Glamorgan, DRUCE.

795/2. *ARRHENATHERUM TUBEROSUM* (Gilib.) Dr. Banchoy, Kincardine; Ballater, S. Aberdeen; Kenfig, Glamorgan; Kenmare, Co. Kerry; Berehaven, Co. Cork; Culcaze, Dorset, DRUCE; Legbourne, N. Lincoln, Mrs H. BORRILL, ex Rev. W. W. MASON.

†805/1. *LAMARCKIA AUREA* Moench. Splott, Glamorgan, SMITH.

†808/1. *CYNOSURUS ECHINATUS* L. Ditchling Common, Sussex, Miss COTTES; near Walsall, Staffs, DRUCE and Sir ROGER CURTIS; gravel-pit, Worms Heath, Surrey, LOUSLEY.

813/1. *MOLINIA CAERULEA* Moench, var. *BREVIRAMOSA* Parnell. Dersingham, W. Norfolk, FRYER; Simonswood, S. Lancs, WHELDON; Newtownards, Co. Down, FOX; Gairloch, W. Ross; Dertynane, Co. Kerry; Berehaven, Co. Cork, DRUCE.

819/1. *DACTYLIS GLOMERATA* L., var. *PENDULA* Dum. A slender form with distant panicle branches the lower of which are pendulous,

Chipstead, Surrey, DRUCE. An extraordinary robust form has been found by the Rev. W. WRIGHT MASON at Melmerby, Cumberland.

†821/1. *SCHLEROCHLOA DURA* Beauv. Hull Docks, S.E. Yorks, WATERFALL.

822/2. *BRIZA MINOR* L. Parkstone, Dorset, HALL.

†822/3. *B. MAXIMA* L. Iver, Bucks, MELVILLE.

826/4. *FESTUCA ELATIOR* L., forma *RAMOSA*. Airdrie Coups, Lanark, GRIERSON.

826/6. *F. HETEROPHYLLA* Lam. Selkirk, DRUCE and Miss I. M. HAYWARD.

826/7. *F. RUBRA* L., var. *COMMUTATA* Gaud. = *FALLAX* Thuill. Penrice, Glamorgan, DRUCE; Stapleton, W. Gloster [23], Miss TODD. Var. *MEGASTACHYA* Gaud. Marlborough, Wilts, Mrs WEDGWOOD, det. HOWARTH, as *grandiflora*. Var. *PRUINOSA* Hack. Nash Point, Glamorgan, DRUCE.

826/9. *F. OVINA* L., var. *PALUDOSA* Gaud., tending towards *VULGARIS*. Mynydd y Glu, Glamorgan [PP.103], DRUCE. Var. *FIRMULA* (Hack.). Frilford, Berks [PP.100], DRUCE. Var. *VIVIPARA*. Windermere Wood, N. Lancs [20], Miss TODD.

†826/16. *F. DANTHONII* A. & G. In plenty at Burton-on-Trent, Staffs, DRUCE.

826/18. *F. MYURUS* L. Wivenhoe, Essex [2368], BROWN; Bwlch, Brecon, C. MARKS.

†827/8. *BROMUS RUBENS* L. Hull, S.E. Yorks, WATERFALL.

†827/19. *B. LEPTOSTACHYS* Pers. Colchester, Essex [2369], BROWN; Mendip, N. Somerset, DRUCE.

†827/22. *B. ARVENIS* L. Blackpill, Glamorgan, C. MARKS.

†828/3. *BRACHYPODIUM DISTACHYUM* Beauv. Hull Docks, S.E. Yorks, WATERFALL.

†829/2. *L. TEMULENTUM* L. Dagenham, Essex, DRUCE; ? Cardowater Coup, Lanark, GRIERSON. A decreasing alien.

†829/4. *L. MULTIFLORUM* Lam. Luxuriant examples at Burnham-on-Sea, N. Somerset, MILLER, det. THELLUNG.

830/1. *AGROPYRON JUNCEUM* Beauv., var. *MACROSTACHYUM* Dr. Par Sands, Cornwall, MEDLIN.

830/4. *A. REPENS* L., var. *CAESTUM* Beck. Hanwell, Middlesex; St Luke's, Jersey; Milverton, Warwick, DRUCE.

†832/11. *TRITICUM CYLINDRICUM* C. P. & G. Par Harbour, Cornwall, MEDLIN.

833/1. *LEPTURUS FILIFORMIS* Trin. Towyn, Merioneth, Mrs DEBENHAM.

†836/6. *ELYMUS CANADENSIS* L. Coatbridge Coups, Lanark, GRIERSON.

†836/7. *E. VIRGINICUS* L. Dagenham, Essex, MELVILLE.

844/2. *EQUISETUM ARVENSE* L., var. *ALPESTRE* Wahlb. Kepplecote Tarn, Helvellyn, Cumberland, J. W. HAINES.

*844/3. *E. SYLVATICUM* L. May Hill, W. Gloster, J. W. HAINES.

844/7. *E. HYEMALE* L. By the railway near Cardiff, Glamorgan, June 1927, Bot. Soc. Excursion.

*853/2. *ATHYRIUM ALPESTRE* Milde. Glenveagh, Donegal, BROWNING.

†871/2. *SELAGINELLA KRAUSSIANA* Braun. Porthpean, E. Cornwall, TRESIDDER.

876/5. *CHARA HISPIDA* L. Ainsdale beach, S. Lancs, TRAVIS.

PLANTS OF DONEGAL, 1926-1927.

By F. R. BROWNING, B.Sc.

- 8/1. *TROLLIUS EUROPAEUS* L. Loch Fern on east shore among boulders. (No *Lobelia Dortmanna* seen.)
- 32/1. *FUMARIA CAPREOLATA* L. Cultivated ground, Imlick, Carrigans.
- 88/34. *VIOLA CURTISII* Forst. Rosa penna.
- 100/6. *CERASTIUM VISCOSUM* L. A very hairy form at bottom of wall, Knockramonagh.
- 102/10. *ARENARIA VERNA* L. Close dune turf, Port Salon.
- 103/1. *SAGINA NODOSA* Fenzl. Rathmullan strand, etc.
- 116/1. *LAVATERA ARBOREA* L. Whale Head, Loch Swilly.
- 199/23. *SAXIFRAGA STELLARIS* L. Ledges, Derryveagh Mountains, Poisoned Glen. Although recorded as frequent, I found it rare.
- 199/24. *S. UMBROSA* L. Muckish Summit, 2197 ft., Glenveagh.
- 211/22. *SEDUM ROSEUM* Scop. High rocky and mossy damp ledges, Derryveagh Mountains.
- 213/1. *DROSER A ANGLICA* Huds. Loch side, Glenveagh, in one spot only, S.W. of Castle.
- 214/1. *HIPPURIS VULGARIS* L. Mainland opposite Aughinish Island.
- 239/2. *ERYNGIUM MARITIMUM* L. Dunree shore.
- 244/1. *SMYRNIUM OLUSATRUM* L. Walls of Donegal Castle.
- 250/3. *CARUM PETROSELINUM* B. & H. Walls of Donegal Castle.
- 257/1. *MYRRHIS ODORATA* Scop. Old churchyard, Ramelton.
- 271/1. *LIGUSTICUM SCOTICUM* L. Dunes, Douring Bay. ? Rosa penna.
- 326/1. *ANTENNARIA DIOICA* Gaertn. Marble Hill.
- 328/3. *GNAPHALIUM SYLVATICUM* L. Glen Car and Cottian Wood.
- 405/7. *CENTAUREA NIGRA* L. White-flowered, Glen Kerrykeel.
- 416/2. *CREPIS PALUDOSA* Moench. Glenveagh.
- 431/1. *LOBELIA DORTMANNA* L. Glenveagh, Loch Keel.
- 438/3. *VACCINIUM VITIS-IDAEA* L. Knockalla Mountain, Garten Lake, the largest of the Black Lakes.
- 453/2. *PYROLA MEDIA* Sw. Cornamiltu, Loch Keel.
- 501/1. *LYCOPSIS ARVENSIS* L. Dunree, fields beside shore.
- 547/1. *PEDICULARIS PALUSTRIS* L. White-flowered, Lake Akibbon.
- 552/3. *UTRICULARIA INTERMEDIA* Hayn. Peat dykes, Glenveagh.
- 552/5. *U. MINOR* L. Peaty Loch, Fern.
- 553/4. *PINGICULA LUSITANICA* L. Coravady Burn, by Doon Well.
- 558/7. *MENTHA PIPERITA* L. Glenveagh.
- 558/9. *M. VERTICILLATA* Huds. Bridgend Mill, Ramelton.
- 589/1. *LITTORELLA UNIFLORA* Asch. Loch Fern.
- 628/1. *EUPHORBIA HYBERNA* L. One or two big bushy plants up the River Dunree,

- 650/3. *SALIX ALBA* L., var. *VITELLINA* (L.). Burnside, Knocknamonagh; Knockabryan, lower slopes.
- 722/3. *SPARGANIUM SIMPLEX* Huds. Mainland opposite Aughinish Island.
- 730/1. *ECHINODORUS RANUNCULOIDES* Engel. "The Loch" between Portnablas and Marble Hill.
- 746/15. *SCIRPUS RUFUS* Schrad. Immense colonies on tidal mud flats, Bught, Ramelton.
- 750/1. *CLADIUM MARISCUS* Br. "The Loch" between Portnablas and Marble Hill.
- 851/1. *ASPLENIUM MARINUM* L. Rocky cliffs, Rosa penna.
- 853/2. *ATHYRIUM ALPESTRE* Midle. Glenveagh.
- 856/4. *DRYOPTERIS SPINULOSA* O. K. Shady wood, Imlick, Dunmore, Carrigans.
- 856/5. *D. AEMULA* O. K. Glenveagh.
- 856/9. *D. PHEGopteris* (L.). Colonies in great boulder cavern, Poisoned Glen, Derry Veagh Mountains.
- 857/4. *CYSTOPTERIS FRAGILIS* Bernh. Dunmore, Carrigans.
- 859/1. *CETERACH CETERACH* (L.). Bught Bridge, Ramelton.
- 864/1. *OSMUNDO REGALIS* L. Glenveagh.
- 870/7. *LYCOPodium SELAGO* L. Summit of Muckish, 2197 ft., Poisoned Glen.

The aliens include:—

- 40/1. *LUNARIA REDIVIVA* L. Letterkenny.
- 132/3. *OXALIS STRICTA* L. Imlick, Carrigans, etc.
- 133/4. *IMPATIENS GLANDULIFERA* Royle. Sprackburn, Letterkenny.
- 185/156. *RUBUS SPECTABILIS* Pursh. Woods, Lessennan, near Letterkenny.
- 189/26. *POTENTILLA VILMORINCIANA* Korn. Well established in open copses, Glen Car, Letterkenny.
- 292/1. *LEYCESTERIA FORMOSA* Wallich. Copses behind Rathmullen strand.
- 383/1. *SENECIO SARRACENICUS* L. Killycreen, Ramelton.
- 419/8. *HIERACIUM AURANTIACUM* L. Grassy banks, Knocknamonagh, Letterkenny.
- 518/10. *PHYSALIS FRANCHETTI* Hort. Knocknamonagh, near old port, Letterkenny.
- 543/31. *VERONICA PEREGRINA* L. Cultivated ground, Imlick, Carrigans.
- 585/2. *PRASIMUM SAMIA* L. Knocknamonagh.
- 615/28. *POLYGONUM AMPLEXICAULE* Don. Bridge End, Ramelton. Var. *oxyphyllum* Don. Fort Stewart.

The authorities at the Herbariums at Dublin and Kew; Mr J. W. Besant, Glasnevin; Dr G. Claridge Druce, and Mr J. F. Rayner have kindly helped in the determinations.

THE FLORA OF ST KILDA.

By W. B. TURKILL, M.Sc., F.L.S.

The St Kilda islands, situated some 50 miles to the west of the Outer Hebrides, have a flora of considerable phytogeographical interest in connection with studies on the origin and history of the British Flora. The following is the botanical bibliography of St Kilda so far as I have been able to trace it.

1. J. Macgillivray: Account of the island of St Kilda, chiefly with reference to its Natural History; from Notes made during a visit in July 1840, in *Edinb. Philosoph. Journ.* xxxii., 47, 178 (1842).
2. R. M. Barrington: Notes on the Flora of St Kilda, in *Journ. Bot.* xxiv., 213 (1886).
3. H. Gibson: The Phanerogamic Flora of St Kilda, in *Trans. and Proc. Bot. Soc. Edinb.* xix., 155 (1893).
4. R. Ll. Praeger: Flora of St Kilda (note), in *Ann. Scot. Nat. Hist.* 53 (1897).
5. C. J. Hewit: A contribution to a Flora of St Kilda: being a list of certain Lichens, Mosses, Hepaticae, and Fresh-water Algae, in *Ann. Scot. Nat. Hist.* 239 (1907).
6. W. Evans: Some Moss Records from St Kilda, in *Trans. and Proc. Bot. Soc. Edinb.* xxviii., 67 (1921).

In the list subsequently given here records taken from the papers 1 to 4 are designated by the letters M., B., G., P., respectively.

In July 1927 Mr J. Gladstone stayed on St Kilda just over three weeks and during that time devoted himself mainly to a study of the plant-life. As a consequence an interesting collection of 120 species was received at Kew. The careful determination of these made it obvious that a modern account of the flora especially with a full phytogeographical analysis was very desirable. We give firstly a list, complete so far as our present knowledge goes, of the Phanerogams and Vascular Cryptogams of the St Kilda islands, and, secondly, an analysis of the flora and a consideration of its origin and history. In the list the specimens quoted with numbers are those, now in *Herb. Kew.*, collected by Mr Gladstone, while the records designated by letters are explained above. We, at Kew, are greatly indebted to Mr Gladstone for this exceptionally interesting addition to our British collections, which have been increasing so much in value during the last few years. It is unfortunate that we know little about the distribution of the species on the different islands of St Kilda. Macgillivray only visited Hirta, by which name is indicated the largest, and only permanently inhabited, island of the group. Barrington visited Hirta, Boreray, Soa, and Dun, which, he says, are the only ones on which vegetation exists. Gladstone informs me, however, that a friend of his found about four

species of flowering plants growing on the islet of Levenish, so the last statement has to be modified. Barrington says he observed no plant on the smaller islands which he did not also find on Hirta and, since he does not exactly localise most of his records, I have listed them below under Hirta. Gibson and Praeger also seem to have visited only Hirta. Most of Gladstone's records are also from the main island, but quite a number are localised from Boreray.

SYSTEMATIC LIST.

- RANUNCULUS ACER L. Boreray: 7/7/27, Nr. 4; Hirta: in the glebe (the piece of land attached to the manse and between the Church and the end of the enclosed ground), 20 ft. altitude, 10/7/27, Nr. 53; Hirta: plentiful on the cliffs of the north side of Conacher, about 1100 ft., a large plant, 23/7/27, Nr. 143. The last runs down in Townsend's key in Journ. Bot. xxxviii., 379 (1900), to sub-sp. *Boraeanus*, forma *rectus*. Hirta: B. G.
- RANUNCULUS FIGARIA L. Boreray and everywhere: 7/7/27, Nr. 28. Hirta: one of the commonest plants, B. G.
- RANUNCULUS FLAMMULA L. Hirta: common, 5/7/27, Nr. 10. Hirta: B.G.
- RANUNCULUS REPENS L. Hirta: not common; introduced? f. *alpina* Rostrup. On cliffs, B.
- BRASSICA sp. Hirta: G.
- [CAKILE MARITIMA Scop. Hirta: M.]
- CAPSILLA BURSA-PASTORIS L. Hirta: in the manse garden, 8/7/27, Nr. 30. Hirta: near houses, B. G.
- CARDAMINE HIRSUTA L. Hirta: G.
- [COCHLEARIA DANICA L. Hirta: M.]
- COCHLEARIA OFFICINALIS L. Boreray: cliffs, extremely variable, 7/7/27. Hirta: M. Hirta: frequent; very large in places. Var. *alpina* on hills, B. Hirta: G. (as species).
- VIOLA PALUSTRIS L. Hirta: G.
- VIOLA RIVINIANA Rehb. Hirta: common all over the island, 14/7/27, Nr. 68. Hirta: common, and generally with a single flower, B. (as *V. sylvatica* Fries, var. *Riviniana*). Hirta: G.? (as *V. canina* L.).
- [POLYGALA DEPRESSA Wender. Hirta: flowers pink and white, but most commonly blue; forms come near *vulgaris*, B.] I am doubtful about the identification of this.
- POLYGALA VULGARIS L. Hirta: very variable, with white, pink, and blue flowers, 8/7/27, Nr. 39. Hirta: G.
- [ARENARIA PEPLOIDES L. Hirta: M.]
- CERASTIUM TETRANDRUM Curt. Hirta: Oiseval, 16/7/27, Nr. 78. Hirta: common, B. G.
- CERASTIUM VULGATUM L., var. ALPINUM Gren. Hirta: Ruaival, 19/7/27, Nr. 83; north face of Conacher, about 1150 ft., 23/7/27, Nr. 141. Hirta: 5/7/27, Nr. 11, is probably this. According to B. the species (as *C. triviale* Link) is common; a large-flowered form, var.

- alpestre*; with flowers often solitary, occurs on summits of hills.
Hirta: G. (as *C. triviale* Link).
- LYCHNIS FLOS-CUCULI L. Hirta: at the foot of an Amhuinn, 9/7/27, Nr. 43. Hirta: frequent, B. G.
- SAGINA SUBULATA Presl (Wimm.). Hirta: rare; on end of St Kilda near the Doon, B.
- SAGINA PROCUMBENS L. Hirta: common, 7/7/27, Nr. 19. Hirta: common, B. G.
- SILENE ACAULIS L. Hirta: one clump in the glen which comes off Mul-lach Sgail, no flowers at all, 9/7/27, Nr. 44. Hirta: very rare; only in two places on St Kilda, the end near the Doon, B. G.
- SILENE MARITIMA With. Hirta: abundant on the cliffs, 10/7/27, Nr. 50a. On the rocks south-west of Conacher, 10/7/27, Nr. 59. Hirta: M. Hirta: abundant on cliffs; sparingly on hills over sea, B. G.
- SPERGULA ARVENSIS L., agg. Hirta: a weed in the corn, 13/7/27, Nr. 67. Not exactly determinable in the absence of seeds. Hirta: in cultivated ground, B. G.
- STELLARIA MEDIA Vill. Hirta: growing in the corn, 5/7/27, Nr. 9 (rather short pedicels and glabrous calyces); 22/7/27, Nr. 119 (longer pedicels, larger and hairy calyces). Hirta: common, B.
- STELLARIA ULIGINOSA Murr. Hirta: P.
- MONTIA FONTANA L. Hirta: north-western end opposite Soa, 6/7/27, Nr. 16. Hirta: common. Var. *rivularis*. Frequent, B. Hirta: G. (as species).
- HYPERICUM PULCHRUM L., f. PROCUMBENS Rostrup [in Bot. Tidsskr. iv., 34 (1870-71)]. Hirta: not very common, 8/7/27, Nr. 38. Hirta: rare; in one spot in the gully on Conacher (as species), B. G.
- TRIFOLIUM PRATENSE L. Hirta: G.
- TRIFOLIUM REPENS L. Hirta: common up to 100 ft., 9/7/27, Nr. 46. Hirta: common, B. G.
- VICIA SEPIUM L. Hirta: sparingly among grass on an Cambir, 500-700 ft., the only place on the island, 14/7/27, Nr. 70. Hirta: rare; on the cliffs near Soa and also on the island of Soa, B. G.
- POTENTILLA ANSERINA L. Hirta: in the manse garden and elsewhere, 20-100 ft., 11/7/27, Nr. 60. Hirta: near houses, B. G.
- POTENTILLA ERECTA Hampe. Hirta: very common indeed, 9/7/27, Nr. 48. Hirta: common, B. (as *Potentilla tormentilla* Neck.) G.
- SAXIFRAGA OPPOSITIFOLIA L. Hirta: an Amhuinn Mhòr, plentiful but hardly a flower left, 8/7/27, Nr. 34. Hirta: only in the gully on Conacher, behind the village, B. G.
- SEDUM ANGLICUM Huds. Hirta: M. Recorded with a ? by B.
- SEDUM ROSEUM Scop. Hirta: on the cliffs at the north-western end opposite Soa, 6/7/27, Nr. 15. Hirta: M. (as *Rhodiola rosea*). Hirta: called by the natives "Usanion;" plentiful and luxuriant on cliffs, B. (as *S. Rhodiola* DC.) G.
- DROSER A ROTUNDIFOLIA L. Hirta: about 15 plants only in the little bog near an Amhuinn Mhòr, about 500 ft., 22/7/27, Nr. 120. Hirta: G.

- CALLITRICHE STAGNALIS* Scop.? Hirta: on the western side opposite Soa, 6/7/27, Nr. 13. B. and G. both record *Callitriche vernalis* Koch. It is evident that more, and good, material, is very desirable.
- EPILOBIUM PALUSTRE* L. Hirta: Oiseval cliffs only, about 300 ft., 16/7/27, Nr. 75. Hirta: G.
- ANGELICA SILVESTRIS* L. Hirta: plentiful on cliffs but seldom flowers, 11/7/27, Nr. 24. Hirta: plentiful on cliffs in many places, B. G.
- HYDROCOTYLE VULGARIS* L. Hirta: very common, 10/7/27, Nr. 58. Hirta: plentiful, B. G.
- LIGUSTICUM SCOTICUM* L. Hirta: a little on the Oiseval cliffs; one patch on Dun, about 300 ft., 11/7/27, Nr. 62. Hirta: M.
- LONICERA PERICLYMENUM* L. Hirta: in one spot on the Oiseval cliffs, 250 ft., 15/7/27, Nr. 72. Occurs in some quantity just here and flowers well. Hirta: in one spot only to the east of landing places, on cliff, B. G.
- SAMBUCUS NIGRA* L. Hirta: only three plants in the churchyard, 21/7/27, Nr. 113. Hirta: G.
- GALIUM SAXATILE* L. Hirta: very common, 8/7/27, Nr. 40. Hirta: common, B. G.
- SCABIOSA SUCCISA* L. Hirta: abundant, not yet generally in flower, 21/7/27, Nr. 104. Hirta: everywhere, B. G.
- ACHILLEA MILLEFOLIUM* L., var. *VILLOSA* Hartm. Hirta: not uncommon below 300 ft., 20/7/27, Nr. 99. Hirta: common, B. (as the species) G.
- ANTENNARIA DIOICA* Gaertn. Hirta: common on the south sides of Conacher and Oiseval, 200-500 ft., 10/7/27, Nr. 54. Hirta: common, B. (as *Gnaphalium dioicum* L.) G.
- ARTEMISIA VULGARIS* L. Hirta: G.
- BELLIS PERENNIS* L. Hirta: only one clump found at an altitude of about 400 ft. on the sheltered S.W. slope of Conacher. Possibly introduced. 10/7/27, Nr. 57.
- CHRYSANTHEMUM SEGETUM* L. Hirta: a common weed in the oats, 50 ft., 12/7/27, No. 63. Hirta: M. Hirta: the principal weed in the oats, B. G.
- CIRSIUM AERVENSE* Scop. Hirta: only outside the factor's house, on a rubbish heap, 21/7/27, Nr. 102.
- CIRSIUM LANCEOLATUM* Scop. Hirta: a few plants near the factor's house, the store, and on Oiseval, 21/7/27, Nr. 100. Hirta: near the village, B. (as *Carduus lanceolatus* L.), G. (as *Cnicus lanceolatus* Hoffm.).
- LEONTODON AUTUMNALIS* L. Hirta: very common, 9/7/27, Nr. 45. Hirta: very common, B. G.
- MATRICARIA MARITIMA* L. Boreray and Hirta: 7/7/27, Nr. 20. One specimen discoid fasciated. Hirta: has spread itself over a large part of the manse garden and there is no difference visible between this and the plant growing on the cliffs, 22/7/27, Nr. 126. Hirta: M. (as *Pyrethrum inodorum*, the maritime variety). Hirta: on the

- cliffs, B. (as *Matricaria inodora* L., var. *salina*), G. (as *M. inodora* L., var. *maritima*).
- SENECIO AQUATICUS Huds. Hirta: frequent, B.
- SENECIO JACOBAEA L. Hirta: not common, late flowering, 21/7/27, Nr. 101; 23/7/27, Nr. 140; Hirta: frequent, B. G.
- SENECIO VULGARIS L. Hirta: in the manse garden, 8/7/27, Nr. 32.
- SONCHUS ASPER Hill. Hirta: sparingly on Oiseval cliffs, 200 ft., 16/7/27, Nr. 74. Hirta: P. Recorded with a ? by B.
- SONCHUS OLERACEUS L. Hirta: G.
- TARAXACUM sp., probably *T. paludosum* Schlecht. Hirta: common, 23/7/27, all the flowers are over by now, Nr. 142. Hirta: M. (as *Leontodon taraxacum*, var. *palustre*). Hirta: common; growing in the wildest and most exposed situations, B. (as *Taraxacum officinale* L., var. *palustre*), G. (as *Taraxacum officinale*).
- VACCINIUM MYRTILLUS L. Hirta: on the south side of Conacher, 1200-1300 ft., very scrubby, probably neither flowers nor fruits, 23/7/27, Nr. 137. Hirta: on the top of Conacher, B. G.
- CALLUNA VULGARIS Salisb. Hirta: common, B. G.
- ERICA CINEREA L. Hirta: fairly plentiful, 8/7/27, Nr. 36. Hirta: plentiful, B. G.
- ARMERIA MARITIMA Willd. Hirta: very common, large and small, 4/7/27, Nr. 5. Hirta: M. (as *Statice Armeria*), B. G.
- ANAGALLIS TENELLA Murr. Hirta: on Oiseval and the south of the island, 9/7/27, Nr. 47. Hirta: M. B. G.
- PREMULA VULGARIS Huds. Hirta: an Amhuinn Mhòr, near the sea, 8/7/27, Nr. 37. Fide A. E. Cockburn, Boreray: on cliffs near the sea. Hirta: plentiful on some of the cliffs, B. G.
- [CENTAURIUM sp. (as *Erythraea Centaurium*, var. *latifolium*). Hirta: M.]. This remains a doubtful record.
- GENTIANA CAMPESTRIS L. Hirta: a good many plants at the mouth of the stream running off Mullach Sgail, 60 ft., 13/7/27, Nr. 65. Hirta: M.
- MYOSOTIS ARVENSIS Hill. Hirta: on a little mound outside the factor's house, 9/7/27, Nr. 12. Hirta: G.
- ALECTOROLOPHEUS DRUMMOND-HAYI Sterneck. Hirta: rare, on the south-western slopes of Conacher, 500 ft., 10/7/27, Nr. 55. B. records "*Rhinanthus Crista-galli* L. Rare," and G. also lists this name.
- EUPHRASIA CURTA Wettst., var. *GLABRESCENS* Wettst. Hirta: very common and many forms, 10/7/27, Nr. 52. It would be interesting to have a complete set of the "forms" of Eyebright from St Kilda. B. records "*Euphrasia officinalis* L. Specimens stunted and flowers purplish," and G. also lists this name.
- PEDICULARIS SILVATICA L. Hirta: very common, there is also a white-flowered variety, 21/7/27, Nr. 105. Hirta: very common, B. G.
- VERONICA OFFICINALIS L. Hirta: plentiful all over the island, 22/7/27, Nr. 122. Hirta: frequent, B. G.

- PINGUICULA VULGARIS L. Hirta: common all over, 6/7/27, Nr. 14.
Hirta: not uncommon, B. G.
- GALEOPSIS TETRAHIT L. Hirta: only as a weed in the corn, 22/7/27,
Nr. 121. Hirta: B. G.
- PRUNELLA VULGARIS L. Hirta: not common, 14/7/27, Nr. 66. Hirta:
not common, B. G.
- THYMUS SERPYLLUM L. Hirta: everywhere, 5/7/27, Nr. 8. The speci-
men is not a very good one and since much of the British material
of the genus possessed by Kew is at present on loan for critical
determination I have used the aggregate name. B. records
"Thymus Serpyllum L. Abundant." G. lists *Thymus Serpyllum*
Fries.
- PLANTAGO CORONOPUS L. Hirta: village bay, 4/7/27, Nr. 2 (large well
developed form); Hirta: 5/7/27, Nr. 42 (a small form, var. *pygmaea*
Lange). Hirta: B.
- PLANTAGO LANCEOLATA L. Hirta: village bay, 4/7/27, Nr. 3. Small
rounded spikes of flowers, and varying in the degree of develop-
ment of silky hairs on the leaves. Hirta: B. G.
- PLANTAGO MAJOR L. Hirta: in the manse garden, 50 ft., 15/7/27, Nr.
78. Hirta: B. G.
- PLANTAGO MARITIMA L. Hirta: village bay, 4/7/27, Nr. 1. Hirta:
plentiful, and very variable. Var. *pygmaea* Lange. Plentiful,
B. G.
- ATRIPLEX BABINGTONII Woods. Hirta: on the cliffs everywhere, very
variable, but always mealy, 9/7/27, Nr. 49. Hirta: B. G. Pro-
bably the *Atriplex maritima* of M. is this species.
- [SALSOLA KALI L. Hirta: M.]
- OXYRIA DIGYNA Hill. Hirta: M. (as *O. reniformis*). Hirta: on the
north face of Conacher; rare, B. G.
- POLYGONUM AVICULARE L. Hirta: manse garden, 20 ft., 11/7/27, Nr.
61. Hirta: B. G.
- POLYGONUM sp. (perhaps *P. Persicaria* L.) Hirta: very rare in the
manse potatoes only, 21/7/27, Nr. 107. G. lists *Polygonum Persi-*
caria L.
- RUMEX ACETOSA L. Boreray: on cliffs, 7/7/27, Nr. 25. Hirta: in great
abundance, and most luxuriant on cliffs at north of island, B. G.
- RUMEX ACETOSELLA L. Hirta: frequent, 22/7/27, Nr. 123. Hirta:
common, B. G.
- RUMEX CONGLOMERATUS Schreb. Hirta: near the houses, B.
- RUMEX CRISPUS L. Hirta: near the houses, 21/7/27, Nr. 116. Hirta:
near the houses, B. G.
- RUMEX OBTUSIFOLIUS L. Boreray: in two patches, 7/7/27, Nr. 23;
Hirta: near the houses, 21/7/27, Nrs. 114, 115. Hirta: near the
houses, B. G.
- URTICA DIOICA L. Hirta: only in the churchyard, about 150 ft., and in
one spot near the sea cliff, about 40 ft., 21/7/27, Nr. 112. Hirta:
frequent, B. G.

- SALIX HERBACEA L. Hirta: on the summit of one of the hills, M. Hirta: north face of Conacher, and descending to about 500 ft., B. G.
- SALIX REPENS L. Hirta: an Amhuinn Mhòr, 8/7/27, Nr. 41: an Amhuinn Mhòr, 22/7/27, Nr. 124. Hirta: on Conacher, near village, etc. Var. *incubacea*, B. G. (species).
- EMPETRUM NIGRUM L. Hirta: 8/7/27, Nr. 35, does not seem to flower or bear fruit, 14/7/27, Nr. 71. Hirta: on hill-tops, B. G.
- [COELOGLOSSUM VIRIDE Hartm. (as *Habenaria viridis*). Hirta: M.]
- ORCHIS MACULATA L. (O. ERICETORUM Linton). Hirta: extremely common, very small, flowers often white, 5/7/27, Nr. 7. Hirta: common, B. G.
- IRIS PSEUDACORUS L. Hirta: St Kilda's Well, an Amhuinn Mhòr, 9/7/27, Nr. 50. Hirta: B. G.
- NARTHECIUM OSSIFRAGUM Huds. Hirta: common, 20/7/27, Nr. 91. Hirta: B. G.
- JUNCUS BUFONIUS L. Hirta: above the beach on the village bay, 20 ft., 13/7/27, Nr. 64. Hirta: G.
- JUNCUS BULBOSUS L. Hirta: the marsh south of the village, 21/7/27, Nr. 108. Hirta: B. (as *J. supinus* Moench) G.
- JUNCUS EFFUSUS L. Hirta: not uncommon, 21/7/27, Nr. 99a. Hirta: B. G. (as *J. communis* L.).
- JUNCUS LAMPROCARPUS Ehrh. Hirta: everywhere, 19/7/27, Nr. 87. Hirta: G.
- JUNCUS SQUARROSUS L. Hirta: on Conacher only, from 800 ft. to the top, 23/7/27, Nr. 136. Hirta: B. G.
- LUZULA CAMPESTRIS DC. Hirta: common, 20/7/27, Nr. 92. Hirta: B.
- LUZULA MULTIFLORA Lej. Hirta: 20/7/27, Nr. 93. Hirta: B.
- LUZULA SILVATICA Gaud. Hirta: on the top of the island in large quantities descending a little down an Amhuinn Mhòr, 23/7/27, Nr. 130. Hirta: plentiful on the summit, 1220 ft., B.
- POTAMOGETON POLYGONIFOLIUS Pourr., var. ERICETORUM Syme. Hirta: in stagnant peaty ponds, North Bay, 10/7/27, Nr. 56. Hirta: B. (as species). G. lists *Potamogeton natans* L. and the record probably refers to the above plant.
- CAREX BINERVIS Sm. Hirta: round the summit of Conacher, descending to about 1000 ft., 23/7/27, Nr. 132. Hirta: B. G.
- CAREX STELLULATA Good. Hirta: common, 21/7/27, Nr. 97. Hirta: B. G.
- CAREX FLACCA Schreb. Hirta: in the marsh in the village bay, 21/7/27, Nr. 111. Hirta: B. (as *C. glauca* Scop.).
- CAREX FLAVA L. Hirta: common over the island, 19/7/27, Nr. 72. A very small form but too young to determine more exactly. Hirta: the marsh in the village bay, 21/7/27, Nr. 110. A larger form. Hirta: B. Var. *minor* Townsend. Hirta: G.
- CAREX GOODENOVII Gay. Hirta: 20/7/27, Nr. 95; an Amhuinn Mhòr, 23/7/27, Nr. 131. One piece has the utricles asperulous, and the specimens are not quite typical *C. Goodenovii* as it grows in the south of England. Hirta: B. (as *C. vulgaris* Fries).

- CAREX PANICEA L. Hirta: 19/7/27, Nr. 88. Hirta: B.
 CAREX PILULIFERA L. Hirta: B. G.
 CAREX PULICARIS L. Hirta: near Ruaival, about 400 ft., 19/7/27, Nr. 82. Hirta: B. G.
 CAREX RIGIDA Good. Hirta: on the summit of one of the hills, M. Hirta: seen on the top of Conacher, 1220 ft. Hirta: G.
 ELEOCHARIS UNIGLUMIS R. et S. Hirta: village bay in the marsh, 2 ft., 19/6/27, Nr. 84. Recorded by B. with a ? (as *Scirpus uniglumis* Link). G. lists *E. palustris* R. Br. and the record probably refers to the above plant.
 ERIOPHORUM ANGUSTIFOLIUM Roth. Hirta: common in peaty soil all over the island, 14/7/27, Nr. 71. Hirta: B. G.
 SCHOENUS NIGRICANS L. Hirta: B.
 SCIRPUS CAESPITOSUS L. Hirta: abundant on the south face of Conacher, 500-1100 ft., 23/7/27, Nr. 129. Hirta: B. G.
 AGROPHYRON REPENS Pal. de Beauv. Hirta: B. (as *Triticum repens* L.) G.
 AGROSTIS CANINA L. Hirta: G.
 AGROSTIS STOLONIFERA L. Hirta: Oiseval, 17/7/27, Nr. 81 (one piece awned, var. *armata* Cel., the rest typical); Hirta: common, 22/7/27, Nr. 119 (var. *pro-repens* Koch).
 AGROSTIS TENUIS Sibth. Hirta: 23/7/27, Nr. 135; Oiseval, 17/7/27, Nr. 82 (var. *pumila* Lightf.). Hirta: G. (as *Agrostis vulgaris* With. and var. *pumila*).
 AIRA PRAECOX L. Hirta: the glen, on a cleit, near the village, 14/7/27, Nr. 69. Hirta: B. G.
 ALOPECURUS GENICULATUS L. Hirta: the marsh, south of the village, 21/7/27, Nr. 109. Hirta: B. G. (with a ?).
 ANTHOXANTHUM ODORATUM L. Hirta: B. G.
 ARRHENATHERUM ELATIUS Mert. et Koch, var. *TUBEROSUM* Aschers. Hirta: 3 or 4 large tufts on the edge of an Amhuinn Mhòr, about 200 ft., 22/7/27, Nr. 125. Hirta: G. (as *Avena elatior* L.).
 [AVENA STRIGOSA Schreb. Hirta: M.]
 DESCHAMPSIA FLEXUOSA Trin. Hirta: an Amhuinn Mhòr, 23/7/27, Nr. 134. Hirta: B. (as *Aira flexuosa* L.) G.
 FESTUCA OVINA L. Hirta: M. Hirta: often viviparous, B. G. (as species, var. *vivipara*, and var. *arenaria*).
 FESTUCA RUBRA L. Hirta: common, 20/7/27, Nr. 90; 21/7/27, Nr. 98 (viviparous); an Amhuinn Mhòr, outside the enclosed ground, about 300 ft., 22/7/27, Nr. 128 (sub-sp. *genuina* Hack., forms with more or less glabrous spikelets). Hirta: B. (as var. *duriuscula*). G. (as *F. ovina*, sub-sp. *duriuscula* and sub-sp. *rubra*).
 HOLCUS LANATUS L. Hirta: abundant in the enclosed area, 21/7/27, Nr. 117. A form with rather small, compact, cylindrical panicles. Hirta: B. G.
 HORDEUM VULGARE L. Hirta: Nr. 125. This was formerly grown by all in the island, but there is now only one patch of it, though it has spread as a weed into the corn.

- [*KOELERIA GRACILIS* Pers.? (as *Aira cristata*). Hirta: M.]
- LOLIUM PERENNE* L. Hirta: in the manse garden, 19/7/27, Nr. 86.
Hirta: G.
- MOLINIA CAERULEA* Moench. Hirta: common, 21/7/27, Nr. 89; an Amhuinn Mhòr, about 30 ft., 24/7/27, Nr. 144 (var. *depauperata* Aschers. et Graebn.). Hirta: B. G.
- NARDUS STRICTA* L. Hirta: Ruaival, 19/7/27, Nr. 85. Hirta: B. G.
- POA ANNUA* L. Hirta: common everywhere, 23/7/27, Nr. 127. Hirta: B. G.
- POA PRATENSIS* L. Hirta: not plentiful, 23/7/27, Nr. 133. Hirta: B. G.
- POA TRIVIALIS* L., var. *GLABRA* Doell. Hirta: common, 22/7/27, Nr. 119a. Hirta: B. (the species) G.
- SIEGLINGIA DECUMBENS* Bernh. Hirta: Oiseval cliffs, 16/7/27; Nr. 79.
Hirta: G. (as *Triodia decumbens* Beauv.).
- [*TRisetum FLAVESCENS* Pal. de Beauv. (as *Avena flavescens*). Hirta: M.]
- ASPLENIUM ADIANTUM-NIGRUM* L. Hirta: G.
- ASPLENIUM MARINUM* L. Hirta: on the Oiseval cliffs, 200 ft., 15/7/27, Nr. 73. Hirta: M. B. G.
- ATHYRIUM FILIX-FEMINA* Roth. Hirta: not uncommon, 22/7/27, Nr. 126. Hirta: G.
- BLECHNUM SPICANT* With. Hirta: western end, opposite Soa, 6/7/27, Nr. 17. Hirta: B. (as *Lomaria Spicant* Desv.) G.
- BOTRYCHIUM LUNARIA* Sw. Hirta: in a gully running out of Mullach Sgail, 13/7/27, Nr. 6. Hirta: M. Hirta: near landing place, B. G.
- CYSTOPTERIS FRAGILIS* Bernh. Hirta: western end, opposite Soa, 4/7/27, Nr. 18 (? var. *dentata* Hook.); Conacher, 23/7/27, Nr. 138 (? var. *dentata* Hook.); Conacher, 23/7/27, Nr. 139 (? var. *Dickieana* Milde). Hirta: B. (as var. *dentata*).
- HYMENOPHYLLUM PELTATUM* Desv. Hirta: rare on south side of Conacher, B. (as *H. unilaterale* Willd.) G.
- DRYOPTERIS ARISTATA* Druce. Hirta: B. (as *Nephrodium dilatatum* Desv.) G.
- OPHIGLOSSUM VULGATUM* L., var. *POLYPHYLLUM* Braun. Hirta: among short grass near the extreme north end of St Kilda, B. (as *O. vulgatum* L., var. *ambiguum*). G. (as species).
- POLYPODIUM VULGARE* L. Hirta: Oiseval, 16/7/27, Nr. 77. Hirta: B. G.
- EUPTERIS AQUILINA* Newm. Hirta: common in the enclosed ground, 16/7/27, Nr. 80. Hirta: B. G.
- EQUISETUM ARVENSE* L. Hirta: in the enclosed ground, common, 20/7/27, Nr. 96. Hirta: B. G.
- EQUISETUM PALUSTRE* L. Hirta: P.
- SELAGINELLA SELAGINOIDES* Gray. Hirta: seen at 100 ft. and at 1100 ft., very small and difficult to spot, 21/7/27, Nr. 106. Hirta: rare, B. G.

ANALYSIS OF THE FLORA.

I. Native, original vegetation.

- a. Aquatic and marsh species.—*Ranunculus Flammula*, *Viola palustris*, *Lychnis Flos-cuculi*, *Stellaria uliginosa*, *Montia fontana*, *Callitriche stagnalis*, *Senecio aquaticus*, *Iris Pseudacorus*, *Juncus bufonius*, *J. bulbosus*, *Potamogeton polygonifolius*, *Eleocharis uniglumis*, *Alopecurus geniculatus*, *Equisetum palustre*.
- b. Species of sea-cliffs and rocks.—*Cochlearia officinalis*, *Silene maritima*, *Ligusticum scoticum*, *Matricaria maritima*, *Armeria maritima*, *Plantago Coronopus*, *P. maritima*, *Atriplex Babingtonii*, *Asplenium marinum*. In addition, *Epilobium palustre* and *Angelica silvestris* are recorded from "cliffs."
- c. Arctic-alpine species, mostly very rare in St Kilda.—(*Cerastium vulgatum*, var. *alpinum*), *Silene acaulis*, *Saxifraga oppositifolia*, *Sedum roseum*, *Antennaria dioica*, *Oxyria digyna*, *Salix herbacea*, *Carex rigida*.
- d. Heath-moor species.—*Ranunculus acer*, *Viola Riviniana*, *Polygala vulgaris*, *Sagina subulata*, *Hypericum pulchrum*, *Potentilla erecta*, *Drosera rotundifolia*, *Hydrocotyle vulgaris*, *Galium saxatile*, *Scabiosa Succisa*, *Taraxacum paludosum*, *Vaccinium Myrtillus*, *Calluna vulgaris*, *Erica cinerea*, *Anagallis tenella*, *Gentiana campestris*, *Alectorolophus Drummond-Hayi*, *Euphrasia curta*, *Pedicularis silvatica*, *Veronica officinalis*, *Pinguicula vulgaris*, *Thymus Serpyllum*, *Rumex Acetosella*, *Salix repens*, *Empetrum nigrum*, *Orchis maculata*, *Narthecium ossifragum*, *Juncus effusus*, *J. lamprocarpus*, *J. squarrosus*, *Luzula campestris*, *L. multiflora*, *Carex binervis*, *C. stellulata*, *C. flacca*, *C. fulva*, *C. Goodenovii*, *C. panicea*, *C. pilulifera*, *C. pulicaris*, *Eriophorum angustifolium*, *Schoenus nigricans*, *Scirpus caespitosus*, *Agrostis canina*, *A. stolonifera*, *A. tenuis*, *Aira praecox*, *Deschampsia flexuosa*, *Festuca ovina*, *F. rubra*, *Molinia caerulea*, *Nardus stricta*, *Sieglingia decumbens*, *Asplenium Adiantum-nigrum*, *Athyrium Filix-femina*, *Blechnum Spicant*, *Botrychium Lunaria*, *Cystopteris fragilis*, *Hymenophyllum peltatum*, *Dryopteris aristata*, *Ophioglossum vulgatum*, *Polypodium vulgare*, *Eupteris aquilina*, *Selaginella Selaginoides*.
- e. Relicts of woodland ground flora?—*Ranunculus Ficaria*, *Vicia sepium*, *Lonicera Perichlymenum*, *Primula vulgaris*, *Luzula silvatica*.

- II. Modified vegetation.—*Ranunculus repens*, *Cerastium tetrandrum*, *C. vulgatum*, *Sagina procumbens*, *Trifolium repens*, *Achillea Millefolium*, *Bellis perennis*, *Leontodon autumnalis*, *Senecio Jacobaea*, *Prunella vulgaris*, *Plantago lanceolata*, *Rumex Acetosa*, *Arrhenatherum elatius*, *Holcus lanatus*, *Poa annua*, *P. pratensis*, *P. trivialis*.

III. Introduced plants.

- a. Weeds of cultivated ground.—*Capsella Bursa-pastoris*, *Cardamine hirsuta*, *Spergula arvensis*, *Stellaria media*, *Chrysanthemum segetum*, *Senecia vulgaris*, *Galeopsis Tetrahit*, *Plantago major*, *Polygonum aviculare*, *P. Persicaria*, *Agropyron repens*.
- b. Ruderals.—*Potentilla Anserina*, *Artemisia vulgaris*, *Cirsium arvense*, *C. lanceolatum*, *Sonchus asper*, *S. oleraceus*, *Myosotis arvensis*, *Rumex conglomeratus*, *R. crispus*, *R. obtusifolius*, *Urtica dioica*, *Equisetum arvense*.
- c. Escapes from cultivation.—*Brassica* sp., *Trifolium pratense*, *Sedum anglicum* (?), *Sambucus nigra*, *Hordeum vulgare*, *Lolium perenne*.

IV. Doubtful records (not at present accepted).—*Cakile maritima*, *Cochlearia danica*, *Polygala depressa*, *Arenaria Peploides*, *Centaureium* sp., *Salsola Kali*, *Coeloglossum viride*, *Avena strigosa*, *Koeleria gracilis*, *Trisetum flavescens*.

The following comments may be made on these groups of species:—

1. The doubtful records are mostly from Macgillivray's account and include four maritime species which may well occur in St Kilda. In this connection it is important to remember that Gladstone has collected several species which but for his keen field observations would have been included amongst the doubtful records (e.g. *Ligusticum scoticum*). Nevertheless, it has been considered best not to include the species given under paragraph IV. in any of the theoretical considerations which follow. They are, therefore, ignored in the rest of this paper.

2. The introduced plants owe their origin intentionally or unintentionally to man. The majority are either weeds, whose seeds doubtless came in with the seeds of crop plants (chiefly oats and barley), or camp-followers found in waste places in all temperate regions and introduced in various ways by man's activities. In St Kilda the majority are limited to the enclosed ground in Hirta, near the village.

3. The species listed under paragraph II. are tentatively grouped together because in heaths in various parts of the British Isles (Surrey, Yorkshire, western Scotland) they occur in areas obviously derived from the original heath by biotic factors (grazing, trampling, etc.). For eastern and southern English heathlands the "grass-heath" community is described in some detail by Farrow in *Journ. Ecol.* iv., 57 seq. (1916), and by Summerhayes, Cole, and Williams in *Journ. Ecol.* xii., 293 seq. (1924). Ostenfeld [in Warming: *Botany of the Faeroes*, 962 seq. (1908)] describes a "grass slope" community, and similar types of vegetation are common in Iceland. While for St Kilda any similar type of community as such must be considered as derived under the influence of man and his introduced animals, this does not solve the phytogeographical problem of the origin in the islands of the species involved. They

are all species of wide distribution in the North Temperate Region and most of them occur in a wide range of habitats, but rarely as dominant plants unless the substratum or vegetation has been modified by man. I am inclined to think that most of the species enumerated have been introduced to St Kilda by man but it is not possible to speak with the same assurance as for the species listed in paragraph III.

4. Of the native species forming the original vegetation those which suggest they may be relicts of a woodland ground flora are particularly interesting. They are only five in number, and though outside St Kilda they are not entirely limited to woods they are usually found in forest or brushwood. The general distributions of all five are wide in the North Temperate Region. The species are worth considering individually. *Ranunculus Ficaria* is said to be "one of the commonest plants" and to occur "everywhere." Druce for the Shetlands [Flora Zetlandica, in Report Bot. Soc. and Exch. Club. 1921, 459 (1922)] considers it has there been possibly introduced by man. For the British Isles its usual method of multiplication is vegetative, but this can scarcely be held as evidence against its being native. McNeil records it for Colonsay as "abundant in situations that, later on, are overgrown with bracken" [Colonsay (1910) 96]. Its tuberous roots are said to be scraped up in winter and eaten by pheasants, and they are also used by the inhabitants as a cure for piles, corns, etc. It has been introduced into the Faeroes [Botany of the Faeroes 854 (1908)]. *Vicia sepium* is certainly to be regarded as a native species though of very limited occurrence. In Great Britain it is usually a plant of wood-edges, hedgerows, shady banks, and roadsides, and even in moderately shady situations in woods. It is recorded for Colonsay (McNeil) and for the island of Harris [Balfour & Babington, A Catalogue of the Plants gathered in the Islands of North Uist, Harris, and Lewis, in Trans. Bot. Soc. Edinb. I., 148 (1843?)]. *Lonicera Periclymenum* is rather a surprising plant to find flowering luxuriantly in St Kilda. It is there of local occurrence, but since it is found right away from the houses and is also known from the Outer Hebrides and from Colonsay I must consider it a native. It might have been introduced by birds (see considerations of bird dispersal below) but it may also be a member of the pre-glacial vegetation, and indeed a relict of woods or brushwood. *Primula vulgaris* seems to occur in St Kilda chiefly near the sea, often on cliffs. It is not a member of the dominant heath-moor vegetation and has the appearance of being a relict. It occurs in the Outer Hebrides and in Colonsay. Druce (*l.c.* 504) records it as common in the Shetlands and it is "most likely a native" in the Faeroes [Botany of the Faeroes 50 (1901)]. *Luzula silvatica*, though in England and elsewhere often a woodland plant, in the north is frequently found on rock ledges and grassy slopes. Its occurrence "in large quantities" on the top of the island is noteworthy, but loses some of its possible significance when it is remembered that it is widely distributed in Scotland, the Shetlands, and the Faeroes outside woodlands and where it can scarcely be regarded as a forest or brushwood relict.

We are forced to conclude then, that while at least five species of the flora of St Kilda may be woodland relicts, the floristic evidence by itself is insufficient for us to postulate the previous existence of tree or brushwood communities on St Kilda. The species concerned are approaching their northern limits under oceanic conditions in St Kilda and their occurrence in herbaceous or suffruticose communities is perhaps connected with this, since there is a tendency for species to have a different ecological behaviour at the limits of their distribution areas. On the other hand it must be recalled that work on the Scottish peat bogs, and especially that by the modern method of pollen analysis, has indicated that in earlier post-glacial times trees and forests had a more northern distribution in the British Isles than they have at present [see a summary of the recent work on pollen analysis and post-glacial vegetation in *Bot. Gaz.* lxxxiii., 323 (1927)]. More exactly G. Erdtman [Studies in the Micropalaeontology of Post-glacial Deposits in Northern Scotland and the Scotch Isles, with especial reference to the history of the woodlands, in *Journ. Linn. Soc. Bot.* xvi., 449 (1924)] has shown that woods of birch, pine, and other trees were more widely distributed in the north and west of Scotland, including the islands, than they are at present. His investigations included some of the Hebrides and the Shetlands but not St Kilda. It is obvious that an examination for pollen of St Kilda peat is very desirable as a means of proving the previous existence of forests.

5. The small "arctic-alpine" element consists of species all of which have a very wide circumpolar distribution and extend on high mountains, far to the south in one or more of the continents. They are just sufficient to indicate the northern latitude of St Kilda (57 deg. 50 the last Ice Age.

6. The plants particularly characteristic of the sea-cliffs and rocks are not so numerous as might be expected, but this may be due to insufficient collecting on the wonderful steep cliffs, a process not lacking in danger. It should be noted that four of Macgillivray's records would come in here if substantiated. All the accepted species are of wide distribution and the phytogeographical problems connected with them are not peculiar to St Kilda but have an import beyond the scope of this paper. There is no reason for supposing the species placed in this category to be of recent introduction, but the evidence favours accepting them, with the aquatic and marsh and the heath-moor types, as constituting part of the old natural vegetation.

7. The aquatic and marsh species are mostly found in the small marsh at the head of Village Bay. There are only two or three perennial streams, of which that proudly known as "an Amhuinn Mhòr"—the great river—is the largest, and descends from Conacher, the highest hill, to the Village Bay. There is thus little fresh water for aquatic vegetation, but obviously several of the plants here listed under the heath-moor category might well be included also with the marsh species. The distinction, in the field, between marsh, bog, moor, and heath is

not always sharp, especially in the northern parts of the British Isles. No special comment is called for in considering the St Kilda fresh-water plants. They are all widely distributed species and are probably, with perhaps a few exceptions, an old element in the flora.

8. We come now to a consideration of the dominant element in the flora—what is here termed the heath-moor element. The basic differences between heath and moor and between marsh and bog are usually emphasised in the text-books. In practical field surveys, however, especially at higher latitudes or altitudes, we frequently find within comparatively small areas a convergence of these types of vegetation so that an easily graded series from one extreme to the other may be traced. The specific constitution in any one spot is related to environmental conditions which are very local and which can only be discovered by careful observation and experiment in the field. It follows that in any general account, such as this, it may be undesirable to attempt a further subdivision and we must consider the heath-moor type as one. Obviously the majority of the species, and especially the dominant and subdominant ones, are such as characterise the grouse-moors of Scotland and Yorkshire. These are usually considered as heaths botanically [see W. G. Smith in Tansley, *Types of British Vegetation* 113 (1911)]. Yet certain high moor and bog plants also occur. There is no doubt that this heath-moor type of vegetation is the dominant original type for St Kilda. That the biotic factor of grazing has modified it, is probable, but to what degree it is difficult to say. Some 1200 sheep roam the hills, and Soa has its own distinct breed which is kept uncontaminated [see R. Lydekker, *The Sheep and its Cousins*, 59 (1912) and the references given there]. It is unlikely that the sheep have exterminated or introduced any species of the St Kilda flora and it is by keeping down the higher growths of the suffruticose perennials, by grazing down the grasses, and by increasing the "modified vegetation" referred to above at the expense of the original heath-moor that we must expect them to influence the plant life. "Burning the heather" is sometimes done but apparently neither regularly nor over large areas. The violent storms of winter and the full exposure to the fury of the Atlantic gales make it probable that since St Kilda has had approximately its present configuration and island topography the heath-moor vegetation has been the climatic climax even apart from existing biotic factors. It follows that the species of the heath-moor vegetation must for the most part be relatively old in St Kilda.

In attempting to define "relatively old" a little more exactly one is confronted with many unsolved problems and only tentative working hypotheses can be put forward. I have been unable to obtain evidence that St Kilda was glaciated during the Quarternary Ice Age or Ages. It might well be that its flora, as represented by the dominant heath-moor types, survived the Ice Age in the islands, either these escaping glaciation owing to their oceanic position or plants continuing to exist on local nunataks. Postulating this pre-glacial origin for the main mass of the heath-moor flora one is in the main in agree-

ment with the recent views of Dr Woodhead with regard to the heaths of the Pennines [see Journ. Bot. lxii., 301 (1924), and The Naturalist 245 (1926)]. It should be noted that this view applies only to the northern heath-moor flora and vegetation, and to the arctic-alpine element. Personally I cannot accept the view that the southern element (including the Lusitanian) survived the Ice Age in the British Isles. If then the heath-moor flora is post-glacial in origin there are still two possibilities: either it reached St Kilda before this became an island, or it migrated across the sea. Since I favour the former view it is essential to consider in some detail the possibilities of the latter. It is unlikely on botanical grounds that ocean currents account for any of the species in our list. Moreover, the direction of ocean currents in the North Atlantic Ocean is not strongly in favour of such a possibility (see the Charts given in The Botany of the Faeroes, pp. 813-815). As regards winds we must remember that the most constant and the strongest blow from the south-west, west, and north, i.e. from the open ocean. A few of the species have seeds or fruits with a structure suitable for wind dispersal (e.g. *Salix repens*, *Eriophorum angustifolium*) and still more have small light seeds or spores. If the winds usually blew from the Hebrides it might be admissible to accept wind dispersal over the 50 or so miles of sea for a majority of the species, but since this is not so it is not advisable to accept this factor as working now. The last long-distance dispersal agents over sea areas (apart from man) are birds. A considerable number of migratory birds, both land birds and sea birds, are recorded for St Kilda (see Macgillivray *l.c.*, also papers by Mackenzie and by Waterston in Ann. Scot. Nat. Hist. 1905, pp. 75, 141, 199). It is very possible that a few species have been introduced by them (notably *Lonicera Periclymenum* listed with the possible wood relicts) but it is at least doubtful if they account for many of the species. The evidence for bird carriage over long distances of sea in north-western Europe is a controversial subject. Thus in "The Botany of the Faeroes" Ostenfeld (pp. 116 seq.) gives and agrees with the opinion of the ornithologist Andersen that "migratory birds are of hardly any importance as disseminators of plants," while Warming (pp. 676 seq.) and Børgesen (pp. 809 seq.) believe that seeds, etc., can be and often are carried in small crusts of mud and similar substances on the beaks and feet of birds, though they too accept the view that birds migrate on empty stomachs. It is unlikely, then, that any appreciable number of species have been carried internally by birds, but there must remain a doubt as to the value to be attributed to dispersal externally on feet and feathers.

It is fair to turn now to a consideration of the view that the main constituents of the heath-moor flora reached St Kilda over a pre-glacial land connection. Geologists are mainly in agreement that a Tertiary land, largely covered with basaltic flows, occupied the district from Northern Ireland to Scotland and Iceland, and though there is a range of opinion when most of this foundered, with the working hypothesis here postulated it is not necessary to suppose its continuance into

post-glacial times. If then St Kilda remained in contact with Scotland or the larger Hebridean islands till Pliocene times our view is considerably strengthened. I have found no published geological evidence against this being possible. That the main fracturing and foundering of the North Atlantic continent occurred before the Ice Age seems certain because, as I have seen in Iceland and the Faeroes, the glaciation around these islands is outwards from the centre to the sea in all directions. Yet there is also some evidence that the fracturing and foundering stretched through an enormous period of time from the Miocene into the Pliocene [see Cole, *The Growth of Europe*, pp. 51 seq. (1914)]. So much for the geological evidence.

The hypothesis suggested here is based mainly upon a consideration of the total floristic composition of the heath-moor flora. It is not denied that wind and birds could introduce new plants but it seems unlikely that such a selection would have been made by these agencies. As the list proves, the flora is a typical piece of Scottish "moor" ecologically varying from heath to moor in the strict sense. Many exactly similar communities occur in the western Highlands and islands and suggest that botanically St Kilda is merely a detached portion of Scotland. If this is not actually so it is difficult to understand the absence of examples of discontinuity in distribution in St Kilda. Moreover, certain species occur which are not recorded from the Faeroes, basing this statement on Ostenfeld's revised list (*Botany of the Faeroes*, pp. 896 seq.). Thus *Hydrocotyle vulgaris*, *Taraxacum paludosum*, *Pedicularis silvatica*, *Schoenus nigricans*, *Rumex Acetosella*, *Salix repens*, *Aira praecox*, *Ophioglossum vulgatum*, and *Eupteris aquilina* occur in St Kilda and Western Scotland but are absent from the Faeroes. There is nothing in the flora to connect especially St Kilda with Greenland, the Faeroes, or Iceland. The floristic and ecological affinity is most strongly with those parts of Western Scotland with an acid terrain. The absence of certain genera and species also speaks for the same view since the rich Alpine-Arctic flora of the Scotch mountains predominates only where calcareous rocks outcrop [see Patton, *Rep. Bot. Soc. and Exch. Club* 1922, 797 (1923)]. It is this which possibly helps to explain the absence from St Kilda of species of *Saxifraga* (other than *S. oppositifolia*), *Dryas*, *Hieracium*, and many other plants.

The life-forms agree with the climatic and edaphic conditions. Thus in the heath-moor vegetation we find: 2 nanophanerophytes, 9 chamaephytes (several of them dominants), 40 hemicyptophytes, 10 geophytes, and only 5 therophytes. Wind and birds would be likely to introduce a higher number of therophytes, though it might be argued that these could not establish themselves.

The absence of endemics need some explanation. St Kilda is limited in size, in range of habitats, and in the composition of its flora, while it, in common with all north-western Europe, has suffered great climatic changes in late Tertiary and Quarternary times. All of these facts are against the existence of endemics, which are of two possible kinds—relict and novitate species. There is, in our view, no reason

why relict species should be endemic in St Kilda, since they should rather be found also in Scotland at least. Novitate species occur especially where ecological conditions are varied but have had a long period of continuity, and where genera with numerous species occur. In these we find St Kilda also at a disadvantage.

To sum up we may suggest, in a very tentative manner, that the heath-moor flora of St Kilda is much as it was in late Pliocene times, that it survived the Ice Age *in situ*, and that it is actually a detached piece of West Scottish vegetation.

In conclusion, my best thanks are due to my friends H. K. A. Shaw and C. E. Hubbard for assistance in determining some of the plants in the above list, and to J. Gladstone for much valuable information as well as for the collection on which this paper is mainly based.

Kew, November 1927.

ADVENTIVE FLORA OF THE METROPOLITAN AREA. (I.)

RECENT ADVENTIVES ON LONDON RUBBISH.

By R. MELVILLE and R. L. SMITH.

From time to time lists of adventive plants found in the London district have been compiled and published, but no serious study of the foreign plants to be found growing on waste ground near London seems to have been made. Three years ago the writers took upon themselves the interesting task of exploring all the likely spots they could discover and making a note of all the adventive plants they saw. This paper records the results of their observations.

It was soon realised that the various rubbish dumps of the L.C.C. were the most fruitful spots to explore and, accordingly, interest was centred around them. Large quantities of household and general rubbish are taken down the Thames in barges to be tipped on the low lying ground between Barking and Tilbury and smaller quantities are taken along the Grand Junction Canal and tipped near Yiewsley. Although these tips are all of a similar type and, broadly speaking, have almost identical floras, a short account of five of them will not be out of place.

DAGENHAM, ESSEX.

This is by far the largest strip of waste ground that has been explored. It is at least a square mile in area and extends along the low lying ground on the north bank of the Thames between Dagenham Dock and a point opposite Rainham. London rubbish has been tipped here for many years, and most of the ground is now too overgrown with vigorous native plants to allow other than a few of the more hardy of the adventives to persist. Nevertheless several of these adventives have thoroughly established themselves on the old part of the tip. Of these

the most prominent are *Heracleum Mantegazzianum*, *Rumex Patientia*, and *Bunias orientalis*. The two former are growing together and form a veritable forest of vegetation over eight feet high that must be seen to be appreciated. The ground that this "forest" stands on has been acquired by a commercial firm and will probably soon be cleared and levelled. *Solanum nigrum* is the dominant plant over quite large areas on some of the newer parts of the tips, where it forms a dense undergrowth. Other parts are covered with a tangle of *Chenopodiums* among which the various forms of *Chenopodium rubrum* are the most frequent. About one hundred and seventy adventives have been found in this locality including fifty-six not observed on the other hunting grounds.

GRAYS, ESSEX.

About a mile to the east of Grays on the bank of the Thames is another L.C.C. rubbish tip about a quarter of a square mile in extent. In this locality *Erigeron canadensis* and *Rapistrum rugosum* have made themselves at home and are quite established, as is also a small patch of *Onopordon acanthium*. About sixty-five adventives have been gathered on this dump including nine that have not been seen elsewhere in the district.

TILBURY, ESSEX.

The waste ground in the vicinity of Tilbury Docks has long been recognised as a source of alien plants, but when visited in 1926 it was not very promising. The dock area has recently been enlarged and much new material, which may be productive later, has been tipped. About a dozen plants only have been included in the list from this locality.

YIEWSLEY, MIDDLESEX.

The waste ground near Yiewsley, which is an old hunting ground of Dr Druce's, consists of several rather small areas on either bank of the Grand Junction Canal just within the Middlesex boundary. It has proved most interesting on account of the large number of species to be seen within a small area. *Acorus Calamus* grows along the canal-bank, and *Impatiens biflora* is of frequent occurrence in the neighbouring streams and ditches together with an occasional plant of *Impatiens glandulifera*. On the waste ground itself *Chenopodium rubrum* is very common together with other *Chenopodiums* and *Solanum nigrum*. A large variety of cereals has been found here and these may be classed as chicken-food aliens. A total of 118 species has been found in this locality, including 34 not gathered elsewhere.

HACKNEY MARSH, MIDDLESEX.

On both sides of the river Lea about a mile to the east of Homerton are several small rubbish dumps. Nearly the whole of this ground lies within the Middlesex boundary, but a small portion is in Essex. A variety of adventives occurs here, but no one plant is dominant over an area of any size. *Acorus Calamus* and *Archangelica officinalis* are estab-

lished on the river bank. In this neighbourhood seventy-three species have been gathered, including nineteen new additions.

In making a study of adventive plants, many difficulties arise which are not encountered when one is working on the native flora. There is every chance of finding a native plant that may be known to grow in a certain locality, but the enthusiastic searcher after adventive plants has to make light of many an inconvenience and disappointment.

For instance, if one's nose and ears are at all sensitive, the former is sure to be displeased with the multifarious odours that are ever present, while the latter will be plagued with the chirping of the millions of crickets that make their home on these tips. Another frequent source of annoyance is the presence of hosts of gnats and mosquitos all "out for blood."

Then again, one may go out of a week-end and, among other finds, see a strange plant not yet in flower. Rough bearings are taken and a note made to visit the spot a week or so later, but when the next visit is made, one is very fortunate if the plant in question can be gathered. It is no uncommon experience to find that the spot where the plant was growing has been freshly tipped and the plant obliterated. However, there is an even more exasperating possibility. Vegetation grows very quickly on these heaps and instead of returning to a few scattered plants with our "stranger" easily discernible amongst them, we are confronted with a veritable forest of plants and, search how we will, our quarry eludes us and we are forced to regard it as an unsolved mystery. Thus our notebooks are strewn with interrogation marks that will never be cancelled and, indeed, one can never be sure of a specimen until it is safely in the drying press.

But this is not the end of our troubles. The identification of an adventive plant, owing to the lack of any knowledge of its native country, is often a matter of some difficulty. As a rough estimate, fifty per cent. of our adventives are to be found in countries bordering on the Mediterranean Sea, which makes it possible to identify a fair proportion with the aid of a good French or Italian flora. North American plants come next in point of numbers and the remainder from all parts of the world, but of these a number are garden outcasts or plants having some economic use.

In spite of its drawbacks the writers prefer this kind of field work to the more conventional form and have had many enjoyable excursions over rubbish heaps. It offers the charm of uncertainty—one can never tell what one may find next.

When visiting a rubbish dump in search of adventive plants, it is advisable to seek the ground that has been tipped upon recently, but not too recently. Experience has shown that the rubbish tipped during the autumn and winter of one year will, if left undisturbed, produce quite a crop of plants by the late summer of the following year. This does not mean that the late summer is the only time that these plants are worth seeking. Far from it—there is always something fresh and

interesting to be seen from early May to mid-October, but late August is perhaps the best time, at all events, for a single visit.

This list includes approximately two hundred and fifty plants, which have been arranged according to the second edition of Dr Druce's "British Plant List," to which the numbers refer. No species has been included unless its identity has been established with reasonable certainty. In this connection our cordial thanks are offered to Dr Druce, Dr Thellung, and the staffs of the British Museum (Botanical Dept.) and the Kew Herbarium for their help.

No claim of finality is made for this paper, for such a state is obviously unattainable in any survey of adventive plants. It is probable that during the next few years sufficient material will accumulate to warrant the writing of a supplement to this, shall we say, tentative List of London's Adventive Plants.

- 13/3. *DELPHINIUM AJACIS* L. Europe. Hackney Marshes; Yiewsley; flore pleno alba, Dagenham. Probably the garden annual in each case.
- 21/1. *PAPAVER SOMNIFERUM* L. Orient. Dagenham; Yiewsley. Opium Poppy.
- 21/6. *P. HYBRIDUM* L. Europe; N. Africa. Dagenham.
- 28/1. *ESCHSCHOLZIA DOUGLASHII* Walp. California. Dagenham. Californian Poppy.
- 33/4. *MATHIOLA BICORNIS* DC. Eastern Europe. Dagenham. Night-scented Stock.
- 42/10. *ALYSSUM MARITIMUM* Lam. Europe. Dagenham; Yiewsley. Sweet Alyssum.
- 45/1. *COCHLEARIA ARMORACIA* L. Europe. Dagenham; Grays; Yiewsley; Hackney Marshes. Horseradish.
- 48/1. *WILCKIA MARITIMA* Scop. Europe. Dagenham; Yiewsley. Virginian Stock.
- 49/2. *SISYMBRIUM SOPHIA* L. Europe. Dagenham; Yiewsley.
- 49/3. *S. ALTISSIMUM* L. Europe. Dagenham; Grays; Yiewsley; Tilbury.
- 49/4. *S. ORIENTALE* L. Europe. Dagenham; Grays; Yiewsley.
- 49/6. *S. OFFICINALE* Scop., var. *LEIOCARPUM* DC. Europe. Yiewsley.
- 49/11. *S. PYRENAICUM* Vill. Europe. Dagenham.
- 49/13. *S. LOESELII* L. Europe. Dagenham.
- 50/1. *ERYSIMUM CHEIRANTHOIDES* L. Europe. Dagenham; Yiewsley; Hackney Marshes.
- 52/1. *CAMELINA SATIVA* Crantz. Europe. Dagenham; Hackney Marshes.
- 54/2. *BRASSICA NAPUS* L. Dagenham; Yiewsley.
- 54/3. *B. NAPO-BRASSICA* Mill. Dagenham; Grays; Yiewsley. Swede Turnip.
- 54/4. *B. RAPA* L. Dagenham; Yiewsley. Turnip.
- 54/15. *B. ALBA* Boiss. Europe. Dagenham; Yiewsley; Hackney Marshes.

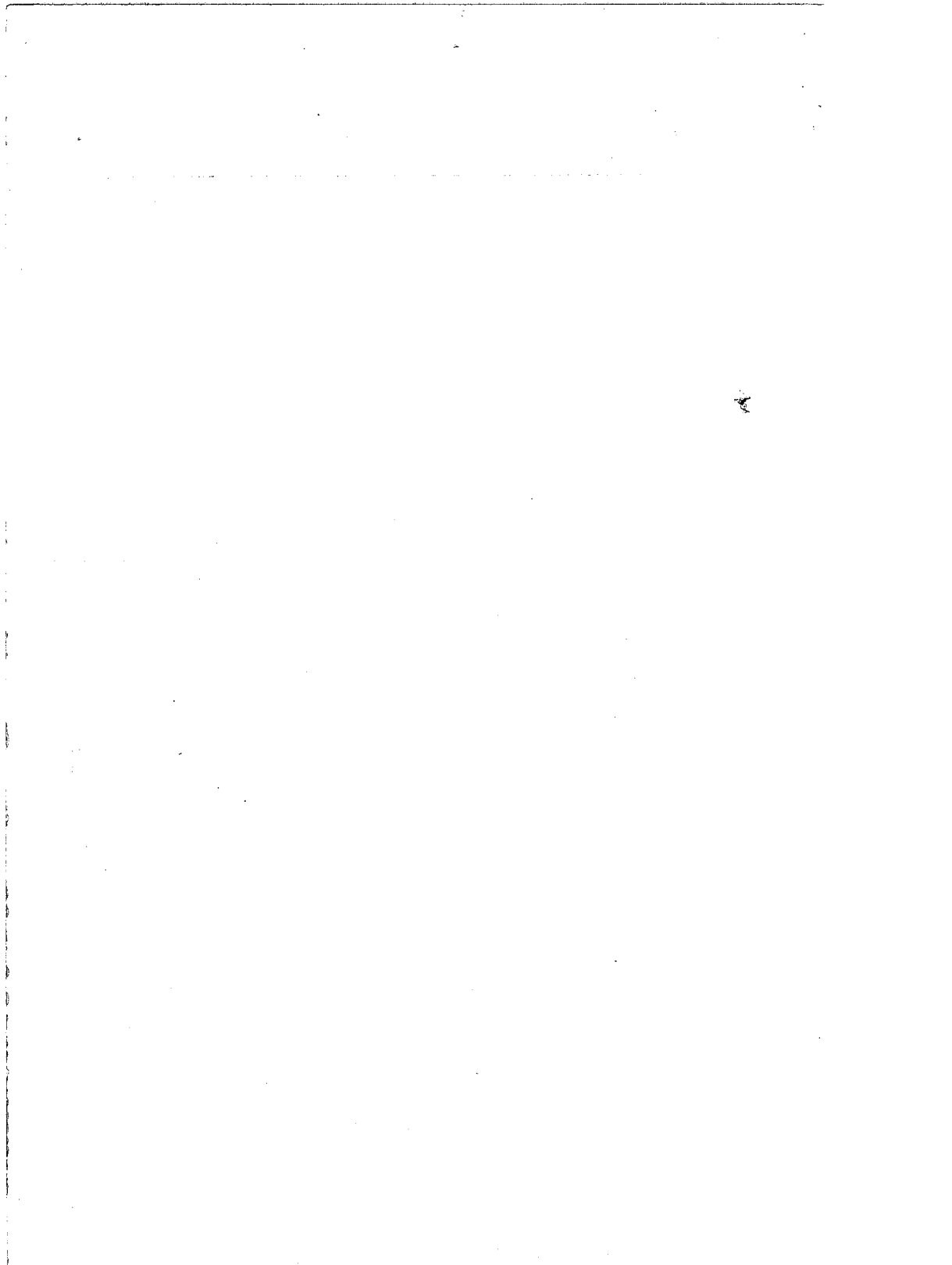
- 54/16. *B. JUNCEA* Coss. Asia. Dagenham; Yiewsley; Hackney Marshes.
 55/1. *DIPLOTAXIS TENUIFOLIA* DC. Europe. Dagenham; Grays; Hackney Marshes.
 55/2. *D. MURALIS* DC. Europe. Grays.
 55/3. *D. ERUCOIDES* DC. Europe. Dagenham; Hackney Marshes.
 56/2. *ERUCA ERUCA* (L.). Europe. Dagenham.
 61/1. *LEPIDIUM GRAMINIFOLIUM* L. Europe. Dagenham.
 61/3. *L. DRABA* L. Europe. Dagenham; Yiewsley; Grays; Tilbury.
 61/4. *L. RUDERALE* L. Europe. Dagenham; Yiewsley; Grays; Tilbury.
 61/12. *L. SATIVUM* L. Orient. Dagenham; Yiewsley; Hackney Marshes.
 61/20. *L. VIRGINICUM* L. N. America. Yiewsley.
 64/1. *THLASPI ARVENSE* L. Europe. Dagenham; Yiewsley; Grays; Hackney Marshes.
 65/2. *IBERIS UMBELLATA* L. Europe. Dagenham.
 70/1. *VOGELIA PANICULATA* Hornem. Europe. Dagenham; Hackney Marshes.
 72/1. *MYAGRUM PERFOLIATUM* L. Europe. Hackney Marshes.
 74/2. *BUNIAS ORIENTALIS* L. Europe. Dagenham; Grays.
 76/2. *RAPISTRUM ORIENTALE* DC. Greece. Dagenham; Grays.
 78/1. *ENARTHROCARPUS LYRATUS* DC. Greece. Hackney Marshes.
 80/4. *RAPHANUS SATIVUS* L. Orient. Dagenham; Yiewsley; Grays; Tilbury; Hackney Marshes.
 84/1. *GYNANDROPSIS PENTAPHYLLA* DC. Africa; S. America. Dagenham. A curious but uncommon garden annual.
 85/8. *RESEDA ODORATA* L. Egypt. Dagenham; Yiewsley. Mignonette.
 92/8. *DIANTHUS CARYOPHYLLUS* L. Europe. Dagenham.
 95/2. *SAPONARIA VACCARIA* L. Europe. Dagenham; Yiewsley.
 96/4. *SILENE NOCTIFLORA* L. Europe. Hackney Marshes.
 96/5. *S. ANGLICA* L. Europe. Hackney Marshes.
 96/16. *S. DICHOTOMA* Ehrh. Europe. Grays.
 98/9. *LYCHNIS GITHAGO* Scop. Europe. Yiewsley.
 115/3. *ALTHAEA ROSEA* L. Europe. Dagenham; Hackney Marshes. Hollyhock.
 117/6. *MALVA AMBIGUA* Guss. S. Europe. Dagenham.
 117/9. *M. PARVIFLORA*, var. *MICROCARPA* (Desf.) F. & P. Europe. Hackney Marshes.
 125/4. *LINUM USITATISSIMUM* L. Cult. Dagenham; Yiewsley; Hackney Marshes. Flax.
 127/27. *GERANIUM SIBIRICUM* L. Asia. Dagenham. Naturalised in N. America.
 130/1. *TROPAEOLUM PEREGRINUM* L. Peru. Dagenham.
 130/2. *T. MAJUS* L. Peru. Dagenham; Yiewsley.
 133/2. *IMPATIENS BIFLORA* Walt. America. Yiewsley. Frequent in Surrey.
 133/4. *I. GLANDULIFERA* Royle. Himalayas. West Drayton.
 140/1. *VITIS VINIFERA* L. Europe. Dagenham; Yiewsley; Grays; Hackney Marshes. Vine.

- 140/2. *V. HEDERACEA* L. (*AMPELOPSIS QUINQUEFOLIA* Michx.). N. America. Yiewsley; Dagenham.
- 140/3. *V. THUNBERGII* (S. & Z.) Dr. (*AMPELOPSIS VEITCHII* Hort.). N. America. Yiewsley; Dagenham.
- 153/1. *MEDICAGO FALCATA* L. × *M. SATIVA* L. Europe. Dagenham.
- 153/3. *M. SATIVA* L. Europe. Dagenham; Yiewsley; Grays. Lucerne.
- 153/4. *M. DENTICULATA* Willd. Europe. Hackney Marshes.
- 153/4. *M. HISPIDA* Gaertn., var. *CONFINIS* Burnat. Europe. Hackney Marshes.
- 153/5. *M. ARABICA* Huds. Europe. Hackney Marshes; Yiewsley.
- 154/1. *MELILOTUS ALTISSIMA* Thuill. (*OFFICINALIS* Lam.). Europe. Dagenham.
- 154/2. *M. ALBA* Desr. Europe. Dagenham; Hackney Marshes.
- 154/4. *M. INDICA* All. Europe. Dagenham; Yiewsley; Grays; Hackney Marshes.
- 155/4. *TRIFOLIUM INCARNATUM* L. Europe. Dagenham.
- 155/15. *T. HYBRIDUM* L. Europe. Dagenham; Yiewsley.
Var. *ELEGANS* (Savi). Europe. Dagenham.
- 160/11. *LOTUS ORNITHOPODIODES* L. South Europe. Dagenham.
- 163/1. *GALEGA OFFICINALIS* L. Europe. Dagenham; Grays.
- 165/1. *COLUTEA ARBORESCENS* L. Orient. Dagenham; Grays; Tilbury.
Common by the District Railway near Barking.
- 170/1. *CORONILLA VARIA* L. Europe. Dagenham.
- 175/1. *CICER ARIETINUM* L. Orient. Dagenham. Chick Pea. Introduced with chicken-food.
- 176/5. *VICIA VILLOSA* Roth. Europe. Yiewsley.
- 176/6. *V. DASYCARPA* Ten. Europe. Hackney Marshes.
- 176/12. *V. SATIVA* L. Cult. Dagenham; Yiewsley; Grays; Hackney Marshes.
- 176/16. *V. BENGHALENSIS* L. Europe. Yiewsley.
- 176/24. *V. FABA* L. Cult. Dagenham; Yiewsley; Grays; Hackney Marshes.
- 176/26. *V. PANNONICA* Cr., b. *STRICTA* M. Bieb. Europe. Dagenham.
- 176/31. *V. PEREGRINA* L. Europe. Dagenham; Hackney Marshes.
- 178/23. *LATHYRUS ODORATUS* L. Europe. Dagenham; Yiewsley.
- 180/1. *PISUM ARVENSE* L. Europe. Dagenham; Yiewsley; Hackney Marshes.
- 180/5. *P. SATIVUM* L. Europe. Dagenham; Yiewsley.
- 189/11. *POTENTILLA NORVEGICA* L. Europe. Dagenham; Hackney Marshes.
- 219/2. *LYTHRUM HYSSOPIFOLIA* L. Europe. Yiewsley.
- 223/1. *OENOTHERA BIENNIS* L. N. America. Dagenham; Grays; Yiewsley.
- 223/2. *OE. GRANDIFLORA* Ait. (*LAMARKIANA* De Vries). N. America. Yiewsley.
- 223/8. *OE. ARGENTINA* Lévl. & Thell., var. *LONGIPILA* Kloos & Thell. S. America. Dagenham.

- 228/1. *LAGENARIA LAGENARIA* (L.) Dr. (VULGARIS Ser.). Tropics. Dagenham. Common Gourd.
- 230/1. *CITRULLUS CITRULLUS* (L.) Dr. Tropical Africa. Dagenham. Water Melon.
- 231/3. *CUCUMIS MELO* L. Asia. Yiewsley.
- 231/4. *C. MAXIMA* Duch. West Indies. Yiewsley.
- 231(2)/1. *CUCURBITA PEPO* L. Asia. Dagenham; Yiewsley; Grays.
- 250/1. *CARUM CARVI* L. Europe. Dagenham; Hackney Marshes. Caraway.
- 250/3. *C. PETROSELINUM* B. & H. Cult. Dagenham; Yiewsley. Parsley.
- 275/1. *ARCHANGELICA ARCHANGELICA* (L.) Karst. (OFFICINALIS Hoffm.). Europe. Hackney Marshes. Naturalised on the banks of the River Lea.
- 276/4. *PEUCEDANUM GRAVEOLENS* (L.). Europe. Dagenham. Dill.
- 277/1. *HERACLEUM MANTEGAZZIANUM* Somm. and Levier. Caucasus. Dagenham; Yiewsley. See accompanying plate.
- 279/1. *CORIANDRUM SATIVUM* L. Europe. Dagenham; Yiewsley; Hackney Marshes. Coriander.
- 287/3. *SAMBUCUS EBULUS* L. Europe. Tilbury.
- 298/10. *GALIUM TRICORNE* Stokes. Europe. Yiewsley; Hackney Marshes.
- 308/3. *DIPSACUS SATIVUS* (L.). Europe. Dagenham; Yiewsley. Previously recorded in the latter locality, but newly introduced.
- 312/6. *SOLIDAGO CANADENSIS* L. N. America. Dagenham; Temple Fortune.
- 318/4. *ASTER NOVI-BELGII* L. N. America. Yiewsley.
- 318/13. *A. NOVAE-ANGLIAE* L. N. America. Yiewsley.
- 320/3. *ERIGERON CANADENSIS* L. N. America. Dagenham; Yiewsley; Grays.
- 339/4. *AMBROSIA TRIFIDA* L. N. America. Dagenham. This plant has persisted for three years.
- 341/3. *XANTHIUM SPINOSUM* L. Cosmopolitan. Dagenham; Hackney Marshes.
- 347/4. *HELIANTHUS ANNUUS* L. N. America. Dagenham; Yiewsley; Grays; Hackney Marshes. Sunflower.
- 347/8. *H. LAETIFLORUS* Pers. N. America. Yiewsley.
- 347/12. *H. TUBEROSUS* L. N. America. Yiewsley. Jerusalem Artichoke.
- 347/13. *H. DIFFUSUS* Sims (*H. SCABERRIMUS* Ell.). N. America. Dagenham; Yiewsley; Grays.
- 351/1. *GUIZOTIA ABYSSINICA* Cass. Africa; India. Dagenham; Hackney Marshes. This plant is cultivated in India for its seeds, which yield a bland oil similar to Sesame. A frequent alien.
- 354/1. *GALINSOGA PARVIFLORA* Cav. America. Dagenham; Hackney Marshes.
- 362/2. *TAGETES MINUTA* L. Dagenham; Hackney Marshes.
- 364/2. *ANACYCLUS RADIATUS* Lois., var. *PALLESCENS*. Europe. Dagenham.
- 370/1. *CHRYSANTHEMUM SEGETUM* L. Europe. Dagenham.
- 370/3. *C. MORIFOLIUM* Rau (*SINENSE* Sabin). Hortal. Yiewsley.



HERACLEUM MANTEGAZZIANUM SOMM. & LEVIER.
DAGENHAM, ESSEX, 1927, R. MELVILLE.



- 370/13. *C. PARTHENTIUM* Bernh. Europe. Hackney Marshes.
 371/3. *MATRICARIA SUAVEOLENS* Buch. N. America. Dagenham; Yiewsley; Grays; Hackney Marshes.
 371/9. *M. GLOBIFERA* Fenzl. S. Africa. Dagenham.
 378/1. *ARTEMISIA ABSINTHIUM* L. Europe. Dagenham.
 378/8. *A. ABROTANUM* L. Spain. Yiewsley. Southernwood.
 378/15. *A. ANNUA* L. Orient. Yiewsley.
 383/7. *SENECIO SQUALIDUS* L. Europe. Dagenham; Yiewsley; Hackney Marshes.
 383/8. *S. VISCOSUS* L. Europe. Dagenham; Grays; Yiewsley.
 385/1. *CALENDULA OFFICINALIS* L. Europe. Dagenham; Yiewsley; Grays. Marigold.
 395/3. *CARDUS Pycnocephalus* L. Europe. Hackney Marshes.
 397/1. *ONOPORDON ACANTHIUM* L. Europe. Grays.
 398/1. *CYNARA CARDUNCULUS* L. Europe. Dagenham; Hackney Marshes. Globe Artichoke.
 399/1. *MARIANA MARIANA* Hill. (LACTEA). Europe. Dagenham; Hackney Marshes.
 405/12. *CENTAUREA CYANUS* L. Europe. Dagenham; Yiewsley; Grays. Cornflower.
 405/31. *C. SOLSTITIALIS* L. Europe. Dagenham.
 405/32. *C. MELTENSIS* L. Europe. Dagenham; Yiewsley; Hackney Marshes.
 407/3. *CARTHAMUS TINCTORIUS* L. Africa. Dagenham; Yiewsley; Grays; Hackney Marshes.
 Var. *INERMIS* Schweinf. Yiewsley.
 409/1. *CICHORIUM INTYBUS* L. Europe. Dagenham; Grays. Chicory.
 409/2. *C. ENDIVIA* L. Europe. Dagenham; Yiewsley; Grays. Endive.
 415/2. *PICRIS HIERACIODES* L. Europe. Dagenham; Grays; Tilbury.
 416/10. *CREPIS TARAXACIFOLIA* Thuill. Europe. Dagenham; Yiewsley.
 425/1. *LACTUCA VIROSA* L., type and var. *INDIVISA*. Europe. Dagenham; Yiewsley; Grays; Tilbury.
 425/. *L. SATIVA*. Dagenham; Yiewsley. Lettuce.
 425/8. *L. MACROPHYLLA* A. Gray. Europe. Temple Fortune.
 463/3. *LYSIMACHIA PUNCTATA* L. Europe. Yiewsley.
 467/3. *ANAGALLIS FOEMINA* Mill. Europe. Dagenham.
 473/1. *VINCA MAJOR* L. Europe. Yiewsley.
 474/2. *BUDDLERIA DAVIDII* Franch. China. Yiewsley.
 493/2. *LAPPULA LAPPULA* (L.). Europe; Orient. Dagenham; Yiewsley.
 507/3. *LITHOSPERMUM ARVENSE* L. Europe. Dagenham; Hackney Marshes.
 516/1. *LYCOPERSICON LYCOPERSICUM* (L.) (ESCULENTUM Hill). America. Dagenham; Yiewsley; Grays; Hackney Marshes. Tomato.
 517/2. *SOLANUM NIGRUM* L. Hackney Marshes; Yiewsley; Dagenham; Grays.
 Var. *ATRIPLICIFOLIUM* Coult. Hackney Marshes.
 517/16. *S. CILIATUM* Lam. S. America. Dagenham; Yiewsley.
 517/17. *S. SARRACHOIDES* Sendtn. Central America. Dagenham.

- 518/7. *PHYSALIS PERUVIANA* L. S. America. Dagenham; Yiewsley; Grays; Hackney Marshes.
- 520/1. *LYCIUM CHINENSE* Mill. China. Dagenham; Tilbury.
- 521/1. *ATROPA BELLADONNA* L. Europe. Dagenham. Quite naturalised.
- 522/1. *DATURA STRAMONIUM* L. Europe. Dagenham; Hackney Marshes. Thorn Apple.
- 524/1. *HYOSCYAMUS NIGER* L. Europe. Dagenham; Hackney Marshes. Henbane.
- 524/4. *H. MUTICUS* L. Egypt. Dagenham.
- 525/1. *NICOTIANA RUSTICA* L. Mexico. Dagenham.
- 525/3. *N. TABACUM* L. America. Grays; Yiewsley.
- 525/5. *N. ALATA* Link & Otto, var. *GRANDIFLORA* Comes (AFFINIS T. Moore). Hortal. Dagenham; Yiewsley; Grays.
- 527/1. *VERBASCUM PHLOMOIDES* L. Europe. Dagenham.
- 534/1. *ANTIRRHINUM MAJUS* L. Europe. Dagenham; Yiewsley.
- 537/1. *MIMULUS GUTTATUS* DC. N. America. West Drayton.
- 543/1. *VERONICA SPICATA* L. Europe. Yiewsley.
- 556/7. *VERBENA TRUCIROIDES* Gill. & Hook. Dagenham.
- 556(2)/1. *OCIMUM MICRANTHUM* Willd. Tropical America. Dagenham. Basil.
- 560/2. *ORIGANUM ONITES* L. Europe. Dagenham.
- 566/17. *SALVIA VERTICILLATA* L. Europe. Dagenham.
- 569/1. *NEPETA CATARIA* L. Europe. Grays.
- 570/3. *DRACOCEPHALUM PARVIFLORUM* Nutt. N. America. Dagenham.
- 577/7. *STACHYS ANNUA* L. Europe. Hackney Marshes.
- 577/9. *S. SALICIFOLIA* Ten. (*ITALICA* auct.). Europe. Dagenham.
- 588/1. *PLANTAGO INDICA* L. Europe; Asia Minor. Grays.
- 596/1. *AMARANTHUS CAUDATUS* L. Orient. Yiewsley.
- 596/4. *A. CHLOROSTACHYS* Willd. Europe. Yiewsley.
Var. *ARISTULATA* Thell. Dagenham.
- 596/9. *A. ALBUS* L. N. America. Dagenham; Grays.
- 600/6. *CHENOPodium MURALE* L. Europe. Dagenham.
- 600/7. *C. OPULIFOLIUM* Schrad. Europe. Dagenham; Grays.
- 600/8. *C. ALBUM* L., var. *VIRIDE* L. Europe. Yiewsley.
Var. *VIRIDESCENS* St Am. Europe. Yiewsley.
Var. *SUBFICIFOLIUM* Murr, forma *MICROPHYLLUM*. Hackney Marshes.
Var. *LANCEOLATIFORME* Murr. Yiewsley.
- 600/11. *C. LEPTOPHYLLUM* Nutt. N. America. Yiewsley.
- 600/12. *C. FIGIFOLIUM* Sm. Europe. Dagenham; Yiewsley.
- 600/15. *C. POLYSPERMUM* L. Europe. Dagenham; Yiewsley; Hackney Marshes.
- 600/16. *C. AMBROSIOIDES* L. Europe. Hackney Marshes.
- 604/2. *BETA VULGARIS* L. Cult. Dagenham; Yiewsley. Beetroot.
- 605/1. *SPINACIA OLERACEA* L. Cult. Dagenham; Yiewsley. Spinach.
- 606/10. *ATRIplex HORTENSIS* L. Asia. Yiewsley.
- 606/11. *A. TATARICA* L. Europe. Yiewsley; Hackney Marshes.

- 607/1. *AXYRIS AMARANTOIDES* L. N. Asia. Dagenham.
- 610/1. *KOCHIA SCOPARIA* Schrad. Europe. Dagenham. Summer Cypress.
- 613/1. *SALSOLA KALI* L., var. *TENUIFOLIA* Tausch. Dagenham; Grays.
- 615/32. *POLYGONUM CUSPIDATUM* Sieb. & Zucc. Japan. Dagenham; Yiewsley; Grays; Tilbury; Hackney Marshes.
- 616/1. *FAGOPYRUM FAGOPYRUM* (L.) (*SAGITTATUM* Gilib.). Europe. Dagenham; Grays; Hackney Marshes. Buckwheat.
- 616/2. *F. TATARICUM* (L.) Gaertn. N. America. Yiewsley; Dagenham.
- 618/12. *RUMEX PALUSTRIS* Sm. Europe. Grays.
- 618/19. *R. SALICIFOLIUS* Weinm. N. America. Dagenham; Grays.
- 618/20. *R. PATIENTIA* L. Europe. Dagenham.
- 618/29. *R. OBOVATUS* Danser. S. America. Hackney Marshes.
- 628/9. *EUPHORBIA VIRGATA* W. & K. Europe. Dagenham; Grays; Tilbury.
- 630/1. *RICINUS COMMUNIS* L. Tropics. Dagenham; Grays. Castor Oil Plant.
- 632/2. *MERCURIALIS ANNUA* L. Europe. Dagenham; Yiewsley.
- 635/1. *CANNABIS SATIVA* L. Central Asia. Dagenham; Yiewsley; Grays. Hemp.
- 647/1. *CASTANEA CASTANEA* (L.) Karst. (*SATIVA* Miller). Europe. Dagenham. Chestnut.
- 656/1. *ELODEA CANADENSIS* Michx. N. America. Dagenham; Yiewsley; Grays.
- 683/1. *TRITONIA CROCOSMIFLORA* Nich. (*MONTBRETIA*). Hortal. Iver; Dagenham.
- 717/3. *COMMELINA NUDIFLORA* L. Tropics. Hackney Marshes.
- 720/1. *PHOENIX DACTYLIFERA* L. N. Africa. Dagenham; Yiewsley; Grays. Date Palm.
- 724/1. *ACORUS CALAMUS* L. Europe. Yiewsley; Hackney Marshes.
- 754/1. *PANICUM MILIACEUM* L. Central Asia. Dagenham; Yiewsley; Grays; Hackney Marshes.
- 754/2. *P. CAPILLARE* L. N. America. Dagenham.
- 754/5. *P. LAEVIFOLIUM* Hack. Dagenham; Yiewsley; Grays.
- 754/8. *P. CRUS-GALLI* L.; var. *LONGISETUM* Döll. Europe. Dagenham; Grays; Hackney Marshes.
- 754/9. *P. FRUMENTACEUM* (Link) (*ECHINOCHLOA FRUMENTACEA* Link). Africa; China. Yiewsley.
- 754/10. *P. SANGUINALE* L. Europe. Dagenham.
- 756/1. *SETARIA ITALICA* (L.) Beauv. Europe. Dagenham; Yiewsley; Grays.
- 756/2. *S. VIRIDIS* (L.) Beauv. Europe. Yiewsley; Dagenham. Var. *WEINMANNI* R. & S. Yiewsley.
- 756/3. *S. GLAUCA* Beauv. Europe. Dagenham.
- 759/1. *ZEA MAYS* L. America. Dagenham; Yiewsley; Hackney Marshes. Maize.
- 763/1. *SORGHUM SORGHUM* (L.) Dr. (*VULGARE* Pers.). Tropics. Dagenham.

- 765/5. *PHALARIS CANARIENSIS* L. Cult. Dagenham; Yiewsley; Grays; Hackney Marshes.
- 765/8. *P. ANGUSTA* Nees. N. America. Hackney Marshes.
- 766/2. *ANTHOXANTHUM ARISTATUM* Boiss. (PUELLI Lec. & Lam.). America. Dagenham.
- 784/1. *GASTRIDUM VENTRICOSUM* (Gouan) S. & T. Europe. Grays.
- 785/1. *APERA SPICA-VENTI* (L.) Beauv. Europe. Dagenham; Yiewsley; Grays.
- 788/1. *LAGURUS OVATUS* L. Europe. Yiewsley.
- 794/7. *AVENA SATIVA* L. Cult. Yiewsley; Dagenham; Grays.
- 808/1. *CYNOSURUS ECHINATUS* L. Europe. Dagenham; Yiewsley; Grays; Hackney Marshes.
- 809/6. *KOELERIA PHLEOIDES* Pers. Europe. Grays.
- 815/6. *ERAGROSTIS PILOSA* Beauv. Tropics. Grays.
- 822/3. *BRIZA MAXIMA* L. Europe. Yiewsley.
- 824/5. *POA PALUSTRIS* L. Europe. Dagenham.
- 827/2. *BROMUS RIGIDUS* Roth. S. Europe. Tilbury.
- 827/13. *B. UNILOIDES* H.B.K. America. Dagenham; Yiewsley; Grays; Hackney Marshes.
- 827/16. *B. SECALINUS* L. Europe. Dagenham; Yiewsley; Hackney Marshes.
- 829/2. *LOLIUM TEMULENTUM* L. Europe. Dagenham; Yiewsley; Hackney Marshes.
- 830/2. *AGROPYRON PUNGENS* R. & S. Dagenham.
- 831/1. *SECALE CEREALE* L. Cult. Dagenham; Yiewsley; Grays; Hackney Marshes. Rye.
- 832/4. *TRITICUM AESTIVUM* L. (VULGARE Host). Cult. Yiewsley; Dagenham, etc.
- 835/7. *HORDEUM JUBATUM* L. N. America. Dagenham; Yiewsley; Hackney Marshes.
- 835/10. *H. VULGARE* L. Cult. Yiewsley; Dagenham, etc.
- 835/11. *H. HEXASTICHON* L. Cult. Hackney Marshes.
- 836/7. *ELYMUS VIRGINICUS* L. N. America. Dagenham.

MEETING OF SOME OF THE BOTANICAL SOCIETY OF THE
BRITISH ISLES IN GLAMORGAN, 1927.

By E. VACHELL.

Thursday, June 9. After such a successful visit to Weston-super-Mare some anxiety was felt by the local field botanist in charge of the Cardiff expeditions as to whether Glamorgan could possibly supply as many rare plants as Somerset. If its ability to do so was to be proved, no time could be wasted. As soon, therefore, as possible after the short voyage across the Bristol Channel was safely accomplished, cars were requisitioned to take the party via Llandaff, where a short time was spent in visiting the cathedral, to Llanishen where on the banks of the Roath Park Brook *Aconitum anglicum* grows in considerable abundance. Near by, on the Rhymney Railway embankment, the silvery leaves of *Anaphalis margaritacea* were seen in profusion. This plant was first noticed in the Rhymney Valley by Lhwyd in 1724, and now covers slag heaps, waste ground and mountain scree, almost, in some places, to the exclusion of other species. When gathering specimens of this plant a fine colony of *Equisetum hyemale* was noticed in the vicinity. This is a new habitat for a species very scarce in Glamorgan.

Friday, June 10. Starting early from the Angel Hotel the party drove through Llantwit Major, the seat of a monastery founded by St Iltyd about the 5th century, past St Donat's Castle to Marcross Cwm. Twice the charabanc was brought to a standstill as the bright blue flowers of *Achusa sempervirens* and attractive clumps of *Lathyrus latifolius* and *Asperula ciliata*, both relics of former cultivation, were passed. After a rough scramble over rocks and smooth round pebbles heaped up beneath the cliffs near Nash Point, *Mathiola incana* was seen in full bloom and *Brassicâ oleracea* one of the features of the Lias cliffs of Glamorgan. In the Cwm *Iris foetidissima*, *Campanula glomerata* and *Cnicus eriophorus* are plentiful and Dr Druce noticed the following varieties hitherto not recorded for the county:—*Crataegus monogyna*, var. *quercifolia*; *Sonchus asper*, var. *pungens*; *Sonchus oleraceus*, var. *lacerus*, and *Acer campestre*, var. *hebecarpa*. Driving through Southern-down, Dunraven Bay was next visited where, on dripping cliffs, *Adiantum Capillus-Veneris* was seen. Near the entrance to Dunraven Castle *Erodium maritimum*, *Sagina maritima* and *Ranunculus parviflorus* occur in some profusion. Dr Druce also noticed *Cnicus palustris*, var. *ferox*. The next stop showed *Cochlearia danica* and *Asperula cynanchica* on the Downs, *Inula Crithmoides* on cliffs by the sea, and *Asplenium marinum* in crevices of rock. After crossing the slippery stepping stones below the picturesque ruins of Ogmores Castle covered with *Cheiranthus Cheiri* the little party were rewarded by seeing *Hippuris vulgaris*, *Glaux maritima* and *Alopecurus geniculatus* while *Impatiens glandulifera* grew abundantly near by. A two minutes' halt at Shewell

provided *Polygonum Bistorta* for one of the party and after half-an-hour's drive the charabanc drew up at the quaint old-world village of Aberthin where *Anthemis nobilis*, *Leonurus Cardiaca*, *Mentha piperita*, *M. Pulegium* and *Stachys ambigua* occur. At Hensol Castle an amusing contretemps occurred. The late owner had only just given up possession and the charabanc, arriving by the South Lodge instead of by the main entrance as the caretaker had expected, found the gates locked and the lodge empty. It gained an entrance into the Park by a steep narrow lane up which it was impossible to effect an exit backwards, only to find that after a drive of half a mile between Park railings a second gate was barred against it. To turn was impossible, and it was well that a hurried search round the Castle was successful and that caretaker and key were found to extricate the charabanc from its unenviable position. In Hensol lake grow *Elatine hexandra*, *Ceratophyllum demersum* and *Scirpus sylvaticus*. St Hilary was next visited where a warm welcome awaited the members and a delicious tea was provided by Sir Thomas and Lady Mansel Franklen. Then, after a delightful rest in the garden Cardiff was reached in time for dinner. Later in the evening, by kind invitation of Mr Hyde, Keeper of Botany, a private visit was paid to the National Museum of Wales where the various galleries were inspected and much interest was shown in the valuable collections of China. Pictures and Welsh by-gones and in the exhibits displayed in the Botanical Department.

Saturday, June 11. Swansea was reached by train and taxis were in readiness at the station to convey the party to the peninsula of Gower. A halt was called at Park Mill to enable the members to walk over the sandhills to Pennard Castle, a picturesque ruin situated on a limestone crag near the shore. *Helleborus foetidus* and *Poa pratensis*, var. *sub-caerulea* were passed near the path and *Hutchinsia petraea* near the limestone rocks below the Castle. *Draba aizoides* occurs in fair quantity both on rocks bordering the steep incline leading up to the Castle and also on the ruined walls, but June is late for the Yellow Whitlow Grass and a prolonged search for a petal was made unsuccessfully, to satisfy the desire of one of the party to see it "in flower." The next stop was at Penmaen, near which, after a short walk, a picnic lunch was enjoyed on the steep grassy slopes overlooking Three Cliffs Bay, once the home of *Brassica monensis*. Here *Limonium binervosum*, *Euphorbia portlandica* and *Geranium sanguineum* are abundant and later in the year *Spiranthes autumnalis* appears amongst the short turf. After rejoining the cars the road through Penrice Castle grounds past the old station for *Hypericum calycinum* was taken to Oxwich Bay. Botanically speaking, this strip of country is exceedingly interesting and would have repaid a longer visit. *Typha angustifolia* and *Chara fragilis*, etc., were seen in the ponds, *Juncus acutus* in the slacks of the sandhills, and *Glaucium flavum* on the shingle, and after a hurried visit to Old Oxwich Church tea was found very acceptable in a cottage near the shore. The party was obliged to return to Cardiff by rather an early train, but between the station and their hotel *Cymodon Dactylon* was

visited on the banks of the River Taff. In the evening Hon. Mrs Adeane, still undaunted, was shown *Saxifraga granulata* and *Lathraea Squamaria* by the writer when it was almost too dark to see them by the banks of the Taff River within the Castle grounds.

Sunday, June 12. After a hurried glimpse at the interesting Roman wall that has recently been excavated at Cardiff Castle an early start was made for Mynydd-y-Glu about 7 miles from Cardiff. *Arrhenatherum tuberosum* and *Polygonatum multiflorum* were gathered just as the charabanc drew up on the edge of the moor. Here by the shores of a small mountain lake occur *Drosera longifolia*, *D. rotundifolia*, *Pilularia globulifera*, *Hypericum elodes*, *Peplis Portula*, *Agrostis setacea*, *Narthecium ossifragum*, *Elatine hexandra*, *Scirpus fluitans*, *S. multicaulis*, *Radiola linoides*, *Potamogeton obtusifolius*, *Centunculus minimus*, *Apium inundatum*, *Potentilla palustris*, *Nitella flexilis* and *Carex inflata*. Dr Druce recorded for the first time from this locality *Carex vesicaria* and the hybrid *C. vesicaria* × *inflata* = *C. involuta*. A further drive of about 20 miles brought the party to Kenfig Pool, a large stretch of fresh water situated amongst the sandhills, a well-known haunt of botanists, entomologists, ornithologists and archaeologists. After a light lunch at the Inn where is kept a replica of the old town Mace, a relic of the time when Kenfig, now buried under the sand, was once a thriving borough that supplied two members to Parliament, the party visited the leaves of *Narcissus biflorus* which early in the year half covers an adjoining meadow, *Lamium amplexicaule*, *L. hybridum* and *Ballota nigra*, var. *mollissima*. The flora of Kenfig is exceptionally interesting but it was impossible to see during a short walk all the treasures that the district contains. The vivid colour of the marsh orchids attracted most attention, for *Orchis incarnata*, var. *dunense*, and *O. praetermissa* were in their full glory, while hundreds of buds of *Epipactis palustris* gave some indication of the magnificent display that was to come. On the shifting sand of the newer dunes occur *Cynoglossum officinale*, *Blackstonia perfoliata*, *Echium vulgare*, *Euphorbia portlandica*, *E. Paralias* and *Lycopsis arvensis*, while *Salix repens*, *Carex arenaria* and *Ammophila arenaria*, which by law was ordered to be planted by all the inhabitants of the borough before it was destroyed by the great sandstorm, still do their part to stay the onward rush of the sand. On the fixed dunes occur *Viola Curtisii*, var. *flavicornis*, *Polygala oxyptera*, *Saxifraga tridactylites*, *Erigeron canadense*, *Anagallis arvensis*, etc., etc. In the damp slacks between the sandhills, *Sagina nodosa*, *Erythraea Centaurium*, *E. pulchella*, *Samolus Valerandi*, *Ajuga reptans* with blue and white flowers, *Gentiana Amarella* with purple and mauve-pink flowers, and *Juncus acutus* are seen. In the waters of the lake itself grow *Nymphaea alba*, *Ranunculus peltatus* and *R. trichophyllus*, and around the sandy margins of the adjacent pools *Potamogeton heterophyllus*, *Alisma Ranunculoides*, *Apium inundatum*, *Scutellaria galericulata*, *Myosotis caespitosa*, *Hypericum elodes* and *Chara aspera*. One small pond surrounded by *Lysimachia vulgaris* and full of the pink spikes of *Polygonum amphibium* was a blaze of colour

when seen against the blue background of a June sky. Miss Insole's Iris garden at The Court, Llandaff, was visited after a short wait at Cowbridge for tea, and towards evening the little party, under the leadership of Mr R. Smith, inspected the ballast heaps and allotments at Splott where many interesting grain aliens are to be seen. Great hopes were entertained that a plant of *Roemeria hybrida* would be visible and luckily these hopes were fulfilled. Many rare and interesting plants occur from time to time as adventive species. The following may usually be seen:—*Glaucium corniculatum*, *Sisymbrium Sophia*, *S. altissimum*, *S. orientale*, *Erysimum Cheiranthoides*, *Camelina sativa*, *Lepidium Draba*, *Bunias orientalis*, *Silene noctiflora*, *S. gallica*, *Malva pusilla*, *Melilotus indica*, *Trifolium resupinatum*, *Potentilla norvegica*, *Amni majus*, *Anacyclus clavatus*, *A. radiatus*, *Anthemis arvensis*, *Anagallis foemina*, *Lappula echinata*, *Amaranthus retroflexus*, *Chenopodium murale*, *Panicum Crus-galli*, *Setaria viridis*, *Poa palustris*, *Hordeum jubatum*, *Phalaris canariensis*, *P. minor*, *P. paradoxa*, and on the marshes near by fine examples of *Glyceria rupestris*, etc., etc. By this time the remaining members of the Botanical Society were almost plant weary—note books and memories were full to overflowing for Glamorgan in its effort to rival Somerset had provided almost a surfeit of flowers, and the following morning the local field-botanist said good-bye to a somewhat jaded, but, she hopes, contented little party who took their places in the London train.

THE BOTANICAL EXCURSION IN SOMERSET AND GLAMORGAN.

By W. D. MILLER.

A small party of botanists met at Weston-super-Mare on Whit Monday, June 6. On Tuesday, a start was made by car at 9.30, the route being across the flat ground north of the Mendips and gradually ascending to within 200 ft. of the top of Blackdown, the highest point of these hills (1060 ft.). The first stop was made at Tynings Farm where, in short mowing grass, *Vicia Orobus* was in good flower with *Ophioglossum*, *Habenaria viridis* and other Orchids. A little further on some old lead workings provided *Thlaspi alpestre* and *Carex montana*. Thence down Cheddar Gorge where, among many plants noticed, were *Saxifraga hypnoides*, *Meconopsis cambrica*, *Polypodium calcareum*, *Cystopteris fragilis*, *Sedum rupestre*, *Galium sylvestre*, *Hieracium lima*, *Geranium sanguineum*, *Dianthus caesius*, *Thalictrum minus*, and *Cardamine impatiens*. After lunch—including the strawberries for whose culture Cheddar is celebrated—the return journey was made along the southern side of the Mendips, stopping near Axbridge to visit *Carex depauperata* and *Lithospermum purpureo-caeruleum*, and later at Purn Hill, where the white rock-rose, *Helianthemum polifolium*, was in good

flower, with the hybrid pale lemon-yellow form. Other plants were *Marubium vulgare*, *Trinia glabra*, *Rhamnus catharticus*, *Cerastium pumilum*, *Koeleria valesiana*, *Polygala oxyptera*, and many others. Weston was reached in time for a late tea.

On Wednesday, June 8, an expedition was made to the peat moors. This is an extensive area of low-lying ground, some 7 miles long by 2 miles wide, where there is little cultivation. Some of the ground is used for grazing, but it is mostly old or recent peat cuttings and is largely occupied by marshy ground with much scrub birch, alder and *Myrica*, intersected everywhere by rhines, and peat bogs. The flora is remarkable throughout. On this occasion only a small area came under observation, and the flora was backward. Among plants noticed were *Hottonia palustris*, *Rumex maritimus*, *Thalictrum flavum*, *Potentilla palustris*, *Radiola Millegrana*, *Sparganium minimum*, *Sium latifolium*, *Peucedanum palustre*, *Habenaria viridis*, *Osmunda regalis*, *Aspidium Thelypteris*, *Utricularia vulgaris*, *Apium inundatum*, and many sedges, including *C. Pseudo-cyperus*, *C. teretiusecula* and *C. filiformis*. The majority of these were not yet mature.

Thence the route lay along the Polden hills, a narrow hogsback raised some 250 ft. above the levels and commanding wide views over the peat moor on the right as far as the Mendip hills, and on the left over Sedgemoor to the Quantocks and the Blackdown hills, while in front stretched the Bristol Channel with Steep Holm standing out prominently, and the Welsh coast and Glamorganshire hills filling in the background. Reaching Burnham a rough piece of ground south of the town was examined, which yielded *Caucalis Daucoides*, *C. latifolia*, *Sisymbrium Sophia*, *Galium tricornis*, and a little further on, *Trifolium maritimum*. *Elymus arenarius* was gathered on the sandhills. The party then had tea with Mr and Miss Miller and examined a small rockery where many rare British plants were to be seen. Afterwards a visit was paid to the golf links. Among plants noted were *Trigonella purpurascens*, *Orchis hircina* (in bud), *Oenothera odorata*, *Hippophae Rhamnoides* and *Festuca uniglumis*. On the way back to Weston *Cirsium Marianum*, *Onopordon Acanthium* and *Lepidium latifolium* were seen.

Owing to the early date of the meeting many of the interesting species encountered were not yet in flower but, aided by almost perfect weather and boundless enthusiasm, the members of the party were determined to enjoy themselves and undoubtedly succeeded in doing so though the absence of Dr Druce on the Wednesday was continually deplored.

SAGINA REUTERI Boiss.

By W. H. PEARSALL.

For many years we have heard little of *S. Reuteri*, but recently Dr Druce sent me a specimen from Burnham, Somerset—"Leg. W. D. MILLER, May 1927"—which must unquestionably be referred to this species as we at present understand it. The occasion seems opportune for more clearly defining the distinctive characters of the species and also for making some attempt to indicate its comital distribution here.

Boissier's original description (Diagn. Plant. Or. Nov. ser. ii., fasc. i., p. 82) differs slightly from that ex Willkomm, given in Rep. B.E.C. 1892, 359, but one of the differences is very important. The original description gives the peduncles as being "*glanduloso-hirtis*;" Willkomm omits this important character, but stresses the fact that the flowers are "shortly pedunculate." Both agree that the peduncles are "much longer than the calyx." When we remember that the whole plant is dwarf (*pygmaea*), and the calyx normally less than 2 mm. in length, we may well infer that the peduncles will be 3-4 mm. in length, at least. This is evidently the view of the writer of the description in the Camb. Fl. (iii., 31, 1920) who gives "pedicels very short, up to about 3 or 4 mm." A very considerable proportion of our British examples would come within even this narrow limit, but the examination of a very large number of such specimens in public and private herbaria justifies me in suggesting 6 mm. (or $\frac{1}{4}$ in.) as the maximum length of peduncle we should admit. While quite aware of the absurdity of apparently attempting to limit the operations of Nature in this manner—by giving measurements in mm.—I also recognise how very helpful actual measurements are to students in the field, and how much they are appreciated (cf. Hooker's Stud. Fl.). Without some definite unit or standard of comparison, relative terms like "small, short, etc.," are vague and unsatisfactory. We are justified in insisting that examples of *S. Reuteri* must possess very short (3-6 mm.) peduncles—using this original term throughout.

Further, it is quite clear from the original description that these very short peduncles must be glandular-hairy. F. N. Williams (Rep. B.E.C. 1917, 195) is correct in describing them as "*plerumque dense glandulosi*." This character is extremely important in view of the fact that the whole plant is always described as being "*parce glanduloso-puberula*." British examples usually have the peduncles \pm densely glandular. Singularly enough the sepals are described—both by Boissier and Willkomm—as being glabrous, but ours are normally glandular, although often much less so than the peduncles. Possibly the most important character of this species is its dwarf, much branched and congested habit—which usually at once distinguishes it from *S. apetalae*. We have, therefore, 4 distinctive characters marking off this species from others of the same genus:—

- I. Very small size (*pygmaea*: *nana*: stems rarely exceeding 1 in.).
- II. Much branched, congested habit.
- III. Very short peduncles (not exceeding $\frac{1}{2}$ in.).
- IV. Peds. and seps. \pm densely glandular.

When we come to determine the distribution of the species we are faced by considerable difficulty, as the plant was first recorded—on walls near Gt. Malvern Railway Station—35 years ago (Rep. B.E.C. 1892, 358) and has been distributed very seldom during the last 20 years. The best examples I have examined are in the herbaria of Mr A. Bennett, the Cambridge University, Dr G. C. Druce, and the Rev. E. F. Linton, and I am grateful for the facilities so readily afforded in each case.

Published accounts of the distribution of *S. Reuteri* are extremely unreliable. The Camb. Fl. (iii., 31, 1920) gives a brief but admirable description of the species, and adds a list of 11 counties from which the plant has been recorded, qualified by the words "but we do not venture to vouch for the correctness of this distribution." This is not very helpful to the serious student and the list might with advantage have been omitted. The London Catalogue (ed. 11) is certainly nearer the mark in giving 6 (?) as the probable number of counties. As some slight contribution to our knowledge of the distribution of the species, I submit a list of those examples which have passed through my hands and possess the four characters outlined above.

WORCESTERSHIRE. GREAT MALVERN Railway Station, collected by J. H. A. Steuart, 8/8/92 and 21/8/92; R. J. Towndrow, 8/6/93; G. C. Druce, 1893; R. F. Towndrow, 16/7/96 (mixed); C. E. Palmer, 17/6/96 (mixed); A. J. Crosfield, June 1896; R. F. Towndrow, 1907; S. H. Bickham, 23/9/07 (mixed); S. H. Bickham, 4/8/09.

GLAMORGAN. PENARTH, Dr Trow, 1909.

PEMBROKE. TENBY, R. F. Towndrow, June 1898.

SOMERSET. BURNHAM, W. D. Miller, May 1927.

I cannot, of course, assume that every sheet bearing a name and date given above is authentic, but examples bearing the same label—from different herbaria—are, as a rule, so uniform, that I have little doubt of the gathering as a whole. Where, in my judgment, a gathering includes both *S. Reuteri* and *S. apetala*, I have added the word "mixed" in brackets.

It will be noted—possibly with surprise—that my list includes only 4 counties. Three of these are maritime, and one inland; all on, or near, the Bristol Channel. So far, I have seen no examples of *S. Reuteri* from either Scotland or the North of England, and I do not consider the var. *glabra* Ingham and Wheldon (Journ. Bot. 111, 1908) has any relation to that species. In the paper by F. N. Williams (Rep. B.E.C. 1917, 196) Hertfordshire is probably a misprint for Herefordshire. Mr R. F. Towndrow sent in some interesting examples from "gravel walks, The Rectory, Tedstone Delamere, Herefordshire (v.-c. 36), 22/7/97," but in my opinion the plants were too large, the habit

too lax, the stems only slightly branched, the peduncles too long, and some of the sepals were spreading. They represent, I should say, a somewhat frequent form of *S. apetalata*. The Ilfracombe plant referred to on the same page was examined both by Mr D. Lumb and myself many years ago, and I find that our considered opinion was "*S. ciliata*, but on poor characters." On p. 195 (*l.c.*) *S. Reuteri* is described as "glabra vel parce glanduloso-puberula." There is, in my judgment, not the slightest justification for the addition of the term "glabra" to the original description. I have never yet seen any example one could so describe—in fact glabrous *S. Reuteri* is, in my experience, far more elusive than glabrous *S. apetalata*.

A brief description of the recent Burnham (Somerset) plant may perhaps be helpful to those not familiar with the original description of this species.

Plant very small and squat. All stems under 2.5 cm., much branched, upper stem usually very ciliate, but lower stem nearly glabrous. There are no glandular hairs in either case. Leaves linear, awned, nearly glabrous, no glands but a few long basal cilia. These cilia are usually 4-5 celled in length, markedly tapering and with much-swollen joints. Peduncles densely glandular and all under $\frac{1}{4}$ in. in length. Flowers apetalous—what look like petals being the 4 light-green, truncate valves of the capsule. The sepals are appressed, nearly 2 mm. long, have broad scarious margins, are densely glandular, blunt (very rarely mucous) and with the apex \pm incurved.

It is to be hoped that this slight contribution to our existing knowledge of this species may induce members to examine dwarf examples of apparent *S. apetalata* with a view to ascertaining if they possess the characters of *S. Reuteri* given above. It is quite possible that this species has been generally overlooked and may yet be found in localities outside the Bristol Channel area.

BRITISH PLANTS CONTAINED IN THE DU BOIS HERBARIUM
AT OXFORD, 1690-1723.

By G. CLARIDGE DRUCE.

This great collection of plants was made by Charles Du Bois, who was born in 1656, and died at Mitcham, Surrey, October 21, 1740, where he was buried. He was a London merchant, and treasurer of the East India Company, an office which gave him an opportunity of corresponding with men of science abroad and of accumulating so important a collection of plants from India. His chief contributor there was Dr Edward Bullkley, of Madras, where he was an ingenious surgeon in the employ of the Company at Fort George (see Petiv. *Musei*). From the Cape he received many plants from another of the Company's surgeons, Mr Alexander Brown, formerly in India, who removed to the Cape. A huge herbarium of British plants, which had been formed by the Rev. William Stonestreet, who died in 1716, also came into his possession.

Du Bois' collection must have been left or given to the East India Company, since in the life-time of Professor Humphrey Sibthorp that Company presented it to Oxford University (see Prof. Williams' MS.). The plants were contained in 80 elephant folio volumes, numbering, it is said, about 13,000 sheets, and were arranged according to Vol. i., 1686, and ii., 1688, of Ray's "Historia Plantarum," to which they afforded a very valuable guide, since in many cases they were the types. In addition to the contributors already mentioned there are specimens from James Petiver, Queen's Botanist to Mary II.; Leonard Plukenet, Apothecary to the Charterhouse; John Aubrey of Wiltshire, a nephew of Henry Lyte; John Evelyn, the author of the "Silva"; his brother, Daniel Du Bois; the Essex botanist, Samuel Dale; Dr Richardson of Bierly, Yorkshire; Sir George Croke; Sir Hans Sloane, whose great collections are in the British Museum; Samuel Doody, Keeper of the Chelsea Garden; William Sherard, the founder of the Sherardian Chair of Botany at Oxford; Robert Plot, the author of "The Natural History of Oxfordshire;" the Rev. Adam Buddle, the Suffolk botanist; Edward Lhwyd (or Lwyd), the Welsh worker at Snowdonia; William Stephens, once lecturer in Trinity College, Dublin; H. Herrmann of Leyden; the eminent Pitton Tournefort; Prof. Nissolle of Montpellier; Rev. John Banister of Virginia; Mark Catesby of Carolina; William Vernon of Maryland; Isaac Rand, a keeper of the Chelsea Garden; J. Bobart, the younger, of Oxford; Dr Manningham of Slinfold, Sussex; J. Dillenius, of Oxford; Dr David Kreig, F.R.S., a German voyager to Maryland; Fettiplace Bellers of Gloucestershire, whose collection went into the hands of Ingram of North Leach; T. Herle of Lisbon; Dr William Houston, a West Indian collector; Philip Miller, of the Chelsea Garden, and author of

the "Gardener's Dictionary;" R. Millar, of the West Indies; James Cunningham, of China; Salvadore of Spain, and other donors.

The plants were well selected, carefully prepared, and neatly mounted and labelled in a copper-plate hand. The Indian specimens frequently have the vernacular Tamil name added, written on slips of bamboo. Seeds and fruits are often supplied, and there were copies of medical notes, recipes, etc., attached. Here are two such. "Samuel Wallis of Stamford, who having been in a sick and languishing condition for 13 years, was in ye year 1658 wonderfully restored to health by one that knocked at his door, and came into his house, and together with the Holy Counsel he gave him, directed him to make use of two red sage leaves and one bloodroot leaf steeped in beer for 3 days, and for a whole month to be in the fresh air in some country town, and told him when he should recover, which fell out accordingly." How much of the cure was due to the sage and how much to change of air and scene who shall say. "Yarrow is a very fit plant to make green walks, where the ground is hard and dry; it never withering (when well rooted) in the greatest heats of our summers." There are also extracts from sermons and many copies of Boyle's recipes.

When in 1880 I first saw these volumes of Du Bois, they were placed on the top shelf in what was little more than a loft above the lecture room at the Botanic Garden. There were no facilities for warming, and the place was damp. The only means of access was a loose ladder of such a rickety structure as to deter such a worker as the Rev. W. W. Newbould from coming to take up his residence in Oxford which he contemplated in order to work out the old botanical material in which Oxford was so rich. The Du Bois herbarium was the only thing in order there. The immense mass of the Morisonian (Bobartian), Dillenian, and Sherardian collections were in loose unarranged sheets, often unmounted. Even the Fielding Herbarium was mostly unnamed and roughly sorted into the different families. So far as consultative facilities were concerned it was chaotic. At that time I little thought it would fall to my lot to bring rude matter into due form. In the course of over 40 years that has been done, and with the collaboration of Dr Vines the Morisonian and Dillenian collections have been described in two volumes. To return to the Loft. Never in all my rock-climbing experience have I experienced such dangers as I had in stepping off without any hand rail on to the uppermost rungs of a wobbly ladder, with a bundle of this old material under one arm and clutching with the other at the ladder as one began the perilous descent. Nothing more serious happened than sometimes one had to drop a bundle to the wolves in order to save a slip. In this way at leisure moments I went through the British material here described, and also through the other herbaria. The whole of the Dillenian flowering plants were remounted by me at my own house in the small hours after business was over, of course, without any cost to the Department.

So things went on after the departure of Lawson and until the advent of Prof. I. B. Balfour, who came like a tornado. All the old things

had to be changed, the herbaria sorted in, and the gardens remodelled. Then the garden plants were arranged according to the Linnean system. Now the beds had to be refashioned and the plants put in their natural families. Under the care of the two Baxters—father and son—both good men, the former a remarkable man, the latter one to whom the University was under a debt for planting the trees in the Parks, the plants in the old Physic garden did well and looked happy. The radical and rapid change now made killed off many of the rarer plants. The gardener, a Baxter of the third generation, a difficult man to get on with, did not welcome the change, and the relations between him and the Professor became so strained that the place knew him no more. So terminated the connection of the Baxter family with the garden which had lasted nearly a century.

All to the good was Balfour's decision to remove the herbaria from the loft and place them in the building which for many years had been the dwelling-house of the Sherardian Professors. Alas, Balfour, accustomed to other ways and to the use of modern methods, issued an edict to cast all these old collections into one general herbarium. I had no official status then: indeed I had only been a visitor in Lawson's time. He had very generously given me *carte blanche*, and in the interregnum between his resignation and the arrival of Balfour, with H. E. Garnsey, I was an honorary but, I may say, an ardent worker at the old material. In the course of my work, when vainly trying to find Sibthorp's British plants, some important discoveries were made, including the unearthing from a pile of material in the coke-house, the Herbarium of Gregory of Reggio of 1606, of which I hope to give a detailed account at a later date. Therefore I could only try to induce Balfour to leave the collections intact until they could be carefully examined, and to concentrate upon the modern plants which could be sorted into the Fielding Herbarium. This suggestion did not prove acceptable, and in order to save the dispersal of the Morisonian, Dillenian, Sherardian, and Sibthorpien collections the Du Bois plants were sacrificed—as at that time I did not realise what light they threw upon the Raian plants. So these 80 volumes were cut up, and the plants in them were mounted by not very careful or competent hands, losing fruits and seeds in the disposal. Then, too late, it was brought home to the Professor that as they only had pre-Linnean names, they could not be sorted into the general collection so they were tied up in bundles, in the process of which much damage was done, and put in a storeroom where they remained for many years. Subsequently I named and put all the British specimens into their proper order. The European specimens were for the greater part also examined, and placed in blue paper covers. The very large number of Indian plants are now in pink paper covers. Very many of the Madras specimens have been identified by Mr J. Gamble. Prof. Dr Burt Davy has named many South African species, but the plants for North Africa still require critical examination. These are in orange coloured covers. The numerous and valuable American specimens, in

green paper covers, are to a great extent unidentified although some of the grasses have been determined by Dr N. L. Britton and others. The mosses have been mostly identified by Mr H. N. Dixon, and Messrs Batters and E. M. Holmes have named the algae. Perhaps later on the names of the identified plants may be published here as in many cases they are the earliest localised examples from the countries where they were gathered.

It is to be noted that Du Bois alludes to Mr Alexander Brown as collecting some algae from the Sussex coast. One wonders if he is the same Alexander Brown, a surgeon at the Cape, who was so generous a contributor to the herbarium. Mr Ernest H. Wilson in his "Plant Hunting," mentions the name of Mr J. Stonestreet as an Australian explorer. He may have been a connection of the Rev. W. Stonestreet, of whom few particulars seem available. Yet Petiver dedicated tab. xx. of his "Gazophylacii" to him. The Du Bois collection is now preserved in eight cabinets in No. 1 Room at Oxford. It may be said that Daniel Du Bois, the brother of Charles, helped greatly in the formation of the herbarium. The name Du Bois is commemorated in the genus *Duboisia* of the Solanaceae. Petiver dedicated tab. xv. of his "Gazophylacii Naturae" to Charles. In 1730, the Society of Gardeners published a folio called "Catalogue of Trees and Shrubs, both Exotic and Domestic, which are propagated for Sale in the Gardens near London." The preface, in which the early horticulturists are duly honoured, says, "But to none of the before-mentioned persons is England more indebted for introducing trees, plants, flowers, and fruits, than to the learned and ingenious Charles Du Bois, Esq., of Mitcham, who has not only been very industrious to procure plants from abroad, but also as generous in communicating whatever his garden would afford, as also many useful observations relating both to their culture and uses, to all delighters in planting and gardening; and it is to him we are greatly indebted for many valuable trees and plants which enrich this catalogue." In 1835 (Loudon *Arb.*, vol. i., 63) it is stated that the garden at Mitcham was then occupied by Mr Blake, an auctioneer of Croydon. The house of Du Bois had long been pulled down, but in the grounds many trees planted by him still remain—a very large weeping willow, a nettle tree, with branches covering a space 50 feet in diameter, and a trunk 6 ft. 8 in. in circumference—a *Pinaster* with a clean trunk 40 feet high, the girth at 3 ft. from ground 9 ft., and a total height of 60 ft., a very large old Mulberry, large and old Scotch Pines, a large old Stone Pine, *Prunus Malaheb*, a fine *Ptelea trifoliata*, a stag's horn Sumach, an old *Bignonia radicans*, a large *Arbutus* and some other fine specimens.

The following localised specimens have been determined by me, and as they in many cases are the first evidence of the plant occurring in the county it has been thought desirable to put them in an accessible form, with any original notes about them contained on the accompanying labels. The old name is given in italics. The counties and notes have been supplied by me. The prefixed numbers are those of the second edition of the British Plant List.

PHANEROGAMS.

- 6/3. RANUNCULUS ACER L.
 "Common upright *Ranunculus*: ye flowers when decaying turn white on ye insides, at Dulwich." Surrey.
- 6/7. RANUNCULUS FLAMMULA L., var. TENUIFOLIUS Wallroth.
 "*R. Flam. minimus cauliculis repentibus* N. D. I found it in Surrey [and] *R. Flammeus repens folio angustissimo flore minimo*. D. Rand."
- 9/1. HELLEBORUS VIRIDIS L. and 9/2. H. FOETIDUS L.
 Leaf specimens of both species on one sheet, said to have been found by "Mr J. Sherard in a great many places in Brundish parish in Suffolk," but E. Suffolk is only credited with the latter species in the *Synopsis* 272, 1724, and in the *Flora of Suffolk*.
- 13/3. DELPHINIUM AJACIS L.
 "*Delphinium majus sive vulgare*. Found growing plentifully among the corn in Swaffham field in Cambridgesh. J. Sherard."
- 15/1. ACTAEA SPICATA L.
 "*Aconitum racemosum Actaea quibusdam* J. B. Malham Cove." Yorks. Already recorded by Ray.
- 17/1. BERBERIS VULGARIS L.
 "*B. dumetorum* C. B. Near Audley End by Walden in Essex by Mr J. Sherard."
- 20/1. CASTALIA (NYMPHAEA) ALBA Link.
 "*Nymphaea alba* Ger. Gathered in Sir Jonathan Andrew's Pond in Kempton Park in Middlesex." The earliest evidence for that county.
- 22/1. MECONOPSIS CAMBRICA Vig.
 "*Argemone Cambro-Britannica-lutea* Park. Found by the River Side at Llanberis by Mr James Sherard." See Ray *Catal.* 1670.
- 24/1. ROEMERIA HYBRIDA DC.
 "*Papaver corniculatum, violaceum* C. B. Among Corn in Swaffham Field in Cambridgeshire, by J. Sherard." See Ray *Catal. Cant.* 1660.
- 31/1. CAPNOIDES (CORYDALIS) OLAVICULATA Druce.
 "*Fumaria alba latifolia*, Blackheath. J. Sherard." Kent. Recorded thence in Merrett's *Pinax*, 1666.
- 32/4. FUMARIA PURPUREA Pugsley.
 "*Fumaria major scandens floribus albis, pictus saturate purpureo crescit* in Hort. D. Du Bois." This is at Mitcham, Surrey, but it may have been introduced there.
- 35/1. RADICULA NASTURTIUM Druce. (NASTURTIUM OFFICINALE Br.).
 "*Nast. aquat. an praecocius* D. Dale. It grows about Brain-tree in Essex. Mr Stonestreet."
- 35/3. RADICULA ISLANDICA (Oeder) Druce.
 "*Eruca aquatica* Ger. In Peckham field." Surrey.

- 36/3. BARBAREA BARBAREA (L.) Karst. (B. VULGARIS Br.).
"About ye ditches near Bathe. Du Bois." Under the wrong name of Wild Navew.
- 37/1. ARABIS HIRSUTA Br.
"*Barbarea muralis* J. B. Found growing on walls in Stoke between Braintree and Lynn in Norfolk."
- 43/4. DRABA MURALIS L.
"*Bursa pastoris major loculo oblonga*. Craven, Yorks. From Isaac Rand."
- 44/1. EROPHILA VERNA Meyer, var. STENOCARPA (Jord.).
"*Paronychia siliquis longioribus et angustioribus*. Found by Mr Rand near ye Town." Earliest example from Middlesex.
- 49/7. SISYMBRIUM THALIANUM Gay. (ARABIS THALIANA L.).
"In ye fields near Chelmsford." Essex.
- 50/1. ERYSIMUM CHEIRANTHOIDES L.
"*Erysimum Galeno* plentifully in ye Osier grounds near Ely." Cambridgeshire.
- 59/1. BURSA PASTORIS Weber, var. DENSIFOLIA (Mott) Druce.
"*Bursa pastoris media* C. B. Pin. 108. Crescit in arenosis circa Londinum; Buddle. A vulgari specie distinctam censet. Bene exprimitur in Icone Tabernamont. From Mr Stonestreet."
- 61/2. LEPIDIUM LATIFOLIUM L.
"Gathered by the River side near Colchester. Du Bois." Essex, where it still abounds.
- 61/7. LEPIDIUM SMITHII Hook.
"*Thlaspi supinum, hirsutum, maritimum*. Found on ye sea-shore in ye Parish of Ham near Pool in Dorsetshire. Flore albo est." The first record for Dorset.
- 85/3. RESEDA LUTEOLA L., forma.
"An *Reseda* Species nova, found among the Corn in a field behind Mount Ephraim near Tunbridge Wells, in August 1699." Kent. Also typical specimens from "the Stone Quarries near Bathe." Somerset.
- 96/1. SILENE MARITIMA Sm.
"*Lychnis marina anglica* Lob. Gathered upon Crib Goch." One of Dr Richardson's specimens from Carnarvonshire.
- 96/3. SILENE CONICA L.
"A new *Lychnis* found at Dover by Mr Sherard in 1715." Dillenius recorded it in the *Synopsis* of 1724, p. 341. This seems to be the first British specimen.
- 96/9. SILENE OTITES L.
"*Lychnis viscosa, flore muscosa* C. B. Prope Newmarket." As recorded in *Ray Hist.* 1002, 1688.
- 96/10. SILENE NUTANS L.
"*Lychnis major noctiflora* Dubrensis. Found at Dover by J. Sherard in 1715."

- 98/3. *LYCHNIS ALBA* × *DIOICA*.
 “*Lychnidis alba vulgaris varietas flore dilute purpureo*. Found by Mr Rand near Chelsey.” The earliest British evidence of this hybrid.
- 100/8. *CERASTIUM SEMIDECANDRUM* L.
 “*Alsine hirsuta minor* not mentioned in the *Synopsis* [Ed. 2, 1696]. Isaac Rand.” This is one of the earliest British examples.
- 101/6. *STELLARIA DILLENIANA* Moench, var. *PALUSTRIS* (Retz.) Druce.
 “In some watery places on Peckham fields, James Sherard.” Surrey. See Ray *Syn.* 207, 1696.
- 102/2. *ARENARIA CILIATA* L., var. *HIBERNICA* (Ost. & Dahlst.) Dr.
 “*Lychnis minima Hibernica, flore albo* D. Richardson hanc accepit a D. Edw. Lhywd.” The earliest example from the British Isles being discovered by Lhywd about 1699. It is probably one of the plants referred to in Phil. Trans. xxvii., 524, 1712.
- 102/7. *ARENARIA PEPLOIDES* L.
 “*Glaux exigua maritima* J. B. Gathered on the Sea coast near Harwich, Apr. 1710. Rev. W. Stonestreet.” Essex.
- 117/2. *MALVA SYLVESTRIS* L., var.
 “*Malva vulgari similis flore albo minore*. Found by Mr Rand within ye Walls of Windsor Castle. It continues the colour and smallness of the flower from seed.” Probably a form of the var. *micrantha* Bromf. Fl. Vect. 80, 1856. See *Fl. Berks* 113, 1897.
- 117/4. *MALVA PUSILLA* With.
 “*M. sylvestris foliis sinuatis, minoribus, flosculis minimis nostras*. Found by Mr Rand at Hithe in Kent.” First British record.
- 123/1. *TILIA PLATYPHYLLOS* Scop.
 “*T. sylvatica nostras, foliis amplis hirsutis pubescentibus* . . . Gathered near Streatham Wells, Surrey. Du Bois.” See Sir J. E. Smith *Engl. Bot.* iii., 19, 1825.
- 127/10. *GERANIUM MOLLE* L.
 “*Geran. colum. vulgaris simile sed magis incanum, floribus albis*. Found by Mr Rand in Kent.” First Kentish record.
- 127/14. *GERANIUM ROBERTIANUM* L., var. *ALBUM*.
 “Plentifully in a Lane between Eltham and Chiselhurst in Kent, Mr James Sherard.” Dillenius records it from this locality in the *Synopsis* 358, 1724.
- 128/1. *ERODIUM MARITIMUM* Aiton.
 “*G. pusillum supinum maritimum*. About Pensance, Du Bois.” It was first recorded for Cornwall in Merrett’s *Pinax*, 1666.
- 128/2. *ERODIUM MOSCHATUM* Aiton.
 “*Geranium moschatum* C.B. Near St Vincents Rock by Bristol, Du Bois.” W. Glostershire.

- 128/3. *ERODIUM CICUTARIUM* Aiton.
 “*Geranium Cicutae-folius tenuissime sectis* D. Doody. Found near London.” It is referred to in the *Flora of Middlesex*, p 69.
- 142/1. *ACER PSEUDO-PLATANUS* L.
 “*Aceris majoris varietur foliis in segmenta acutiora dissectis*. Grays Inn walks.” First Middlesex record.
- 151/2. *ONONIS REPENS* L.
 “*Anonis non spinosa hirsutior, flore minore*. Found in Kent. Mr Stonestreet. *A. procumbens maritima nostras, foliis hirsutie pubescentibus*, Raii Syn. 196. Sandy sea-shore, Cornwall, Mr Rand. Another form found by Mr Doody near Greenwich.”
- 153/3. *MEDICAGO SATIVA* L.
 “*Medica major erectior floribus purpurascens* J. B. Gathered wild near Norwich by Mr James Sherard.
- 153/4. *MEDICAGO DENTICULATA* Willd.
 “*Medica coronata*. Found by Mr Rand near Hampton. Also from Orford in Suffolk, Du Bois.” “*Medica polycarpus fructu minore compresso scabro* Ray Syn. App. This grows in Peckham Fields among the Corn plentifully.” It is the var. *apiculata* (Willd.) from Surrey.
- 153/6. *MEDICAGO MINIMA* Bart.
 “*Medica echinata minima*, Newmarket,” as mentioned by Ray.
- 155/6. *TRIFOLIUM STELLATUM* L.
 “*T. stellatum glabrum* Ger. Emac. It grows in Dartford Salt Marsh and about Tilbury Fort. Du Bois.” It appears probable that Du Bois mistook *T. maritimum* which did not occur there for this more southern species, as there is no corroborative evidence of its occurrence in Kent, but the specimen is correctly named.
- 155/7. *TRIFOLIUM ARVENSE* L.
 “A whiter sort of Haresfoot, near Croydon, Du Bois. Gathered in 1719.”
- 155/8. *TRIFOLIUM MARITIMUM* Huds. (*T. squamosum* L.).
 “*T. stellatum glabrum* Ger. In England in Salt Marshes, Mr Stonestreet.”
- 155/10. *TRIFOLIUM SCABRUM* L.
 “*T. parvum hirsutum flore parvo* . . . Ray Hist., p. 945. Gathered on Marlborough Downs in Wiltshire, Du Bois.” The first record for the county. See also Rand in *Herb. Brit. Mus.*
- 155/10. *TRIFOLIUM SCABRUM* L.
 “*T. flosculis albis in glomerulis oblongis* . . . Found growing at Newmarket by Mr J. Sherard,” whence it is recorded by Ray.
- 155/11. *TRIFOLIUM STRIATUM* L.
 “*T. parvum hirsutum* etc., Raii Syn. At Chelsy, Mr Stonestreet.”
- 155/13. *TRIFOLIUM FRAGIFERUM* L.
 “*T. fragiferum* Ger. In the moist places of the Kings-Mead near Bath, Du Bois.” Somerset.

- 171/2. ORNITHOPUS PERPUSILLUS L.
 "*Ornithopodium radice nodosa* Park. Gathered on Tunbridge Wells Common, Du Bois." Kent.
- 173/1. ONOBRYCHIS ONOBRYCHIS (L.) Karst. (VICIFOLIA Scop.).
 "Gathered in the fields near Bathe." First record for Somerset.
- 176/1. VICIA SYLVATICA L.
 "*Vicia sylvatica multiflora maxima*. Sent from Oxford by Mr. Jacob Bobart."
- 176/13. VICIA ANGUSTIFOLIA Reich.
 "Gathered near Colchester." Essex.
- 176/14. VICIA LATHYROIDES L.
 "*V. parva praecox Soloniensis*. Found by Mr Rand at Greenhithe." The first Kent record. See Ray *Syn.* 321, 1724.
- 178/2. LATHYRUS SYLVESTRIS L.
 "*L. Sylvestris* Dod. Gathered by Comb Park Gate in the hedge by the road-side going to Mitcham, Du Bois." First record for Surrey.
- 178/4. LATHYRUS MARITIMUS Big.
 "*Pisum maritimum*. Found growing by Mr James Sherard at Hastings, on ye Beach near the old Castle."
- 178/5. LATHYRUS PALUSTRIS L.
 "*Lathyrus Viciaeformis*. From Mr Stonestreet. Found in Peckham Field by Mr Sherard." This is Merrett's locality. See the *Pinax* of 1666.
- 185/1. RUBUS IDAEUS L.
 "*R. idaeus spinosus fructu rubro* J. B. Found growing by Mr James Sherard in a wood by West Wickham in Oxfordshire." This locality is in Bucks, for which county it is already recorded in the *Phytologia* of 1650.
- 185/47. RUBUS ULMIFOLIUS Schott.
 "The common Bramble with the eggs and punctures of Insects, in August 1723 about Tunbridge Wells, Kent."
- 185/154. RUBUS SAXATILIS L.
 "*Chamaerubus saxatilis* C. B. At Malham near Settle, J. Sherard." Yorks.
- 189/8. POTENTILLA PROCUMBENS Sibth.
 "*Tormentilla reptans alata* . . . D. Plot. Found by Mr James Sherard near Braintree in Essex."
- 189/9. POTENTILLA ERECTA Hampe.
 On the sheet of *P. procumbens*. "Found by Mr James Sherard near Braintree in Essex." Both first records for that county.
- 190/1. ALCHEMILLA VULGARIS L.
 "*Alchimilla* Ger. Found near Bibury, Gloucestershire, by Mr James Sherard." The first county record. It is the *A. pratensis* Schmidt.

- 191/2. *AGRIMONIA ODORATA* Mill.
 " *A. odorata* Park. and Ray Historia p. 400, 1688." Although not definitely added to the British flora till 1857, the plant was well known to the earlier botanists. Unfortunately no locality is given on these specimens.
- 194/2. *ROSA CANINA* L.
 " *R. sylvestris fructu rotundo, majore, glabro*. Found by Mr Manningham near Bosham, 3 miles from Chichester." Sussex. It is without flowers or fruit, the leaves are glabrous and suggest a rose of the *Transitoria* group.
- 196/1. *CRATÆGUS MONOGYNA* Jacq., forma *VARIEGATA*.
 " Striped Hawthorn. Gathered at Upcerne in Dorsetshire."
- 203/2. *CHRYSOSPLENIUM OPPOSITIFOLIUM* L.
 " By a spring near Bathe," whence Gerard records it.
- 207/3. *RIBES RUBRUM* L.
 " *Ribes vulgare fructu rubro* Ger. . . . plentifully in a Spinny by the River side near Mr Leighs at Hally in Kent, Mr Jas. Sherard."
- 210/1. *COTYLEDON UMBILICUS-VENERIS* L.
 " *Cotyledon vera radice tuberosa* J. B. On an old stone wall in Dorsetshire. Du Bois." The earliest record for the county.
- 213/2. *DROSERÆ LONGIFOLIA* L.
 " *Ros Solis longifolia*. Found by Mr Sherard on Hinton Moor in Cambridgeshire and in a bog on Westfield Downs, 4 miles on this side Hastings." Sussex.
- 216/2. *MYRIOPHYLLUM SPICATUM* DC.
 " *Potamogeton pennatum spicatum ramosius, foliis brevioribus*. In ye ponds on Clapham Common, Mr Stonestreet."
- 220/1. *EPILOBIUM ANGUSTIFOLIUM* L.
 " *Lysimachia speciosa, quibusdam Onagra dicta siliquosa* J. B. . . . wild about Sheffield in Yorkshire, Mr Du Bois."
- 220/3. *EPILOBIUM ROSEUM* Schreb.
 " *Lysimachia siliquosa latifolia glabra altera minor*. Found by Mr Rand in Kent. Differt a *Lysim. Siliq. glabra minore*, R. Synops., *foliis longioribus*." The first British record.
- 250/1. *CARUM CARVI* L.
 " Grows plentifully near Lynn in Norfolk and in Christs Colledge meadows in Cambridge." Leaves only. Earliest record for Cambridge.
- 253/2. *Sium ERECTUM* Huds.
 " *Sium* found in ye river Colin St [Colne St Aldwyn] Albins. Mr Bellers." The first Gloucester record.
- 261/2. *CHAEREFOLIUM ANTHRISCUS* (L.) Thell. (*ANTHRISCUS SCANDIX* Beck.).
 " *Caucalis pumila maritima flore albo*. Found by Mr Du Bois near Harwich, and in the Salt Marshes near Harwich." Essex.

- 265/6. ORNANTHE LACHENALII Gmel.
"On ye sea shore near Pool, Mr Stonestreet." The first evidence for Dorset.
- 274/1. ANGELICA SYLVESTRIS L.
"In ye ditches about Bathe." Somerset.
- 274/1. ANGELICA SYLVESTRIS L., forma.
"An *Angelica sylvestris* Ger. Found in the Boggy Woods about Tunbridge Wells, and supposed to be a new sort and not the above written. It wants the small leaves, that are under the single umbell, which the Water *Angelica* hath."
- 276/2. PEUCEDANUM OFFICINALE L.
"*Peucedanum* Ger. It grows in the marshy ditches near Shoreham in Sussex, and also from a bank near Feversham Creek in Kent a little below the Town. From Mr Stonestreet." The Sussex specimen is only in leaf and is, I believe, correctly named, but no recent confirmation exists of its occurrence in that locality.
- 276/3. PEUCEDANUM SATIVUM Benth. & Hook. (PASTINACA SATIVA L.).
"*P. sylvestris latifolia* C. B. On the hills about Bathe." Somerset.
- 287/2 SAMBUCUS NIGRA L., var. LACINIATA L.
"*S. laciniata* J. B. Found plentifully growing wild near Mr Leighs at Hally near Dartford." See Ray *Synopsis* 461, 1724.
- 287/2. SAMBUCUS NIGRA L., var. LEUCOCARPA.
"*Sambucus fructu albo*. Found growing wild by Mr J. Sherard at Halley near Dartford in Kent."
- 295/1. RUBIA PEREGRINA L.
"*Rubia sylvestris* Ray Hist., p. 480. Gathered on St Vincents Rocks near Bristol. Du Bois," whence Gerard (*edit. secunda*), records it in 1633.
- 296/1. GALIUM BOREALE L.
"*Mollugo montana erecta quadrifolia*. It grows about Orton, Winandermeer in Westmorland. From Isaac Rand."
- 296/3. GALIUM ERECTUM Huds.
"*Gallii* species prope Oxonium a D. Buddle." The first British record.
- 296/4. GALIUM HERCYNICUM Weig.
"*Mollugo montana minor, Gallio alba similis* Ray Hist., p. 482. At Tunbridge Wells. Du Bois." First record for Kent.
- 296/6. GALIUM ULIGINOSUM L.
"*Aparine palustris minor, Parisiensis flore albo* Tourn. Found by Mr Buddle in some ditches near Hampstead." The first record for Middlesex and probably for Britain.
- 296/13. GALIUM ANGLICUM Huds.
"*Aparine minima*. On the walls of Eltham in Kent. From Mr Stonestreet."
- 296/14. GALIUM CRUCIATA Scop.
"*Cruciata* Ger. Plentifully about Dartford, Kent. Du Bois."

- 298/3. ASPERULA CYNANCHICA L.
 “*Rubeola cynanchica*. Roadsides on Salisbury Plain, Du Bois.”
 First record for Wilts. Also “Gathered on the Banks by Road-
 side going down Beacon Hill in ye way to Bathe.” Somerset.
- 304/3. VALERIANELLA DENTATA Poll.
 “*Valerianellae vulgaris, seu Lactucae agninae species major serotina* Moris. Praelud. Found among corn at Chiselhurst in Kent. Du Bois.” First as British.
- 308/5. SCABIOSA ARVENSIS L., var. INTEGRIFOLIA Coult.
 “*Scabiosa vulgaris varietas foliis non incis.* Found by Mr Buddle near the town.” The first record for Middlesex.
- 314/1. BELLIS PERENNIS L., forma.
 “*Bellis minor*. Supposed to be starved by the place it grew in . . . the dry Banks . . . in Wiccomb Parish in Kent. All the Plants of Daisys were of this size.” One inch high.
- 318/19. ASTER TRIPOLIUM L., var. GLABER Bolzon.
 “*Tripolium minus* C. B. at Harwich, Essex.” Samuel Dale’s writing.
- 320/2. ERIGERON ACER L.
 “Gathered near Tunbridge Wells, Kent. Du Bois.”
- 324/3. FILAGO GERMANICA L.
 “*Gnaphalii seu Herbae impia vulgaris varietas*. Found by Mr Rand near ye Pits of Fullers earth between Maidstone and Barsted in Kent.”
- 327/1. ANAPHALIS [MARGARITACEA C. B. Clarke], var. SUBALPINA A. Gray.
 “*Elichrysum Americanum latifolium* Tournef. 453. Found growing near Bocking Church in Essex by Mr J. Sherard.”
- 368/3. ANTHEMIS ARVENSIS L.
 “*Chamaemelum flore majore, foliis exiguis tenuissime dissectis*. Found near Greenwich by Mr Buddle.” First Kentish record. Also from the same place “by Mr Stonestreet, who gathered it also in Peckham Field, Surrey.”
- 368/3. ANTHEMIS ARVENSIS L.
 “*Chamaemelum flore majore*. Found by Mr Buddle near Greenwich.” Kent, probably the first British record.
- 368/4. ANTHEMIS COTULA L.
 “*Chamaemelum amarum*. Gathered in Peckham Field, Mr Stonestreet.” Surrey.
- 370/13. CHRYSANTHEMUM PARTHENTIUM Bernh.
 “*Matricaria florum petalis vulgari amplioribus*. Common about Tunbridge Wells.” First Kentish record.
- 371/1. MATRICARIA INODORA L.
 “*Cotula flore fistuloso Cyanoides*. Found in the Field between the Wood and the Bog near Jone Coles House in Wiccombe Parish in Kent, July 15, 1712.” This is forma *cucullata* in which the ligulate flowers are tubular, and the first Kent record for the species. Also the var. *salina* Bab., “*Chamaemelum*

maritimum capitulo majore. On ye shores of Weymouth bay, Mr Stonestreet." First Dorset record.

- 371/1. *MATRICARIA INODORA* L.
 " *Chamaemelum majus folio tenuissimo caule rubente.* It grows frequently about London, Battersea, and Putney." This is a type specimen and the earliest record for Middlesex. Also as "*Chamaemelum inodorum.* Gathered at Chiselhurst in Kent in 1714, Du Bois." The first Kentish record.
- 378/4. *ARTEMISIA MARITIMA* L., forma.
 " *Absinthium Seriphium Gallicum* C. B. This I found with the *Seriphium Belgicum*, August 1708, in great plenty at Harwich on the west side of the town. And is the same with Mr Ray's Specimens collected at Montpellier." The writing is by Samuel Dale. The flowering branches are erect and the foliage less hoary than the type.
- 378/4. *ARTEMISIA MARITIMA* L.
 " *Absinthium maritimum foliis breviores laciniis divis' ramulis et caule minus extentilis.* Found by Mr Rand on the coasts of Kent." This is probably the var. *gallica*. The plant is hoary, with erect flowering branches. Another specimen with less divided leaves from "near Malden, Essex, by Mr Buddle," labelled "*Ramulis longioribus et floribus pendulis oblongis*" belongs to the type as is one from Samuel Dale who says "it is the one formerly observed on Mersey Island and this year, 1708, at St Osyth in Essex." He names it "*Absinthium maritimum latiore folio.*" See Ray *Syn.* 94. Another sheet from "the Salt Marshes at Harwich" is a flowerless one, and a sheet labelled "*Absinthium Seriphium Belgicum* C. B. 179" unlocalised from S. Dale "is sent to show the difference," and is probably the var. *gallica* (Willd.).
- 383/7. *SENECIO SQUALIDUS* L.
 " *Jacobaea Sicula Chrysanthemi facie Bocconi* Ray *Hist.*, p. 286. From Mr Jacob Bobart of Oxford." Interesting as showing that the Oxford Ragwort was cultivated at Oxford in the Physic Garden at this time.
- 393/3. *ARCTIUM MINUS* Bernh.
 " *Bardana capitulis minoribus non lanuginosis.* Found by Mr Buddle near ye Town." Middlesex. "*Bardana minor.* From Mr Isaac Rand. Found at Lee in Kent." First British record.
- 396/3. *CIRSIIUM HETEROPHYLLUM* Hill.
 "From Snowdon." Carnarvonshire. Originally recorded by Ray.
- 405/7. *CENTAUREA NIGRA* L., var. *NEMORALIS* (Jord.).
 " *Jaceae nigrae vulgaris varietas.* Gathered near Bathe." Somerset. With this a specimen, probably *C. pratensis* Thuill., teste C. E. Britton.
- 405/12. *CENTAUREA CYANUS* L.
 "In ye Corn at Mitcham, Du Bois." Surrey.

- 405/13. *CENTAUREA SCABIOSA* L.
 " *Jacea major* with a very pale purple flower. In the Common Field at Mitcham, Surrey, Du Bois."
- 416/3. *CREPIS BIENNIS* L.
 " *Hieracium Chondrillae fol. asperum*. Between Gravesend and Rochester." See Ray *Hist.* ii., 857, 1688.
- 416/5. *CREPIS CAPILLARIS* Wallr. (*C. VIRENS*), var. *DIFFUSA* Druce.
 In the fields at Wiccomb, Kent."
- 416/5. *CREPIS CAPILLARIS* Wallr., var. *ANGLICA* Druce & Thell.
 " *Hieracii lutea glabri, sive minus hirsuta* J. B. Ray *Hist.* i., 234, n. 16, *species major*." This unlocalised specimen is the earliest example known.
- 416/10. *CREPIS TARAXACIFOLIA* Thuill.
 " *Hieracium Chondrilla folio hirsutum* C. B. *H. foliis et facie Chondrilla* Lob. Found by Mr Rand on the banks of the Thames in Kent." First British record.
- 419/24. *HIERACIUM HOLOSERICIUM* Backh.
 " *Pilosella Alpina erecta* . . . In Monte Snowdon, collegit D. Rob. Wyne. From Mr Stonestreet." Carnarvonshire.
- 419/83. *HIERACIUM PELLUCIDUM* agg. (teste E. F. Linton).
 " *An Hieracium macrocaulon hirsutum folio rotundiore*, Lawson. Found growing plentifully near the Lord Howard's house at Darking in Surrey by Mr James Sherard."
- 419/145. *HIERACIUM VULGATUM* Fries agg. (teste F. J. Hanbury).
 " Gathered at Tunbridge Wells."
- 419/224. *HIERACIUM RIGIDUM* Fries (teste F. J. Hanbury).
 " From Mr Stonestreet. An English plant."
- 419/250. *HIERACIUM BOREALE* Fr.
 " At Tunbridge, *latifol. hirsutum*." First Kentish record.
- 421/1. *HYPOCHAERIS MACULATA* L.
 " *Hieracium latifolium* Pannon. . . . Found by Mr James Sherard on Gogmagog hills and the Devils ditch, Camb." Already recorded by Ray.
- 421/2. *HYPOCHAERIS RADICATA* L.
 " *Hieracium hirsutum foliis longis dentatis flore majore*. Found by Mr Manningham near Chichester." Sussex.
- 422/2. *LEONTODON AUTUMNALIS* L., var. *PRATENSIS* Koch.
 " *Hieracium montanum angustifolium alterum* Park. A small *Hieracium* as you ascend the Glydyr nigh Llanberis, Dr Richardson." Another specimen "Gathered in the meadows about Bathe," Somerset, is the type plant.
- 422/3. *LEONTODON NUDICAULIS* Banks.
 " *Dens Leonis pumilus saxatilis asper radice fibrosa*, 16, *Hist. Oxon.*" A type specimen from its discoverer, Jacob Bobart, and the label is in his handwriting. Also a specimen "ex Du Bois from Wiccomb, Kent."

- 427/2. *SONCHUS ARVENSIS* L.
 “*Hieracium* about ye Stone Quarrys near ye Bathe. Du Bois.”
 Somerset.
- 427/3. *SONCHUS ASPER* Hill, var. *INTEGRIFOLIUS* Lejeune.
 “*Sonchus* in Chelsea Physick Garden. This is a kind that keeps
 constant to its form from seed. Pluk. Alm. 354, Phyt. t. 61,
 f. 5, Raii Syn.”
- 427/4. *SONCHUS OLERACEUS* L., var. *INTEGRIFOLIUS* Wallr. (vel *AFFINIS*).
 “*Sonchus foliis longis, angustis, dentatis*. Found by Mr Rand
 on ye banks by ye road side between Newington and Camberwell.”
- 433/1. *CERVICINA HEDERACEA* Druce (*WAHLENBERGIA HEDERACEA* Schrad.).
 “*Campanula Cymbalariae foliis* Ger. Emac. In Cornwall.”
 Already recorded for the county in Merrett's *Pinax*.
- 445/1. *CALLUNA VULGARIS* Hull, var. *PUBESCENS* Hull.
 “*Erica vulgaris hirsuta* Ger. On the Heath near Tunbridge
 wells. Du Bois.” The variety is not mentioned in the “Flora
 of Kent.”
- 446/1. *ERICA CINEREA* L.
 “*E. tenuifolia* Ger. *foliis ex luteo variegatis*. On the Boggy
 grounds near Chiselhurst. Du Bois.” The first Kentish record.
- 453/3. *PYROLA MINOR* L.
 “*Pyrola vulgaris*. Found by Mr James Sherard growing plen-
 tifully in the hanging wood near Hawilton [Hambledon] by
 Henley, Bucks.”
- 456/1. *HYPOPIITYS HYPOPIITYS* (L.) Dr. (*H. MONOTROPA* Crantz).
 “*Orobanche Verbasculi odore* D. Plot. Found near Chevening
 in Kent.” First record for that county.
- 457/2. *LIMONIUM HUMILE* Mill.
 “*Limonium foliis angustis acuminatis, floribus laxius dispositis*.
 Found in ye Salt Marsh near Pagham Church in Sussex, Rev.
 W. Stonestreet.”
 “*Limonium folio angusto acuminato, spicis florum compac-
 tioribus* D. Dale. Found in Salt Marshes at St Osyths and
 Walton on ye coasts of Essex.” This may be a hybrid.
- 457/5. *LIMONIUM BINERVOSUM* C. E. Salm. (*STATICE OCCIDENTALIS*).
 “*Limonium minus maritimum*. Dover Cliffs, J. Sherard.”
 Also “*Limonium minus folio latiusculo, mucronato*. Found by
 Mr Rand.”
- 458/4. *STATICE MARITIMA* Mill.
 “*Caryophyllus marinus minimus* Ger. In the Salt Marsh at
 Harwich in May 1710.” The true holotrichous plant.
- 467/2. *ANAGALLIS ARVENSIS* L., var.
 “*A. flore albo ad fundum caerulecente*. Found in ye corn
 near Quainton in Buckinghamshire. Also “*A. flore purpureo*
 with the first.” First record for the county.
- 467/3. *ANAGALLIS FOEMINA* Miller.
 “*A. caeruleo*. Found by Mr James Sherard in the barren corn
 fields on the north side of Roe hill.” Kent.

- 477/1. BLACKSTONEA PERFOLIATA Huds. (CHLORA).
 " *Centaurium luteum perfoliatum*. Gathered on the dry grounds at Wiccombe in Kent. It is either a starved plant or a distinct sort."
- 480/3. GENTIANA VERNA L.
 " Gentian N. D. Near Galloway by Mr Lhwyd." First recorded for Ireland in Hoe's *Phytologia* of 1650.
- 480/4. GENTIANA AMARELLA L.
 " *Gentianella fugax Autumnalis*. Found by Mr Bellers in Gloucestershire." Also from " Bottle hill in Surrey, and near Westerham in Kent."
- 480/9. GENTIANA CAMPESTRIS L.
 " *Gentianella* found by Rand on ye Downs near Brighthelmston in Sussex."
- 498/1. BORAGO OFFICINALIS L.
 " *Borago floribus caeruleis* J. B. Grew wild in the Fields near Colchester, and thereby so small, Du Bois." Essex.
- 506/9. MYOSOTIS COLLINA Hoffm.
 " *Myosotis Scorpioides minima flosculis saturata caeruleis*. Near Wandsworth, Middlesex, Mr Stonestreet."
- 509/1. ECHIUM VULGARE L.
 " *An Lycopsis Anglica* Lob. This differs from the common *Echium* in having lesser and shorter flowers without the long apices that has. Discovered in Kent by Mr Isaac Rand."
- 511/1. VOLVULUS SEPIUM Junger, forma.
 " *Convolvulus major* J. B. Found growing thus fasciated by Comb Park, in Surrey, Du Bois."
- 513/1. CONVOLVULUS ARVENSIS L., var. STONESTREETII Dr.
 " *C. flore albo parvo in 5 vel 6 laciniis profunde dissecto*. Found near Henley, Mr Stonestreet." First record for Oxon or Bucks.
- 527/7. VERBASCUM LYCHNITIS L.
 " *Verbascum flore albo parvo* J. B. Very common by the Roads in ye Western part of Kent, Mr J. Sherard." Also " *V. nigrum fl. ex luteo purpurascente* C. B. In Kent."
- 527/8. VERBASCUM NIGRUM × PULVERULENTUM = V. SCHOTTIANUM Schrad.
 " Very common about Bury and Norwich, Mr J. Sherard."
- 535/4. SCROPHULARIA NODOSA L., var. BOBARTII Pryor.
 " *S. major caulibus, foliis, et floribus viridibus* D. Bobart, Ray Syn., 1696, 161. Found near Cumnor." First record for Berks, and it was from this example that Mr Reginald Pryor described the variety.
- 543/6. VERONICA SCUTELLATA L.
 " *Veronica aquatica angustifolia, minima* D. Buddle accepit a D. Richardson Eboracensis." A narrow leaved glabrous form. Also " *Anagallis rectius Veronica aquatica angustifolia* J. B. On Kirley Moor, Du Bois."

- 543/7. VERONICA BECCABUNGA L.
 " *V. aquat. praecocior.* Found in ye way to Deptford, Mr Stonestreet." Kent.
- 543/9. VERONICA AQUATICA Bernh.
 " *Anagallis aquatica* Lob. Found by Mr Buddle near ye Neat Houses." The earliest Middlesex record.
- 545/5. EUPHRASIA NEMOROSA Pers.
 " *Euphrasia tenuiore folio vulgaris.* From Mr Stonestreet." Probably the earliest British specimen.
- 545/9. EUPHRASIA CURTA Fries (teste C. H. Ostenfeld).
 " From Mr Stonestreet." The earliest British specimen.
- 545/15. EUPHRASIA MICRANTHA Reichenb. (*GRACILIS* Fr.).
 " *Euphrasia* J. B." Unlocalised but the earliest British example collected by Du Bois.
- 545/18. EUPHRASIA MINIMA Fries (teste C. H. Ostenfeld).
 " Hanc accepi cum aliis in monte Snodon collectis A. D. R. Wynne, non videtur differre ab *Euphrasia vulgaris.*"
- 545/19. EUPHRASIA ROSTKOVIANA Hayne.
 " *Euphrasia latiore folio, flore majore.*" Unlocalised.
- 546/4. BARTSIA VISCOSA L.
 " *Euphrasia major lutea latifolia palustris.* Towards the farther end of Cornewall, and in ye Isle of Jersey, Du Bois."
- 549/1. MELAMPYRUM CRISTATUM L.
 " In the woods at Madingley in Cambridgeshire by Mr J. Sherard." Recorded thence in *Cat. Pl. Cantab.* 95, 1660.
- 550/13. OROBANCHE RAMOSA L.
 " *O. ramosa* Ger. Found among Flax near Beccles in Suffolk by Mr Barker, A.B." First record for Suffolk.
- 551/1. LATHRAEA SQUAMARIA L.
 " Darking, Surrey. See Ray Syn. Mr Du Bois."
- 552/2. UTRICULARIA MAJOR Schmid.
 " *Millefolium palustre galericulatum* Ger." Unlocalised from Du Bois. One of the earliest British examples.
- 558/7. MENTHA AQUATICA L., forma.
 " Mr Buddle takes this to be ye *Menthae aquatica tota nigra* of Dr Merret in his Pinax. Tis very like ye Peppermint and as hot. Found by ye New River near Stoke Newington." The first Middlesex record.
- 558/8. MENTHA PUBESCENS Willd., var. HIRCINA (Hull).
 " *Mentha aquatica nigricans fervidi saporis* Buddle, by ye River side towards Newington." Middlesex.
 Isaac Rand's "*Mentha aquatici genus hirsutum, spica latiore*" is under *M. pubescens* = *hircina* Hull.
- 558/9. MENTHA VERTICILLATA Huds., var. ACUTIFOLIA (Sm.).
 " *M. Verticillata, Aromaticae folio longiore* D. Rand. Found by him on ye banks of ye Medway plentifully between Maidstone and Ailsford, Kent."

- 558/9. MENTHA VERTICILLATA Huds.
 “*Calamintha arvensis verticillatae similis sed paullo elatior* D. Buddle. Near Stoke Newington.” The first record for Middlesex. See Ray *Hist.* i., 530, 1688.
- 558/9. MENTHA VERTICILLATA Huds.
 “*M. verticillata minima odore fragrantissimo* Buddle, who found it near Newington, Middlesex. He says the fragrance is that of *Rosa Eglanteria*.” The plant is referred to in the “Flora of Middlesex,” p. 211.
 Samuel Dale’s “*Mentha aquatica* L.” is *M. verticillata* L., var. *ovalifolia* Briq., and his sheet A. is *M. aquatica* L., var. *capitata* Briq.
- 558/9. MENTHA VERTICILLATA Huds.
 “*Sisymbrium hirsutum verticillatum* D. Buddle. Observed by Mr Rand by the sides of ditches, not far from the Kings Arms Stairs, a landing place in Surrey, over against Whitehall.” Two sheets of different forms of the hybrid.
- 558/10. MENTHA GENTILIS L., var. VARIEGATA (Sole).
 “*M. aquatica verticillata foliis e luteo virentibus odore vehementiore* D. Vernon ex Bobart.” And “*M. verticillata foliis latis acuminatis e luteo variegatis, odore grato*, ex horto D. Reynardson.” Probably the var. *Hackenbruchii* Briq., the var. *variegata* (Sole).
 Buddle’s “*Sisymbrium ramosissimum*” is *Mentha aquatica*, var. *acuta* Briq.
- 558/10. MENTHA GENTILIS L., var. GRACILIS (Sole).
 “*M. verticillata hortensis, foliis glabris acuminatis* ex Horto D. Price, Newingtoniae. An *Menthae Cruciatæ M. Ocymi odore, M. vulgata sive fusca* etc. Lob. 504, cujus Icon, exhibetur sub Titulo *Menthae Cruciatæ*, Ibid., p. 507, ex sententia D. Rand.” Perhaps not separable from var. *cardiaca* Briq., teste J. Fraser.
- 558/11. MENTHA CARDIACA Baker.
 “*M. Cardiaca vera*, ex sententia D. Bobart. Gathered in the Physick Garden at Oxford.”
- 558/12. MENTHA RUBRA Huds., var.
 “*M. crispa verticillata foliis rotundiora* J. B. I found this wild Anno 1708 at Black Notley.” Label in Dale’s writing. The first record for Essex. Also “*M. Balsamita sive latifolia odorata* Merr. Pin. By ye New River-side near Stoke Newington, Middlesex.” The first record for Middlesex. Both sheets come under var. *rarpila* Briq., teste J. Fraser.
- 558/13. MENTHA ARVENSIS L., var. AUSTRIACA Briq., teste J. Fraser.
 Du Bois’ own specimen, gathered in his “Garden at Mitcham,” Surrey. Buddle’s unlocalised specimen is *M. verticillata* L., var. *adulterina* Briq., teste J. Fraser.

- 561/4. THYMUS SERPYLLUM L., forma.
 “*Serpyllum minus flore albo*. Found under ye cliff on this side of Woolwich, Mr Stonestreet.” Kent.
- 569/1. NEPETA CATARIA L.
 “*Nepeta folio angustiore*. Found in ye Road a little on this side Dartford in Kent. Du Bois.”
- 572/1. SCUTELLARIA MINOR Huds.
 “*Cassida flor purpureo*. Gathered in the Forest of Dean by Mr Bellers.” First Gloster record.
- 576/1. MARRUBIUM VULGARE L.
 “*M. album*. Gathered at Chelsey. Du Bois.”
- 577/4. STACHYS PALUSTRIS × SYLVATICA (under S. AMBIGUA Sm).
 “*Galeopsis spicata, foliis Menthae sativae hirsutis*. Differt a *Panace Coloni* Ger. [*S. palustris*] radice non strumosa, foliis mollioribus et hirsutioribus, cauli per pediculos longiores annexis, et flore saturate purpureo, qui in illo dilute purpurascit. Found by Mr Stonestreet in a Kitchen Garden at Stourminster Marshal and Winborn, Dorset.” The first British record for the hybrid.
- 577/5. STACHYS PALUSTRIS L.
 “*An Panax Coloni* at Tunbridge.” Kent. The specimen is a narrow leaved form with strongly hairy stem, approaching the var. *canescens* Lange.
- 577/13. STACHYS OFFICINALIS Trev. (BETONICA OFFICINALIS L.).
 “*Betonica major Anglica*. Found by Mr Bobart in ye Id. Abingdons woods at Ricot [Oxon] eadem videtur *Betonica majore Danica* Park.” The specimen is a luxuriant form of the Wood Betony and the earliest Oxford reference.
- 578/2. GALEOPSIS TETRAHIT L.
 “A variety of *Lanium Cannabinum flore rubro*. Found near Chiselhurst in Kent. The flowers are more specious, larger and differently marked. Du Bois.”
- 578/4. GALEOPSIS LADANUM L.
 “*G. Ladanum dicta, maritima major*. Specie videtur differre a *segetali*. I found this on ye Beach of ye Sea about half a mile eastward from Weymouth.” A robust broad-leaved form, perhaps to be referred to var. *latifolia* Hoffm. Also “*Ladanum segetum maritimum nascens, an diversum a vulgare*. On ye shores near Weymouth, Mr Stonestreet.” The plant is a narrow-leaved form with closely aggregated and densely hairy verticillasters—probably the var. *canescens* auct.
- 583/1. BALLOTA NIGRA L., var. BOREALIS (Schweig.).
 “*Marrubii albi nova Species, vel saltem Varietas*. On the Common near Tunbridge Wells, Du Bois.” Kent.
- 586/2. TEUCRIUM SCORDIUM L.
 “*Scordium*. Mr Ja. Sherard found it growing in the Isle of Ely.” See *Cat. Pl. Cantab.* 152, 1660.

- 586/4. *TEUCRUM CHAMAEDRYS* L.
 “*Chamaedrys vulgaris* Park. It grows plentifully on ye walls and Ruins of Winchelsea Castle. Found by Mr Sherard.”
 Sussex.
- 587/1. *AJUGA REPTANS* L.
 “*Bugula minor et hirsuta*. Found in Stokenchurch woods by Mr Rand.” Either in Oxon or Bucks.
- 587/4. *AJUGA CHAMAEPITYS* Schreb.
 “*Chamaepitys vulgaris* Park. About Roe hill in Kent.”
- 588/3. *PLANTAGO MARITIMA* L.
 “*P. marina*, this grew about Chester.”
- 588/8. *PLANTAGO LANCEOLATA* L., var. *SPHAEROSTACHYA* Roehl.
 “*Plantago trinervia*. Brought from the sea side in Sussex by Mr Stonestreet. He thinks it to be Gasper Bauhines.”
- 588/10. *PLANTAGO MAJOR* L., var. *MINIMA* DC.
 “*Plantago latifolia minor et hirsutior foliis dentatis*. Found by Mr Rand near the Town.” This is probably the plant referred to in the “Flora of Middlesex,” p. 229, as “a small form with larger hairy leaves and slender spikes.” It seems to be a distinct variety although I have provisionally placed it under De Candolle’s *minima*.
- 595/2. *SCLERANTHUS ANNUUS* L.
 “*Knave! Germanorum erectis*. Found by Mr Rand among Corn by Maidstone.”
- 600/8. *CHENOPODIUM ALBUM* L., var. *PSEUDOPULIFOLIUM* (Murr).
 “Gathered in St Georges Fields.”
- 606/2. *ATRIPLEX LITTORALIS* L.
 “*A. angustifolia* D. Buddle. Found at Lynn in Norfolk by Mr J. Sherard.” Also “*Blitum maritimum parvum foliis angustissimis*. Found by Mr Manningham near Bosham, 3 miles from Chichester.” A small starved form. Also the type from “the Coast of Sussex, Du Bois.”
- 606/17. *ATRIPLEX PORTULACOIDES* L.
 “Gathered at the Oyster-Pits at Fingrego near Colchester.”
 Essex.
- 606/18. *ATRIPLEX PEDUNCULATA* L. (OBIONE).
 “*A. maritima Halimus dicta* . . . Gathered by Mr J. Sherard, anno 1715 in the Isle of Thanet just by the Ferry to Sandwich.”
 The earliest Kentish specimen.
- 611/5. *SALICORNIA RAMOSISSIMA* Woods.
 “*Kali ramosius, erectum, foliis brevibus, Cupressiforme*. In a Salt Marsh on ye east side of Poole, Dorset. Found by Mr Stonestreet,” and the first as British.
- 611/8. *SALICORNIA APPRESSA* Dum., vel *S. RAMOSISSIMA* Woods.
 “*Kali ramosius, procumbens, foliis brevibus purpurascens*. In a little Salt Marsh to ye east of Poole. Found by Rev. Stonestreet.” The earliest specimen known.

- 615/6. *POLYGONUM SCABRUM* Moench. (*LAPATHIFOLIUM* auct.).
 “*Persicaria major* D. Bobart. From Mr Stonestreet.” Bobart added this plant to the British flora. See Ray *Syn.* 58, 1696.
- 615/7. *POLYGONUM PERSICARIA* L., var. *INCANUM* Bréb.
 “*Persicaria foliis subtus incanis* Tourn. ex sententia D. Buddle, foliis maculosis subtus caesiis, not in Ray’s Synopsis. Found about London. Mr Du Bois.”
- 615/10. *POLYGONUM MITE* Schrank.
 “*Persicaria mitis maculosa et non maculosa* C. B.” Unlocalised, but one of the earliest examples known of this species.
- 615/14. *POLYGONUM AVICULARE* L.
 “*P. brevi angustoque folio* C. B. Pin. 281. Found by Mr Rand on a bank near Camberwell.” Surrey.
- 615/14. *POLYGONUM AVICULARE* L., var. *MARINUM* S. F. Gray (*LITORALE*).
 “*An P. Marinum*. Non aliter differre videtur a vulgari, quam surculorum longitudine quadrupedali. On ye shores near Weymouth. Mr Stonestreet.” It is a young specimen and may be *P. Raii*. It is the first record of either species for Dorset.
- 615/14. *POLYGONUM HETEROPHYLLUM* Lindman.
 “Our broader leaved *Polygonum* at Chiselhurst in 1714. This variety is not mentioned in Ray’s ‘History’ or ‘Synopsis’.” This plant comes under Syme’s var. *vulgatum*.
- 618/1. *RUMEX HYDROLAPATHEUM* Huds. × *OBTUSIFOLIUS* = *R. WEBERI* F.-B.
 “*Lapathum maximum aquaticum, sive Hydrolapathum* Ger. Gathered in the river at Bathe. Leaf only.” First record for Britain. Mr S. F. Dunn noticed that *Hydrolapathum* in the Avon above Bath has rather cordate leaves with raised petiole edges. See *Fl. Bristol*, p. 517.
- 618/6. *RUMEX OBTUSIFOLIUS* L.
 “Dock eaten by Insects at Upcerne, Du Bois.” First record for Dorset.
- 618/12. *RUMEX PALUSTRIS* Sm.
 “*Lapathum longo, angustoque folio* etc. Pluk. Mantiss. p. 112. Unlocalised.
- 618/16. *RUMEX ACETOSELLA* L.
 “On the dry banks of the gravel pits on Mitcham Common, Du Bois.” A very small form.
- 628/13. *EUPHORBIA PORTLANDICA* L.
 “*Tithymalus maritimus* . . . Found on the narrow neck of land which joins Portland to Dorsetshire [Rev. W. Stonestreet].” In Ray’s *Syn.* Dillenius says Mr Stonestreet was the discoverer, and this is therefore a type specimen.
- 632/1. *MERCURIALIS PERENNIS* L.
 “*M. perennis repens* . . . At Upcerne in Dorsetshire, Du Bois.” The first county record. It is a very luxuriant female form.
- 633/1. *ULMUS MONTANA* Stokes. (*U. CAMPESTRIS* L.).
 “*U. folio latissimo scabro* Ger. Emac. Ray Hist. ii., p. 1426. The Wych-hasel, or Broad-leaved Elm.” Also the flowers of an

- indeterminable specimen labelled "The Common Elm, *U. folio latissimo scabro* Ger. Emac. 1481."
- 633/2. *ULMUS CARPINIFOLIA* Borck. = *U. GLABRA* Mill. = *U. NITENS* Moench.
" *Ulmus folio latissimo glabro*. N.4 near Danbury in Essex."
- 633/4. *ULMUS PLOTII* Druce.
" *Ulmus foliis parvis glabris* Buddle. Ye little Wich Elm, a little on this side Maldon. An *Ulmus folio angusto glabro acuminato* R. Plot Hist. Ox. 160 T. 10." Also "*U. folio glabro minor* D. Plot. Hist. Oxon. Surculi novelli asperiusculi, Stonestreet."
- 633/5. *ULMUS SATIVA* Miller.
" *U. vulgaris* Park. The common Elm gathered from the great Elms in my Field at Mitcham, Surrey, with the said excrescences on the leaves in 1714, Du Bois." See Ray *Hist.* ii., p. 426.
- 633/5. *ULMUS VIMINALIS*, var. *VARIEGATA* (teste Henry).
" *Ulmus minor folio angusto scabro* Ray Syn. ex sententia D. Rand. The narrow-leaved Elm, with party coloured leaves. Gathered in the Physick Garden at Chelsea, Anno 1715."
- 641/1. *MYRICA GALE* L.
" *Rhus Myrtifolia Belgica* C. B. Gathered in Sussex near Tunbridge Wells, Du Bois."
- 646/1. *QUERCUS ROBUR* L.
" Sprigs of an Oak that grew out all white of an old Tree in Stretham Lane, Mr Du Bois." Surrey.
- 650/7. *SALIX SMITHIANA* Willd., var. *RUGOSA* (Leefe). (*S. VIMINALIS* × *CINEREA*).
" The bluish Willow. Near Moredon."
- 650/9. *SALIX AURITA* L., forma *MINOR*.
" *Salix caprea pumila folio subrotundo*. In the Wood by the Green Man at Dulwich. Mr Isaac Rand." Surrey. Probably the earliest British example. First recorded by Dillenius in Ray *Syn.* 450, 1724. Another sheet from "Norwood in Surrey by Mr Stonestreet."
- 650/18. *SALIX HERBACEA* L.
" *Salix pumila rotundifolia, glabra*. From Snowdon, Mr Stonestreet."
- 654/1. *HYDROCHARIS MORSUS-RANAE* L.
" *Nymphaea alba minima* C. B. Gathered in the River at Bathe." Earliest record for Somersetshire.
- 667/2. *CEPHALANTHERA DAMASONIUM* Druce. (*C. GRANDIFLORA* S. F. Gray).
" *Helleborine flore albo* C. B. Gathered on the roadside near Stokenchurch in Oxfordshire." See Ray *Cat.* 339, 1670.
- 668/1. *HELLEBORINE PALUSTRIS* Schrank. (*EPIPACTIS*).
" *H. palustris nostras* Ray *Hist.* ii., 1201, 1688. Gathered at Chiselhurst in Kent."
- 668/2. *HELLEBORINE LATIFOLIA* Druce, agg.
" In Painswick Wood, Mr Bellers." First record of the aggregate plant for Gloucestershire.

- 668/4. HELLEBORINE PURPURATA Druce.
 "*An Helleborine latifolia montana* C. B. In the woods at Tunbridge Wells." If, as I think it is, correctly identified, it is the first Kentish record, and one of the earliest British examples.
- 668/5. HELLEBORINE ATRORUBENS Druce. (EPIPACTIS OVALIS Bab.).
 "*Helleborine altera atrorubente flore* C. B. Found by Mr James Sherard growing at Malham." Yorks. See Ray *Cat.* 187, 1677.
- 669/3. ORCHIS SIMIA L.
 "*O. galea et alis fere cinerea* J. B. Mr James Sherard found it growing between Northfleet and Gravesend in Kent." With it is a specimen of *O. MILITARIS* L. Both species are the earliest specimens known from Kent.
- 669/4. ORCHIS USTULATA L.
 "*O. Pannonica & Clusii*. Found by Mr James Sherard . . . plentifully . . . near the Thames between North Fleet and Gravesend." First record for Kent.
- 669/5. ORCHIS MORIO L.
 "Gathered in the fields near Colchester, Essex, Mr Stonestreet."
- 669/10. ORCHIS PRAETERMISSA Druce.
 "Gathered near Upcerne in Dorsetshire, Mr Du Bois." The first record for the county.
- 669/11. ORCHIS FUCHSII Druce.
 "In ye wood near Upcerne in Dorsetshire, Rev. W. Stonestreet." First record for Dorset.
- 669/14. ORCHIS MASCULA L.
 "Gathered near Harwich in Essex, Mr Stonestreet."
- 672/2. OPHRYS SPHEGODES Mill.
 "*Orchis testiculus sphegodes hirsuto flore*. It grows between North Fleet and Gravesend."
- 674/1. HABENARIA GYMNADENIA Druce. (GYMNADENIA CONOPSEA Br.).
 "Gathered at Chiselhurst, in Kent, Mr Du Bois."
- 676/2. IRIS FOETIDISSIMA L.
 "*Xyris* Ger. It grows wild about Black Notley in Essex."
- 706/2. SCILLA AUTUMNALIS L.
 "It grows plentifully on Blackheath," whence Plukenet recorded it in the second edition of Ray *Syn.* 1696.
- 713/1. COLCHICUM AUTUMNALE L.
 "*Colchicum commune* C. B. Gathered at Everland near Bathe in August 1710." Somerset. See Dodoen's *Herbal* 367, 1578.
- 718/8. JUNCUS SUBNODULOSUS Schrank.
 "*Gr. junceum aquaticum magis sparsa panicula*. From Mr Adam Buddle." Unlocalised, but probably the earliest British specimen.
- 718/15. JUNCUS GERARDI Lois.
 "*Gr. junceum maritimum vel palustre cum pericarpis rotundis*." From Adam Buddle. Unlocalised, and one of the earliest British examples.

- 735/1. TRIGLOCHIN MARITIMUM L.
 " *Gramen junceum spicatum seu Triglochin.* In the Salt Marshes near Harwich."
- 737/19. POTAMOGETON ACUTIFOLIUS Link.
 " *An Potamo. fol. gram. canini, caule compresso.* Differre videtur a Ray cujus species major." Unlocalised, but the earliest British specimen. Dillenius, I believe, has added the synonym from the *Synopsis* 149, n. 10, which however belongs to *obtusifolius*, while Sherard's specimen representing it in the Dillenian Herbarium is *P. mucronatus*.
- 737/20. POTAMOGETON OBTUSIFOLIUS Mert. & Koch.
 " *Potamogeton* at ye simpling feast, 1705." The earliest British example. Also " *Potamog. folio gramineo* N. D. On hunslow heath D. Doody." First Middlesex record, and not given in the " *Flora* " for Hounslow.
- 737/22. POTAMOGETON MUCRONATUS Schrad. (FRIESII).
 " *Potamog. folio gramineo, caule compresso* D. Dale. Found by Mr James Sherard in Cambridge River." This is probably the Pondweed alluded to on p. 124 of the *Cat. Pl. Cantab.* of 1660.
- 737/29. POTAMOGETON INTERRUPTUS Kit.
 " *Potamogeton maritimum grandiusculis capitulis, capillaceo folio nostras* Pluk." Unlocalised. Probably the first British example.
- 740/1. ZOSTERA MARINA L., var. ANGUSTIFOLIA Hornem.
 " *Potamogeton marinum.* Ray Syn., p. 346. Found by Mr James Sherard in the Isle of Shepey in the Ditches near Shelness." First Kentish record and the variety new to the Kent Flora.
- 745/3. ELEOCHARIS MULTICAULIS Br.
 " *An Juncello accedens graminifolia Plantula capitulis Armeriae proliferae* D. Lhwyd Ray Syn., p. 75. Gathered near Tunbridge Wells in Kent, Du Bois." The first British record. Ray's plant was *Scirpus pauciflorus*. See the Morison Herbarium. There is also an unlocalised specimen collected by Buddle.
- 746/5. SCIRPUS TRIQUETER L.
 " *Juncus acutus maritimus caule triangulo* C. B. Gathered on the Thames side near Peterborough House." Also " *Juncus acutus maritimus caule triangulo* C. B. By the Thames," whence it was first recorded by Merrett in 1666. Also " *Juncus maximus caule sulcato.* Limehouse, Mr Stonestreet."
- 746/8. SCIRPUS PAUCIFLORUS Lightf.
 " *Juncello accedens, etc.*" In Bobart's writing. One of the earliest examples of a species which Lhwyd discovered in Carnarvonshire.
- 746/13. SCIRPUS FLUITANS L.
 " *Juncus capitulis equiseti minor et fluitans.*" From Adam Buddle. Unlocalised. First recorded in Ray *Hist.* 1305, 1688. Also with a wrong identification from " Wandsworth Common," Surrey.

- 747/1. *ERIOPHORUM PANICULATUM* Druce. (*LATIFOLIUM* Hoppe).
 "*Linagrostis panicula minore* Tourn. 664. From Mr Stonestreet." Probably the earliest British example.
- 753/3. *CAREX ACUTIFORMIS* Ehrh.
 "*Gr. cyp. majus angustifolium* Ray Hist. 1293, 1688." Probably the earliest record.
- 753/10. *CAREX PENDULA* Huds.
 "*Gr. spica pendula longiora* Park. Notley near Braintree in Essex, Du Bois," where it is still plentiful.
- 753/12. *CAREX STRIGOSA* Huds.
 "*Gr. cyp. polystachion majusculum latifolium, spicis multis, longis, strigosis.* Du Bois." First recorded in Ray Syn. 265, 1696.
- 753/13. *CAREX HELODES* Link. (*LAEVIGATA* Smith).
 "A variety of the *Gramen Cyperoides spicis longe distantibus* with longer Spikes, found in the Boggy grounds about Tunbridge Wells." The first British record, and probably from Sussex.
- 753/15. *CAREX BINERVIS* Sm.
 "*Gr. cyp. spicis parvis longissime distantibus Varietas, altitudine pedali aut longiore, cauli tenui, foliis angustis, e quorum alis spicae seminiferae duae, tresve breves et habitiores, vel sessiles in foliorum alis, vel pediculis brevibus innixae. Caulem spica simplex terminat* Ray Syn. 266, 1696, Du Bois." Unlocalised. In the *Synopsis* this plant is said to grow in "prato quodam juxta lupuletum Danfeldiae in Essexiae," and this is the earliest British record.
- 753/20. *CAREX FLAVA* L., probably crossed with *C. FULVA* Host.
 "*Gr. palustre aculeatum Italicum vel majus* C. B. Pin. ex sententia D. Buddle. Found near Hooknorton in Oxfordshire, Mr Bellers."
- 753/32. *CAREX PILULIFERA* L.
 "*Gr. cyp. spicis brevibus congestis, folio molli.* From Adam Buddle." It was first found by Samuel Doody and recorded in Ray Hist. ii., 1910, 1688.
- 753/33. *CAREX DIVERSICOLOR* Crantz. (*GLAUCA*).
 "Differre videtur a *Gr. cyp.* [Syn.] p. 264, n. 4, spicis longioribus et plerumque nutantibus. Found by ye banks of the New River by Mr Miller."
- 753/53. *CAREX LEPORINA* L.
 "*Gr. cyp., spica e pluribus spicis brevibus mollibus composita.* Ray Hist. 1296, 1688," that being the earliest record.
- 753/57. *CAREX AXILLARIS* Good. (*REMOTA* × *VULPINA*).
 "*Gr. cyp. angustifolium, spicis parvis sessilibus in fol. alis, insignis varietas si non distincta species* Buddle." A type specimen from its discoverer.
- 753/62. *CAREX DIVULSA* Stokes.
 "*Gr. cyp. spicatum minus, spica longa, divulsa seu interrupta,* Ray Hist. ii. 1297, 1688. From Mr Stonestreet." Ray's is the earliest record.

- 753/67. CAREX ARENARIA L.
 "Gr. cyp. ex monte Ballon, simile maritimum. Adam Buddle."
 First recorded in Ray Hist. ii. 1297, 1688.
- 753/68. CAREX DIVISA Huds.
 "Gr. cyp. ex monte Ballon, spica divulsa, Ray Hist. 1696, ex
 Ins. Shepey, Adam Buddle." Du Bois adds that it "grows at
 ye Hithe at Colchester in Essex." Also "Gr. cyp. ex Monte
 Ballon, spica divulsa, A. Buddle. In the meadows near the
 Hithe at Colchester in Essex." The classic locality. See Ray
 Hist. ii., 1296, 1688.
- 758/2. SPARTINA STRICTA Roth.
 "Gr. sparteum spicatum dactyloides near Farnbridge Ferry in
 Dengey hundred plentifully." Essex. The label is in Buddle's
 hand. See Ray Syn. 393, 1724.
- 784/1. GASTRIDIVM VENTRICOSUM S. & T. (LENDIGERUM Gaud.).
 "A Grass found wild in the Garden, 1719, Du Bois." ? at Mit-
 cham, Surrey.
- 790/1. WEINGAERTNERIA CANESCENS Bernh. (CORYNEPHORUS).
 "Gr. pumilum hirsutum, spica purpureo-argentea molli. From
 Adam Buddle," who added it to the British flora from Suffolk.
 See Petiver Conc. Gram. 126, 1716.
- 791/4. DESCHAMPSIA FLEXUOSA Trin.
 "Gr. paniculatum, locustis parvis purpureo-argenteis, majus et
 perenne. From Adam Buddle." First differentiated by Samuel
 Doody. See Ray Syn. 258, 1696.
- 794/2. AVENA PUBESCENS Huds.
 "Gr. avenaceum, panicula purpureo-argentea splendente D.
 Doody," who was its discoverer. This specimen is of Du Bois'
 collecting.
- 794/3. AVENA PRATENSIS L.
 "Gr. avenaceum montanum, spica simplici artistis recurvis.
 See Ray Hist., p. 1290. From Mr Buddle," who added it to
 the British flora from near Barlow (Bartlow) in Essex. Also
 "from the borders of the fields between Newmarket and Exning."
- 808/2. CYNOSURUS CRISTATUS L.
 "Gr. minimum, spica brevi habitiore nostrum, Ray Syn.
 184, 1690. Gathered near Tunbridge Wells, Kent." On
 the same sheet are specimens of *Aira praecox* L. and *Festuca*
bromoides L., the two latter being first county records. The
 specimens of *Cynosurus* are dwarf, bleached forms.
- 814/1. CATABROSA AQUATICA Beauv.
 "Gr. paniculatum aquaticum miliaceum. About London fre-
 quently," whence Lobel recorded it in the *Stirpes Illustrationes*
 in 1655.
- 824/7. POA NEMORALIS L.
 "Gathered at Chiselhurst, anno 1714, Du Bois." First Kentish
 record.

- 824/10. *POA COMPRESSA* L.
 “*Gr. paniculatum pratense medium, culmo compresso. It flowers late, ye stalk always flat and ye glumes more elegantly squamated than ye common.*” A type specimen of the grass which Buddle first differentiated in Britain and which he gathered at Maldon in Essex. See Petiver *Conc. Gram.*, n. 130. On the walls about Eltham in Kent for which it is the earliest record.
- 825/5. *GLYCERIA MARITIMA* Wahl.
 “*Gr. marin. paniculat.* D. Dale. From Mr Stonestreet.” Unlocalised.
- 825/7. *GLYCERIA BORRERI* Bab.
 “*Gr. paniculatum maritimum vulgatissimum.* From Mr Stonestreet.” The name refers to *G. maritima* Wahl., but the specimen is the earliest British example known of *G. Borreri*.
- 826/2. *FESTUCA GIGANTEA* Vill.
 “*Gr. avenaceum glabrum, panicula e spicis raris strigosis composita, aristis tenuissimis, Fulhamiae prope Londinum observavit D. Doody.*” First discovered in Britain by Doody. See Ray *Hist.* ii., 1909, 1688.
- 826/3. *FESTUCA ARUNDINACEA* Schreb.
 “*Gr. paniculatum nemorosum latiore folio, etc.* Ray Syn. 411, n. 15, 1724. Found near Dover by Mr Rand and Mr Sherard.” Type specimen and the first Kentish record. Also “*Gramen arundinaceum aquaticum, panicula Avenacea* D. Doody.” Added to the British flora from the Thames between London and Chelsea. Recorded in Ray *Hist.* ii., 1909, 1688.
- 826/4. *FESTUCA ADSCENDENS* Retz.
 “*Gr. Loliaceum majus spicis ravior dispositis* from Buddle.” Du Bois says “he finds it not in the Dillenian Ray.” The grass is a hybrid of *Lolium perenne* and *Festuca elatior*.
- 826/7. *FESTUCA RUBRA* L., forma.
 “*Gr. pratense, panicula duriore laxa, unam paucipue partem spectante,* Ray *Hist.*, p. 1285. From Mr Buddle.” Unlocalised. Ray’s is the first British record for this species.
- 827/17. *BROMUS COMMUTATUS* Schrader = *B. PRATENSIS* Ehrh.
 “*Festuca Avenacea, spicis strigosioribus e glumis glabris compactis.* From Buddle.” First observed by S. Dale, and recorded in Ray *Hist.* ii., 1907, 1686.
- 829/2. *LOLIUM TEMULENTUM* L., var.
 “*Gr. loliaceum, locustis brevibus, densioribus.* Found near Wandsworth in Surrey, Mr Stonestreet.”
- 830/1. *AGROPYRON JUNCEUM* Beauv.
 “*Gr. caninum maritimum spica crassa. Crescit in littore Sufolciensi,* D. Buddle.” This is the earliest authentic specimen known as it is not quite certain whether the plant in Johnson’s *Itin. Cant.* 23, 1632, is this species.
- 830/2. *AGROPYRON PUNGENS* Roem. & Schultes.
 “*Gr. caninum maritimum, spica loliacea nostras.* Adam Bud-

- dle." A type specimen and the earliest known. See Ray *Hist.* ii., 1256, 1688.
- 830/6. *AGROPYRON CANINUM* Beauv.
 " *Gr. caninum aristatum, radice non repente* Habui a D. Bobart." Bobart first recorded it as British from Stokenchurch woods, Oxon and Bucks. See Ray *Syn.* 235, 1690.
- 844/2. *EQUISETUM ARVENSE* L.
 "In the ditches about Bathe." Somerset. Also "*Equisetum* with the stalk half naked, gathered at Mitcham in General Harveys field near the River, all the place was full of the same sort." Surrey.
- 844/3. *EQUISETUM SYLVATICUM* L.
 "*Equisetum minus tenuifolium procumbens, non descriptum.* Found by Mr Stonestreet upon Hitcham Common." Earliest record for Bucks.
- 845/1. *CRYPTOGRAMMA CRISPA* Br.
 "*Adiantum album floridum.* In Agro Westmorlandico ad muris et in Rupibus Montis Snowdon provenit. From Mr Stonestreet." Also "*Adiantum album floridum, from Snowdon.*"
- 847/1. *FUPTERIS AQUILINA* (L.) Newm. (*PTERIS*).
 "*An Filicis foemina varietas.* From Dorsetshire, Mr Stonestreet." The first record for that county.
- 848/1. *ADIANTUM CAPILLUS-VENERIS* L.
 "*Adiantum fol. Coriandri verum.* Found by Mr Lhwyd at St Ives, Cornwall, and Isle of Arran, near Galloway." The earliest record for Ireland. One label is in Bobart's writing. See *Phil. Trans.* 1710.
- 850/1. *PHYLLITIS SCOLOPENDRIUM* Newman.
 "*Phyllitis, at Uperne in Dorsetshire, bifid form.* Another bifid form "non det.," found by "Vernon at Great Braxted in Essex." "*Lingua Cervina maxima, undulato folio, auriculato per basin* Cat. Hort. Reg. Paris 108. *Phyllitis crispa* J. B. Ray *Hist. App.* 134. The Honourable Capt. Charles Hatton some years since told me he had seen many curious varieties of this plant in the Royal Garden at Paris in Morin's time ye famous Florist, who assured him he had raised them all from the seed of the Common Hart's Tongue, Mr Petivers acct. of rare plants etc. *Phil. Trans.*, vol. 28, p. 33." Interesting as showing that they then knew it could be propagated from spores.
- 851/2. *ASPLENIUM TRICHOMANES* L.
 "*Trichomanes* Park. Gathered on the rocks near Bathe. Du Bois." Somerset.
- 851/5. *ASPLENIUM ADIANTUM-NIGRUM* L.
 "*Adiantum nigrum, segmentis foliorum angustioribus,* Raii *Syn.* p. 51. Found in a shady lane near Mitcham in Surrey." The type "in sandy lanes going to Bathe, Du Bois." Somerset.
- 854/1. *POLYSTICHUM SETIFERUM* Woynar. (*ANGULARE* Presl).
 "*Filix mas pinnulis spinosis, auriculatis, minimis.* In ye Lanes near Baleys in ye Parish of Shirminster-Marshal in Dor-

- setshire." First record for the county. Also "*Filix tenuis-*
sima secta Monte Bal. J. B. Found near Newberry, Mr Bobart."
First record for Berks. See *Fl. Berks* 608, 1897.
- 854/4. POLYSTICHUM LONCHITIS Roth.
"*Lonchitis aspera major* Ger. Gathered by Dr Richardson on
Snowdon," also from the same place from "D. Wynne." Car-
narvonshire.
- 856/1. DRYOPTERIS FILIX-MAS Schott, var. AFFINIS Newm.
"*Filix mas . . . magis incisus* Buddle. In sylvis juxta Henley
in agro Suffolk." First record for the county, for which this
variety is not given in the flora. Also from "Charlton Wood,
Kent, Mr Buddle." Seedlings "from Tunbridge Wells, Kent."
- 856/4. DRYOPTERIS ARISTATA Druce.
"Gathered on the Rocks near Tunbridge Wells, Du Bois."
First Kentish record. Also a specimen from Jacob Bobart.
- 856/9. PHEGOPTERIS POLYPODIODES Fée.
"*Filix montana, pinnulis imis deorsum spectantibus*. North
Wales." See *Ray Hist*.
- 856/11. PHEGOPTERIS ROBERTIANA A. BRAUN. (CALCAREA Fée).
"*Filix minor ramosa* J. B. In a wood by Painswick, four miles
by Gloster, Mr Bellers." The earliest Gloucestershire record.
- 858/1. POLYPODIUM VULGARE L., var. SERRATUM Milde.
"*Polypodium murale, pinnulis serratis*, D. Manningham, on
Windsor Castle." See *Ray Syn.* 117, 1724. First record for Berks.
Also type plant, "*Polypodium pinnulis longioribus acuminatis*.
Found at the entrance of Over [Iver] Heath on the way thither
from Hillingdon in some hedges." First record for Bucks.
- 862/1. TRICHOMANES RADICANS Sw.
"Sent by Dr Richardson to Consul Sherard for a new sort. Dr
Richardson discovered it at Belbank near Bierly, Yorkshire, and
it is included, on p. 127, in the *Synopsis* of 1724.
- 864/1. OSMUNDA REGALIS L.
"A variety of *Osmunda Regalis*, gathered near Bromley in
Kent, anno 1714. A form with sori on some of the upper fronds."
First record for Kent.
- 869/1. ISOETES LACUSTRIS L.
"*Subularia lacustris*. Snowdon, D. Wynne," ex Mr Stonestreet.
- 870/6. LYCOPODIUM INUNDATUM L.
"*Muscus terrestris repens . . .* On Hampsted and Bagshot
Heath." Recorded for Hampstead by Ray in the *Catal.* of 1670
as new to Britain.
- 876/3. CHARA VULGARIS L.
"*An Hippuris lacustris* Buddle. Near Chiselhurst." First re-
cord for Kent.

CRYPTOGAMS.

FUCUS VESICULOSUS L. ?

"Gathered on the shore at Deal in Kent by Mr A. Brown,
1698/9."

FURCELLARIA FASTIGIATA Lam.

"*An Fucus teres villis quaquaversam obductus* Doody. Gathered on the shore of Deal in Kent by Mr Alex. Brown, 1689/9."

HALOPHYS INCURVA Batt. (FINASTROIDES).

"Gathered on the shore at Deal in Kent, 1698/9, Mr Alex. Brown," and "*Muscus marinus capillaceis niger* . . . Found by Mr Dandridge on ye coasts of Essex."

POLYIDES ROTUNDUS Grev.

"*Fucus confervoides lendiginosus seu Cuscuta marina* Raii Syn. Brought from ye Isle of Sheppey in Kent by Mr Doody."

CLADOSTEPHUS SPONGIOSUS Agardh.

"*Muscus maritimus hirsutus flagellis ramosis subviridibus* Hist. Ox., p. 3, s. 15, t. 9. In litore Cornubiensi collectum accepi a D. Stephens. At Harwich, S. Dale."

GELIDIUM CORNEUM Lam.

"Found on the shore of Portland or Weymouth in Dorsetshire by Mr Miller."

POLYSIPHONIA NIGRESCENS Grev.

"*Muscus marinus ramosissimus et tenuissimus niger*. Found by Mr Dandridge on ye coasts of Essex."

POLYSIPHONIA ELONGATA Grev.

"*Fucus angustissimus ramosus, non dichotomus*. Found by Mr Rand on ye shoars at Dover."

LAURENCIA PINNATIFIDA Lam.

"Found on ye shores of Portland or Weymouth in Dorset, Mr Miller."

[GRACILARIA sp. Maryland, Dr Kreig, 1698.]

CERAMIUM RUBRUM Agardh.

"Gathered on the sea shore at Harwich." Essex.

HALIURUS EQUISETIFOLIUS Kütz.

"*Fucus teretifolius spongiosus parvus*, Raii Syn. 4, n. 11, 1696. Gathered on the shore at Deal by Mr Alexander Brown."

CALLIBLEPHARIS LANCEOLATA Batt. (JUBATA).

"*Fucus membranaceus fistulosus purpureus hispidus*. Hunc in litore Cornubiensi collectum accepi a D. Stephens."

DICTYOTES DICHOTOMA Lam.

"*Lichen marinus* . . . Referimus ad litora Cornubiæ implicitus."

BATRACHOSPERMA MONILIFORME Agardh.

"*Conferva fontana nodosa* . . . Ray Syn., p. 62, n. 26, 1724, from D. Dillenius."

CLADOPHORA GLOMERATA (L.).

"*Muscus marinus ramosissimus et tenuissimus viridis*. Found by Mr Dandridge on ye coasts of Essex."

ENTEROMORPHA INTESTINALIS Link.

"*Lichen marinus tubulosus* . . . On ye shores of Poole Bay towards Lower Liche. On the shores of Portland Bill, Mr Stone-street."

- CHAETOMORPHA AERA Kütz.
 " *Conferva marina geniculata*. On ye coasts of Essex, Mr Dandridge."
- CHONDUS CRISPUS. ?
 " *Alga crispa* . . . Sheppy." Kent.
- EURHYNCHIUM MYOSUROIDES Schimper.
 " Gathered off ye oaks in Wallington Common in Surrey, Du Bois."
- HYPNUM CUPRESSIFORME L.
 " Gathered near Tunbridge Wells, Kent. Wallington Common in Surrey."
- PORELLA PLATYPHYLLA Lindb. (MADOTHECA).
 " Stokenchurch, Bobart." Oxon and Bucks.
- TRICHOCOLEA TOMENTELLA Dum.
 " *Muscus Filicinus perelegans crispatus* D. Dandridge Mus. Petiv. No. 438. Highgate and Hornsey interjacent. In the woods near John Coles in Wiccombe, Kent."
- BARBALA SUBULATA (Hedw.).
 "Stretham Lane, Feb. 6. * *Muscus trichoides minus* . . . Ray Syn. 243, 1690." Surrey.
- TORTULA RURALIS Ehrh.
 " Stretham Lane. At ye foot of ye old Apricot in ye Codling Garden, Du Bois." Surrey.

 ORCHID-HUNTING IN FRANCE,

By Rev. T. STEPHENSON, D.D.

(N.B.—It should be premised that by *Orchis maculata* I mean the same as *O. Fuchsii* Druce, and by *O. elodes* the same as *O. maculata vera* (Druce) = *O. maculata*, sub-sp. *ericetorum* Linton).

In June of the years 1924 and 1927 I had two very interesting visits to France in search of orchids, and have pleasure in here recording some notes of the groups of plants met with and their distribution.

In the Charente region I stayed at the charming house of M. J. Delamain, finely situated in the country near Jarnac. In the lawn close to the house Lizard orchids are growing, and they are to be found in fair numbers by the roadsides in the neighbourhood. Under the fir trees near the house are the tall bushes of *Erica scoparia*, *Arenaria montana* and splendid spikes of *Asphodel*. Lower down are the handsome *Lathraea clandestina*, *Phalangium planifolium*, *Equisetum ramosum* and a small colony of *Orchis elodes*. In the open ground and meadows not far away, a great many orchids flourish, *O. mascula*, *morio* and *luxiflora*, with the hybrid of the two last quite frequently, and that of the former two occasionally, *O. maculata*, *militaris*, *Coeloglossum viride*, *Platanthera chlorantha*, *Serapias lingua* and *occultata*,

Anacamptis pyramidalis, *Ophrys apifera* and *scolopax*, with the hybrid between them rarely, *Aceras anthropophora* in plenty, a buff-coloured form, and a most amazing abundance of *Ophrys aranifera*. Occasionally in the district the variety of *Ophrys apifera* with an emerald-green pouch is met with. The purpose which originally attracted me to the Charente region was to see a very fine colony of *Orchis sesquipedalis* which grows in an extensive marsh formed by the "gouffre" called Les Tards, a deep and powerful spring welling up from the chalk, which keeps the marsh in a fairly even condition of moisture all the year round. A full account of this orchis was given in *Journ. Bot.* of April, 1925. It is the finest of the South-European Marsh Orchids, only to be excelled by the splendid *O. Munbyana* of North Africa. This year another visit was paid to the marsh, when the plants were about at their best. Other orchids in the marsh are *O. incarnata* and *O. laxiflora*, and *Gymnadenia conopsea*. The hybrid of *O. sesquipedalis* and *O. incarnata* occurs, and has been named by Dr Keller \times *O. Delamainii*. We searched diligently for a possible hybrid of *O. sesquipedalis* and *O. laxiflora*, but without success. Near Gensac we traversed some very large marshes, where two years ago *O. palustris* grew in thousands, pale purple, pink and white. But this year, owing to the growth of the sedge, the greater number of the plants were temporarily smothered. We found one fine hybrid of *O. laxiflora* with *O. palustris*. Here *O. laxiflora* was also abundant, but nearly over. In these fens, with their dense growth of sedge, cut down about once in three years, the orchids have to struggle against great difficulties, and their power of recuperation is remarkable.

Of plants in this district other than orchids the following may be mentioned:—*Adonis aestivalis*, *Biscutella laevigata*, *Dianthus Carthusianorum*, *Althaea hirsuta*, *Linum gallicum* and *suffruticosum*, *Ornithopus compressus*, *Coronilla minima*, *Lathyrus niger*, *angulatus* and *cancscens*, *Astragalus monspessulanus*, *Tetragonolobus siliquosus*, *Dorycnium pentaphyllum*, *Bupleurum aristatum* and *fruticosum*, *Helychrisum Stoechas*, *Carduncellus mitissimus*, *Campanula Rapunculus* and *linifolia*, *Convolvulus cantabrica*, *Linaria Pelliseriana*, *Melampyrum cristatum*, *Orobanche Picridis* and *epithymum*, *Euphorbia palustris* and *Muscari comosum*.

The greater part of Charente and Charente Inférieure constitute the region in which alone Cognac brandy is produced. This region is divided into seven areas, from which various grades are named, and of these the best, which gives "Fine Champagne," is a small district, of which Cognac and Jarnac stand at the northern boundary. The brandy is produced by simple distillation of the grape-juice, without any admixture of other ingredients. It is matured in casks of French oak, from the tannin of which it gets its colour. Owing to the ravages of *Phylloxera*, the whole of the vines are now raised by grafting from American stock. There are weaknesses incident to the grafting process, and many experiments are being made with a view to producing a satisfactory stock without its aid, but hitherto without success.

We went for a more extended run by motor to the coast at Royan. On the way, at Talmont, there was seen a pretty group of *O. palustris*, and, by the sea, bushes of *Atriplex halimus*. At Royan there are some fine trees of *Elaeagnus angustifolius*, and by the shore at Pontaillac, *Convolvulus lineatus*. From Royan we went into the Forêt de la Coubre, a small northern extension of the dune formation of the Landes, which extend south of the Garonne estuary. This whole region is now planted with *Pinus maritima*, and an extensive industry is conducted in the manufacture of resin. A narrow strip is cut in the bark of the fir, and the resin collected in small tins. The cutting is so managed as to yield resin for several years without much interfering with the growth of the trees. Here by the roadside we found *Helianthemum guttatum* and quantities of the beautiful *Cistus salviaefolius*, also *Cynoglossum pictum*, the curious *Ephedra equisetiformis*, and on the shore, *Linaria thymifolia*. But the sight of sights was *Cephalanthera rubra*, covering the ground under the fir trees in great rosy sheets, almost as closely packed as bluebells in an English wood. *Cephalanthera ensifolia* is equally plentiful on the ground, but when we were there, in early June, it was out of flower. On the return journey, more to the north, we found a fine collection of orchids which included many hybrids of *O. laxiflora* and *palustris* and, especially near Saujon, more groups of *O. sesquipedalis*.

M. Delamain and his son, M. Jean Delamain, have an excellent knowledge of the plants of the whole district, and it was by their kindness that I was able to visit all the best localities within a very short space of time.

This summer, by the kindness of M. L. d'Albis, of Limoges, we had a fine run through practically the whole Tarn valley and the Cévennes. Going by train from Cognac to Limoges, we passed through the forest region of La Braconne largely consisting of a sort of open scrub, where there are still wild boars and a few wolves. Running by car south from Limoges, we saw *O. elodes* in plenty in a damp meadow, with *Genista sagittalis*, which is fairly wide-spread. In a damp meadow south of Cahors, we found large numbers of *O. ambigua* Martr., which was the main object of our expedition. It was growing along with *O. incarnata*, and we found one or two hybrids. M. Martrin-Donos in his "Florule du Tarn" described this plant as a new species, but expressed a doubt as to whether it was a hybrid between *O. maculata* and *incarnata*. However, in the two stations where we found it, neither species of Spotted Orchis was to be seen. In any case, there can be no doubt that the plant is a variety of *O. sesquipedalis*, and it is so recorded by Rouy and Briquet. In comparison with the type form, as seen at Jarnac, it has narrower spikes with very divaricate bracts, but otherwise is very similar; also the lips are flat, whilst in the Jarnac form they are nearly always strongly recurved.

Between Moissac and Montauban the roadside was adorned by many fine spikes of Lizard Orchis, of which we saw nothing more during the rest of the tour. From Montauban we went to Lisle, on the Tarn, the

station from which Martrin-Donos described *O. ambigua*. Here, by the river-side, in damp runnels from the high bank above, we found the orchis in fair numbers, precisely the same as in the Cahors station. From Lisle we went through Albi to Millau, passing through a district in which mulberries are grown. From Millau we went through the splendid gorges of the Jonte and Tarn, passing over the Causse Méjean which divides them. It is a great plateau of Jurassic limestone, of about three thousand feet elevation, treeless and waterless. In the "causses" there are some very fine caverns, and swallow-holes, "avens," such as are found in Yorkshire. Numerous dolmens bear witness to a considerable population in prehistoric times. These grey, barren, undulating wastes are unlike anything I have seen elsewhere. Notwithstanding the aridity, plenty of plants are to be found, low-growing and often stunted, such as *Herniaria incana*, *Sideritis Scordoides*, *Veronica Teucrium*, *Onosma Echioides*, *Iberis pinnata*, and *Asperula arvensis*. Flocks of sheep find scanty nourishment from the stunted, rather aromatic herbage, and from their milk is made the famous Roquefort cheese. Rare plants of the causses which I had not the fortune to see are *Adonis vernalis*, *Saponaria bellidifolia*, *Alsine lanuginosa*, *Armeria juncea*, *Arenaria lesurina*, *A. hispida*, *Teucrium Rouyanum* and *Euphorbia papillosa*. Characteristic trees are *Pinus sylvestris* and evergreen oak, but they are much less frequent than formerly.

Coming down again to the Tarn at St Enimie by an alarmingly steep and twisting road, we spent some time at La Caze, a perfect little mediæval château near Malène. By the river-side were found *O. coriophora* and *militaris*, *Limodorum abortivum* and a colony of pretty *O. maculata*, the only one which we found along the Tarn valley, or anywhere south of Limoges, all the other Spotted Orchids, of which we saw very large numbers here and there along the whole run of 1200 kilometres, being *O. elodes*. Other plants at La Caze and along the upper Tarn are *Dianthus deltoides* and *caryophyllus*, *Cytisus sessilifolius*, *Anthyllis Vulneraria* of a pretty pink colour, *Campanula persicifolia*, *Daucus maximus*, *Aster alpinus*, *Centaurea pectinata*, *Helychrisum Stoechas* in plenty, *Orobanche cruenta*, *Melittis melissophyllum* of a rich rose-red I have never seen elsewhere, *Plantago arenaria*, *Ruta angustifolia*, *Asparagus tenuifolius* and *Aphyllanthes monspeliensis*. Climbing up to the causee above, a part of the Causse Sauveterre, we noted *Colutea arborescens*, *Scrophularia canina*, a belt of *Lavandula spica* and, on the top, a fine array of *Lychnis Viscaria* in splendid flower, *Vicia Onobrychoides*, *Lactuca perennis* and *Saponaria caespitosa*. Of this last we saw a good deal, here and there, making a fine show on rocks and walls.

Leaving La Caze and going up into the Cévennes, approaching Pont-de-Montvert, we found a number of plants of *O. elodes* of a richer, darker purple than usual. Passing through that beautifully situated little town, famous for its associations with the Camisard revolt, we lighted upon a lovely alpine meadow where grew *Narcissus poeticus*, *Gentiana lutea*, *Veratrum album* not yet out, with *O. coriophora*, *ustulata* and

morio. Some way further on, leaving Saugues, we passed a similar meadow full of *Narcissus*, with *Trollius europaeus*, *Ranunculus aconitifolius*, *Gentiana lutea*, *Veratrum album* and a fine dark purple Pansy in thousands. After this, many fields white with *Narcissus* were seen and quantities of *O. elodes*. The way now lay northwards, towards Le Puy, and in the whole of this part of the journey everywhere the country was alight with mile after mile of dwarf broom (*Sarothamnus purgans*) and various Genistas (*G. cinerea* and *anglica*). In the Cévennes we had also seen a great many woods of Sweet Chestnut (*Castanea sativa*), growing rather short and gnarled, like English oaks. Leaving Bort we passed a fine array of *Doronicum Pardalianches*, growing in dark rocks under trees above the road. Other plants noted were *Roripa pyrenaica*, *Alchemilla alpina*, *Phyteuma spicatum*, *Linaria striata*, *Ajuga pyramidalis*, *Ferrula ferulago*, and, here and there, great quantities of *Armeria plantaginea*. Two or three times we found, to our surprise, *O. mascula* still in flower.

Not far from Marcenat, in Cantal, we passed some wet fields crowded with *O. latifolia*, which we saw nowhere else on this tour, or in the Charente region. It is of a very handsome type, having broad leaves heavily spotted with crimson marks, and dark purple flowers having a looped pattern of darker purple, the bracts often very large, and suffused with purple. Here also were *O. elodes* and *O. incarnata*, the latter of a bright purple, coming very near to the var. *pulchella* Druce. There were some hybrids of *O. latifolia* with both of the other species. Here *O. latifolia* far exceeded the other species in numbers, and no one who saw it would set it down as a hybrid. In appearance it comes very near to plants which I have received more than once from Aix-les-Bains, sent by Col. Godfery.

On the rest of the way back to Limoges we saw little to record. *O. elodes* was frequently seen. On the plateau of Millevaches we scanned very many marshy fields which might have contained Marsh Orchids, but saw none.

To add a little further evidence as to the distribution of Orchids, I may say that in June 1926, I explored a fairly large part of Asturias, in Northern Spain. Here, in a narrow belt between the Cantabrian Mountains and the Bay of Biscay, there is a moist and temperate climate which is very similar to that of England. I found *O. elodes* in plenty in the upland meadows and, at one level, *O. maculata*. In one place, at about 2500 feet, *O. incarnata*, of a purple variety, was growing. One Marsh Orchid was very plentiful, belonging to the *sesquipetalis* group. It has somewhat smaller heads than either of the French types, and smaller bracts. It seems to be the same as *O. incarnata*, γ *ambigua*, of Guimarães, and is discussed in *Journ. Bot.*, April 1928, where I have re-named it as *O. sesquipetalis*, var. *iberica*.

On both trips I did a little botanising near Paris, chiefly in order to find out whether *O. praetermissa* occurs in France. I visited four stations north of Paris, in three of which I saw it. In a small marsh near Isle Adam were *O. maculata*, *incarnata*, *militaris* and *latifolia*, and

O. praetermissa more numerous than any. I noted *Calendula arvensis* in plenty in a field by the way. In moist meadows near Coye were *O. praetermissa* and *latifolia* in about equal numbers, and here I could find no Spotted Orchis. In a wood near by was *Limodorum abortivum*. In an extensive and thickly overgrown fen near Arronville, chiefly around the edges were *O. praetermissa* and *maculata* in great numbers, with some *O. latifolia*, *militaris* and *incarnata*. On limestone near Valangoujard were *Ophrys arachnites*, with very open pouches, *Gymnadenia conopsea* and *Himantoglossum loreum*. On the way, *Specularia perfoliata*, *Melampyrum arvense* and *Euphorbia Cyparissias* were conspicuous. *Cirsium oleraceum* was abundant in the fen. Except for the presence of *O. militaris*, these groups of orchids were exactly similar to what one finds in many parts of England. About eighty kilometres south of Paris, I explored the marshes between Scoupes and d'Ordives, where I fully expected to find *O. praetermissa*. I was not able to cover all the ground in this rich area, but only met with one plant which might have been *O. praetermissa*. Here *O. latifolia* and *O. maculata* are very plentiful, with *O. palustris* in small numbers. *O. maculata* is of a pale type, some plants being pure white. *O. latifolia* is taller and with narrower leaves than the form found near Marcenat, but the flowers are very similar. In both cases a few plants with unspotted leaves are found.

A few general notes may bring the paper to a close. *O. praetermissa* is certified, at any rate as far as Paris. South of that city its occurrence is doubtful. *O. incarnata* is not abundant, but it is widely distributed, and does not vary much. The two groups of the Southern Marsh Orchids appear to be confined to the south and south-west respectively. *O. elodes* has a very wide distribution. It was found at Jarnac, and over the whole region traversed south of Limoges. *O. maculata* is equally widespread, but much less plentiful. It was found both north and south of Paris, at Jarnac, and at one place on the upper Tarn. I had been prepared to find a much larger number of segregate forms of the Spotted Orchids in France than in Great Britain, but over the area I traversed this is certainly not the case. I am strongly inclined to think that some of the forms that are named as varieties are nothing more than very occasional individual variations of no general significance. For instance, near Isle Adam I found a single plant which came very near to the drawing of *O. elodes* in Camus' "Iconographie des Orchidées de l'Europe," but it is not at all representative of the species. Again, south of Limoges, in a field where there were a great many plants of the ordinary type of *O. elodes* and nothing else, I found a plant with large, lanceolate bracts, and very broad lower leaves, the lowest petioled, really looking very like the leaves of *Platanthera chlorantha*. This form might easily be described as a new variety, but I do not think the procedure would be justified. As far as my explorations go, there are two types, and two only, of the Spotted Orchids, namely *O. maculata* and *O. elodes*. No doubt there are others, further to the east, but I speak of the western regions known to me.

SOME KENT AND SURREY BRAMBLES.

By WM. WATSON.

(The numbers against the names of the Brambles are those in the Second Edition of the British Plant List.)

There is a beautiful bramble on Wimbleton Common, Abrook and Littleworth Commons and in many localities thence to Cobham. Watson sent it long ago to Boreau as *R. rosaceus*; Wolley-Dod more recently to Sudre. After being called, in turn, *R. rosaceus* and *R. Babingtonii*, var. *phyllothyrus*, it has latterly been known as *R. festivus*. It has been met with by French botanists in various scattered localities in the north of France and has been known to them sometimes as *R. rosaceus*, sometimes as *R. Lejeunii*. Sudre came across Watson's specimen amongst others of French origin in Boreau's herbarium and described and named it as *R. blandulus*, only to find subsequently that Lefèvre and P. J. Mueller had already described and named it as *R. formidabilis*. R. ANDERSONII Lef. (103) is an anterior name given to it by Lefèvre in manuscript descriptions, n. 49 and 53 (see *Bull. Soc. Bot. Fr.* xxiv., 218 and 222); and it is by that name, I think, that the bramble must be called. The stem is sharp-angled, subsulcate, thinly, inconspicuously villose, with hardly any stalked glands. Prickles numerous, nearly equal, broad-based, patent, slightly deflexed or falcate, and a few tubercular-based prickles. Leaves 5-nate, yellowish-green, glabrescent above, thinly hairy beneath, with coarse, patent, triangular teeth. Petiolar prickles long, falcate. Terminal leaflet broadly ovate-cordate, cuspidate, twice as long as its stalk. Flowering branch with rather few, light red, stalked glands (some long), villose, and with many strong prickles which are straight, deflexed, falcate or hooked. Panicle broad, pyramidal below, with long ascending branches and long, very prickly pedicels, lax and nearly leafless, thinly villous. Petals broad, bright rose-red, rather large. Calyx hairy and prickly, segments reflexed in fruit. Stamens white or slightly tinged pink, exceeding the flesh-coloured styles. Young carpels glabrous. Receptacle hairy. Fruit abundant, rather large, ovoid. This robust bramble climbs into small trees and uncloses its beautiful blooms towards the middle of July. The whole bramble is relatively glabrescent. The true, extremely prickly *R. festivus*, on the other hand (which grows on Barnes Common, Surrey), is intensely villose, with a long, narrow panicle and smallish leaves, and has the general aspect of *R. macrothyrsos*, grey, not yellowish-green as *R. Andersonii* is. The comparative lack of stalked glands on the stem is another feature of *R. Andersonii* which, with its glabrescence and bright red flowers, it shares with its close relative, *R. Lejeunii*.

R. macrothyrsos is, I believe, a much overlooked bramble, although abundant on the commons of N.W. Kent. I therefore append a description, drawn up from Kentish bushes, to aid in its recognition.

R. MACROTHYRSOS Lange (65). *R. vestitus*, f. *pulla* Braun. Stem obtuse-angled, striate, dull reddish-brown, felted and densely intricately villose, with a fair number of short acicles and stalked glands and a good many pricklets. Prickles unequal, slender, with a broad deltoid base, straight and patent, falcate or deflexed. Leaves small, flat, pedate, subglabrescent above, soft with thick, short, shining, grey hairs and felt beneath, with unequal incised, finely mucronate teeth, the principal teeth patent, the veins pectinate. Petiole short. Terminal leaflet broadly rhomboid-obovate, with a truncate base and a short point, somewhat lobed towards the point. Petiole, petiolules and midribs with many hooked prickles. Panicle elongate, narrowly pyramidal, truncate, with many simple ovate or lanceolate leaves and many long, much deflexed, slender, falcate and hooked prickles. Panicle branches patent or slightly ascending, 5-3 flowered, the lowest inclined to be fasciculate. Panicle rachis, branches and pedicels felted and villose and with a fair number of short sub-equal, stalked glands and acicles. Flowers moderately small, cupped. Petals bright pink, narrowly oval or obovate. Calyx segments appendiculate, reflexed in fruit. Calyx grey felted and villose, aculeolate and glandular. Stamens slightly longer than the yellowish-green styles. Anthers glabrous. Young carpels abundantly pilose. Fruit copious, globose, rather small. Forms waist-high bushes in open places on all our pebbly commons in N.W. Kent, coming into flower towards the end of June. Rogers, following Focke, associates this with *R. vestitus*—they have not *R. adscitus* in Germany. I think it is more allied to *R. adscitus*. The bramble that most resembles it in general aspect is perhaps *R. festivus*, but that is much more glandular in panicle and has concolorous leaves. *R. clivicolus* (Ley) looks much like it too. On Chiselhurst Common *R. macrothyrsos* crosses with *R. ulmifolius*; the bushes are sterile.

Another hairy-stemmed bramble near *R. vestitus* that will be new to many bramble students is *R. ANDEGAVENSIS* Bouv. (45). *R. umbrosus* Bor. *R. gymnostachys* Genev., p.p. Stem angled, with flat sides, hairy, dark red, glaucous and waxed in autumn. Prickles dark red, hairy, with long slender points from a deltoid base, sub-equal, patent, a few declining. Leaves large, 3-5-nate, glabrescent above, shortly hairy and grey-felted beneath, shallowly, minutely, unevenly sinuate-denticulate, some teeth patent or repand. Terminal leaflet broad at base and apex, oblong-roundish, shortly, broadly cuspidate, base slightly indented. Panicle elongate, not leafy, dense, branches forming many-flowered cymes; rachis dark red, very villose, with a few scattered, sunken, stalked glands and many strong, falcate or declining prickles. Petals a lovely bright rose, sometimes nearly the size of a sixpence, suborbicular, suddenly contracted into a short, broad claw. Stamens white-pink, equaling or slightly exceeding the greenish or reddish styles. Calyx aciculate, felted and hairy, with some sunken, inconspicuous, stalked glands; segments reflexed after flowering. Young carpels hairy. Fruit usually abundant. Seen at Witley Sandhills, Surrey; Hayes Common, N.W. Kent, and near Bimbury, E. Kent.

On Hayes Common and Bostal Heath, N.W. Kent, and on Wimbleton Common, Surrey, there is a bramble which our authorities nearly always have named *R. ericetorum* Lef. The same bramble occurs on Farnborough Common, Kent—very close to Hayes Common—and there it has been named *R. infestus* Weihe. I contend that the bramble in all these localities—it has been collected and distributed many times through the B.E.C.—belongs to the species *R. Griffithianus* Rogers. The occurrence of this species in Kent, so far from Wales, need occasion no surprise, since Focke has recorded it from the Black Forest. Nevertheless we have the true *R. ericetorum* Lef. also in N.W. Kent. It is the bramble that Rogers has described under the name of *R. Radula*, sub-sp. *anglicanus*. This latter bramble has not been recorded from Germany, but it occurs in France, and the fact of its identity with *R. anglicanus* Rogers is known to Bouvet and Sudre. I follow with notes on the Kentish bramble, for comparison with the Welsh bramble, *R. GRIFITHIANUS* Rogers (98). The roundish or broadly ovate, softly villose leaves are present only on the main stem and are accompanied by broad stipules. The stem branches freely and bears narrower, obovate-cuneate, white-felted, subcoriaceous leaves, plicate, undulate at the margin and red-edged. The flowering branch is exactly pentagonal in the middle. Flowers pink in bud, nearly white when expanded and 3 cm. across. Petals oval, 2 × 1, more tapered to the base than to the entire apex, a few minute serratures on the side, at first cupping, at length horizontally expanded with the sides reflexed (as in the *Suberecti*). Stamens white, very long, much exceeding the yellowish-salmon styles. Calyx segments olive-green, white-edged, and with dark red, mucronate, not leafy, tips. The whole bramble is very prickly. The smaller stem-prickles and pricklets from a swollen base, the deep red stem and panicle rachis with crimson-based prickles, the white-felted leaves and large, long-stamened flowers with a tinted eye, form an attractive bush which recalls our English *R. "Godroni"* in several respects. The fruit ripens slowly.

Boulay combined *R. uncinatus* P. J. M. with *R. ericetorum* Lef., which is understandable if *R. ericetorum* is Rogers's *R. Radula*, sub-sp. *anglicanus*, but not if it is the bramble that I have just described. I have found *R. UNCINATUS* P. J. M. (87) on Tooting Common, Surrey. Although it is unlike the specimens from the Bucks locality I feel no doubt of the correctness of my determination. The leaves are plicate and very elegantly cut, the leaflets much tapered to the base; the stem green to yellowish, its branches livid at the base. The basal leaflets, contrary to Rogers's description, are conspicuously stalked, agreeing therein with Focke's description and Sudre's figure. The petals are rather narrowly obovate, pinkish, emarginate; the stamens white, rather exceeding the yellowish styles. The leaves and panicle are densely armed (the panicle rather weakly) with yellowish, hooked prickles. The sepals are leafy-pointed.

In the same locality I have found *R. SCHEUTZII* Lindb. (28), an interesting northern species, discovered by C. E. Britton here many

years ago. The hairy anthers, very long stamens, large flowers, and fruit, very prickly stem, and leaves green on both sides separate it readily from both *R. Lindebergii* and *R. pulcherrimus*. The stem and underside of the leaves are more hairy than one would expect from the description in Rogers's *Handbook*. The panicle branches are divided to the base. Flowers deep pink inside, much paler outside. Bracts, bracteoles and stipules exceptionally broad. Petiolules and midribs with hooked, strong-based prickles.

R. apricus Wimmer has been recorded as a Surrey bramble by Focke. It is recorded also from N. France, Belgium, W. and S. Germany to Silesia. On Chiselhurst Common, Kent, we have a bramble which I make out to be this. The description is as follows: *R. APRICUS* Wimmer (131). Stem obtuse-angled, thinly hairy, glabrescent, glaucous, light green, with dense, red, mixed armature as in the *Glandulosi*. Prickles unequal, the longer with very slender, declining or falcate red points from a swollen, prolonged, green or yellowish base, the smaller with a more swollen base. Leaves 3-4-5-nate, pedate, thick, large, concave, red-edged, light green; roughly hairy, glabrescent above; shortly villose beneath, veins pectinate, margin with unequal, moderately coarse, ovate mucronate teeth. Stipules narrowly lanceolate. Petiole channelled, sometimes obsoletely. Terminal leaflet broadly oval, base emarginate, gradually and longly acuminate, 3-4 times as long as its stalk. Flowering branch and panicle rachis green, with red arms, interruptedly channelled, with acicles nearly patent on the upper part of the rachis and on the pedicels, more deflexed below. Panicle nodding, top rounded or truncate, dense, racemose above, subracemose below, the lowest branch 2-4 flowered, with 2-6 simple leaves, all pedicels half erect, about one inch long. Rachis wavy, rigid, stout, villose. Flowers one inch across, stellate, white with a red eye. Petals pure white (even in bud), entire, narrow oval, narrowed to both ends. Calyx armed as rachis, greyish green, segments long-pointed, half erect when the flower opens, reflexed during flowering, again half erect after the petals have fallen. Stamens white, unequal, the longer slightly exceeding, the shorter slightly falling short of the yellowish-green styles, which are red-based from the first. After the petals have fallen the stamens turn red or rusty and stand erect in a close mass. Young carpels sometimes slightly pilose. Fruit perfected, ovate, moderately large. Begins to flower in the middle of June. The contrast of bright green foliage and red arms, and the large, starry, pure white, red-eyed flowers, make it a conspicuous sight. The German botanists associate it, as a sub-species, with *R. Koehleri* Weihe. I am not acquainted with *R. Koehleri*, but I should have thought it belonged more properly to the *Glandulosi*.

R. HIRsutissimus Sudre & Ley. (53). *R. fuscus*, var. *hirsutissima* *parce glandulosa* Focke in *B.E.C. Rep.* 1886, p. 149; *Flora Heref.*, p. 523. *R. Schlechtendalii* microg. *hirsutissimus* Sudre & Ley. Stem green to fuscous, obtuse-angled, sides convex or flat, striate, densely intricately villose and felted, glaucescent, cerosinose in autumn. Prickles pale, at length more or less crimson, rather unequal and short, slender from a

broad base, exactly patent, some deflexed, some bent at the tip; a variable quantity of short-stalked glands and acicles. Leaves 3-5-nate, light green, moderately small, thick, irregularly, rather coarsely, unequally toothed, strigose above, green beneath and hairy, not felted, veins pectinate with long shining hairs. All leaflets short-pointed, contiguous, not imbricate. Terminal leaflet roundish, narrowed to the emarginate base. Flowering branch green, very villose and felted, with usually copious acicles and stalked glands, the prickles numerous, slender, rather weak, straight or falcate, from an extended base. Panicle with one to several simple leaves, lax, pyramidal below, cylindrical above, the branches divided about half-way, patent or slightly ascending, the pedicels (including the terminal) rather long. Flowers small, cupped. Petals pinkish in bud, white, narrow oval, somewhat tapered to both ends. Calyx deep cream-coloured, segments cuspidate, loosely reflexed after flowering. Stamens white, no longer than the short yellowish-green styles. Anthers glabrous. Young carpels glabrous. Receptacle shortly villose. This is the bramble called by Rogers "*R. leucanthemus?*" I have seen it in several stations in Surrey and at Barnet Wood in N.W. Kent. Both at Burgh Heath and Oxshott Heath, Surrey, it grows in proximity to bushes of *R. fuscus*, var. *nutans*. The incurved, crumpled flowers resemble those of *R. fuscus* (English type), and the panicle is also subracemose towards the apex as in that bramble. I have never found the stem, much less the panicle, nearly eglandular. In the average condition the supply of stalked glands in the panicle is in excess of what is normal to *R. vestitus*. It might well be that it originates from *R. fuscus*, as first supposed by Ley and Focke.

Another very hairy bramble which I have found in Kent, and which will be sought for in vain in Rogers's *Handbook* (among the Vestiti) is *R. LEUCOTRICHUS* Sudre (64). The stem is deep red, sharp-angled with flat sides, striate, villose, with an occasional pricklet or short-stalked gland. Prickles mostly nearly equal, almost confined to the angles, lanceolate from a deltoid base, the larger deflexed and broad-based, the smaller patent, a few falcate. Petioles long, with hooked prickles. Stipules red, sparsely glandular, narrowly linear lanceolate. Leaves sub-glabrous above, except along the principal veins, greyish-felted and thickly villose beneath, especially on the veins, doubly, somewhat shallowly dentate, with long fine mucros. Leaflets sharply cuspidate. Terminal leaflet oval, or obovate, apex rather truncate, base emarginate. Intermediate leaflets nearly equalling the terminal leaflet. Flowering branch densely villose, with a very few stalked glands sunken in the close, long villi on the rachis and branches. All leaves conspicuously incised. Prickles slender, unequal, deflexed, falcate or hooked. The lower part of the panicle leafy and narrowly pyramidal, the upper part leafless and cylindrical, the top dense and truncate; all the branches erecto-patent. Petals moderately large, deep pink, roundish, some oval. Stamens deep pink, slightly longer than the green styles. Calyx segments reflexed in fruit, grey-felted and moderately hairy. Young carpels pilose. Receptacle villose. Fruit sub-globose, normally developed.

In a hedge, on clay, south of Highams Hill, N.W. Kent, not far from the Surrey boundary; occurs in other localities in N.W. Kent. Hitherto it has perhaps been confused with *R. lasiocladus* Focke.

I believe *R. atrocaulis* P. J. M. (35c) has not hitherto been reported as British. It grows on Hayes Common, N.W. Kent, and I have also seen a specimen which came from Surrey. Focke and Sudre associate this with *R. villicaulis*, but Friderichsen places it in the *Vulgares*. Erichsen also keeps it distinct from *R. villicaulis*. The stem is deep purple-brown; prickles falcate, with hard points. Leaves small, light green, thick and firm, glabrous above, grey felted and softly villose beneath; teeth simple, sub-equal, irregular, shallow, with rather long mucros, some patent. Petiole broadly channelled throughout; stipules high, falcate, semi-lanceolate. Terminal leaflet sub-orbicular, shortly cuspidate, base sub-entire. Prickles on the flowering branch long, patent, falcate and hooked, very unequal. Panicle short and rather broad, truncate, dense, with some sunken, sessile and sub-sessile glands, but no stalked glands. Petals pink, oval, moderately large, shallowly notched at apex. Calyx segments with a conspicuous, narrow, white border, reflexed in fruit. Stamens pinkish, exceeding the yellowish, pink-based styles; anthers glabrous. Young carpels thinly pilose. Fruit oblong.

Sudre has pointed out that the specimen illustrating *R. hirtifolius* M. & W. in the Set of Brit. Rubi is not M. & W.'s bramble and he has named the bramble represented, *R. melanocladus* Sudre (60d). English bramble students had adopted the views of Focke who had widened his conception of *R. hirtifolius* until, for him, it embraced all intermediates between *R. villicaulis*, *R. gratus*, *R. pyramidalis*, *R. silvaticus*, *R. macrophyllus* and *R. vestitus*. It seems to be generally agreed, however, that M. & W.'s bramble is not very different from *R. pyramidalis* Kalt., and it is perhaps best to restrict their name to similar forms that can be closely associated with *R. pyramidalis* and to give independent names to groups of forms intermediate between the other species mentioned. Krause, commenting on Wirtgen's specimen, states that *R. hirtifolius* recedes from *R. pyramidalis* in the direction of *R. vestitus*; but Sudre gives the points of distinction from *R. silvaticus*. A bramble agreeing well with the specimens in the Set of Brit. Rubi and with Sudre's description of *R. melanocladus* occurs in Westwood Lane, Welling, and in Lessness Wood, N.W. Kent, and in both cases *R. pyramidalis* and *R. macrophyllus* are present in the vicinity. The stem is deep red, angled, striate, the sides slightly convex or slightly channelled, felted and villose, and bears reddish sessile glands, a few tiny stout pricklets and an occasional acicle and short-stalked gland. Prickles moderate, with a rather broad crimson base and a fine straw-coloured point, deflexed, not equal, the smaller straying off the angles. Leaves 5-nate, light green, glabrescent above, minutely felted, pubescent and pilose beneath, moderate or small. Petiole flat above, like the central petiolule bearing many strong, falcate pricklets in heaps. Terminal leaflet rather roundly ovate, gradually acuminate, base emarginate, 2-4 times as long as its stalk, slightly lobate, with rather small to rather large fine-pointed teeth. Flowering

branch blunt-angled, more and more felted and villose upwards. Leaves 1-3-4-nate, large, greenish-felted beneath. Panicle elongate, flat-topped, broader below; all branches deeply divided or fasciculate, the lower half-erect, longer than the leaves, those above the leaves nearly patent, about 4-flowered; pricklets, acicles and stalked glands rather numerous. Pedicels about two-thirds of an inch long, with many fine pale acicles; terminal flower sub-sessile. Flowers of moderate size; petals narrow oblong-obovate, entire, pinkish-lilac. Calyx segments grey-felted and hairy, slightly aciculate and glandular externally, white within, reflexed in fruit. Stamens pinkish, turning red, much exceeding the greenish (or pinkish) styles; anthers glabrous. Young carpels pilose. Fruit sub-globose, normally produced. The leaves are rather velvety as in *R. pyramidalis*, but the veins are not pectinate; prickles, colour of stem and leaves also as in *R. pyramidalis*, but prickles much less robust. Terminal leaflet as in *R. macrophyllus* but proportionally broader. Panicle leaves very like *R. macrophyllus*. Panicle if not vigorous ending in a raceme as in *R. pyramidalis*. The white reflexed calyx segments are a prominent feature.

The common Kent and Surrey bramble known sometimes as *R. argenteus*, f. *glandulosa*, and sometimes as *R. Gelertii* is, I believe, neither *R. argenteus* nor *R. Gelertii*, but *R. ALTERNIFLORUS* M. & L. (83). True *R. Gelertii* should have a tall stem, angled and furrowed above, not glaucous; leaves greenish-grey felted beneath, the terminal leaflet elliptical, with nearly straight sides, large and long (especially on the flowering branch!), the basal leaflets longer than the petiole; the panicle considerably glandular, narrow and elongate, the upper branches regularly 7-flowered, cymose, and half erect; petals pure white, broad, elliptical; the young carpels glabrous. Focke puts it with the *Candicantes*, and says that in leaves and habit it resembles *R. thyrsoides* and also recalls *R. Radula*. Friderichsen puts in with the *Egregii* and says it is related to *R. egregius* and *R. pulcherrimus*. Our bramble, therefore, cannot well be *R. Gelertii*. It has a low, arcuate, prostrate, sub-cylindrical, glaucous stem; leaves white-felted beneath, the terminal leaflet mostly obovate, broad, the basal leaflets falling short of the petiole; the panicle less glandular (variable as to this), strongly sub-corymbosely pyramidal, upper branches 3- or 5-flowered, nearly patent; petals pink, notched, obovate, with a yellowish claw; the young carpels very pilose even after they have turned red.

The *B.E.C. Rep.* for 1898 records that a bramble from Dunster, Somerset, has been examined by Mr Gelert who has identified it as *R. Drejeri* G. Jensen, type (89). In R. P. Murray's *Fl. of Somerset* (1896) on p. 111 the author records *R. Drejeri* from four localities in the county, one of which is Dunster, but on p. 416 says that the English plant proves to be different from the German and has received the name *R. Leyanus* Rogers. In Marshall's Supplement to this Flora (1914) is the note that Mr Rogers writes that the Dunster plant is "type: very strong." New localities are given for *R. Drejeri* and for sub-sp. *Leyanus* Rogers. Focke (1914) says that he doubts the identity of the English and Danish *R.*

Drejeri. He gives the leaves as grey-felted, however, and says nothing as to the anthers. He ignores *R. cinerosus* Rogers. Sudre (*circa* 1910) adopts *R. Drejeri*, *R. Leyanus* and *R. cinerosus* as distinct, and not closely related (1).

I have seen the Dunster specimens. They have glabrous anthers and leaves strongly grey-felted beneath. Except for the anthers they exactly match Friderichsen's Danish specimens, which I have also seen. Friderichsen, however, says that in the Vosges the representative of *R. Drejeri* has glabrous anthers. I have seen a bramble in Surrey, between Merrow and Newlands Corner, which is identical with the Dunster specimens:—Leaves 5-nate, with dense grey felt and velvety pubescence, basal leaflets with stalks 2-2.5 mm. long. Stem red-brown or yellowish, blunt-angled and sulcate, densely villose. Panicle rachis densely villose, with 5 or 6 simple leaves, the lowest large, broadly cordate; the terminal leaflet of the 3-nate leaves below the panicle broadly obovate, very shortly broadly cuspidate. Panicle cylindrical with one or two much longer, half-erect, lower branches, dense at apex, branches divided to the base, fasciculate; prickles nearly straight, much declining. Rogers's Silchester specimens of *R. cinerosus* are the same thing.

In N.W. Kent *R. Drejeri* has been recorded from Plumstead Common, a locality in the midst of a dozen or so stations for a bramble that has been named by Rogers as *R. cinerosus*. This bramble I have cultivated from rooted shoot-tips and from seed, and I find that it develops into the Merrow bramble. I have observed also in one and the same locality, on clay, several states of the bramble such as have presented themselves in my garden. I am convinced that *R. Drejeri*, *R. Leyanus*, and *R. cinerosus* are one and the same thing, not even sub-specifically distinct. If my conclusion is right it might be expected that two, or even the three of these names, have sometimes been given to the bramble from the same locality. The best instance of this is as follows:—*R. Leyanus*: wood at St Woolstan's farm, Welsh Newton (Trans. Woolhope Club, 1896, p. 74). *R. pulcherrimus*, f. *setosa* [= *R. cinerosus*]: St Woolstan's Wood, Welsh Newton, 1885 (*l.c.*, p. 62). *R. Drejeri*: wood at St Woolstan's Farm, Welsh Newton (Trans. Woolhope Club, 1905, p. 85). Further, it might be expected that doubt would sometimes be expressed as to whether a given bramble was *R. Leyanus* or *R. Drejeri*. Not only is this illustrated in the Somerset Flora, and in the Trans. Woolhope Club, 1896, at p. 74, but also in the Journal of Botany and in the B.E.C. Reports frequently when one or other of these bramble-names is mentioned. It is all a matter of how old or how strong the bramble is, which name is given to it. I would add that Friderichsen is convinced that *R. Drejeri* belongs to *R. horridicaulis* P. J. M., an opinion in which Erichsen concurs. Aberdare specimens labelled *R. horridicaulis* seem to me simply *R. Drejeri*: and there is nothing in the Journal of Botany 1906 description to exclude *R. Drejeri*. It should be carefully compared with Jensen's and Friderichsen's descriptions of *R. Drejeri*.

Two out-stations for *R. imbricatus*, var. *londinensis* Rogers (14c) in Kent are St Paul's Cray Common and Bostal Heath. At the latter

place I have also noted pink-flowered *R. dumnoniensis* Bab. (29), new, I believe, to Kent. *R. holerythros* Focke (12) also has not been reported hitherto, I think, from Kent, but we have it at Hayes and Chiselhurst. *R. nessensis* Hall (2) is plentiful in five stations around Hayes and Chiselhurst. *R. nitidus* Wh. & N. (7), collected by me in 1922, is now extinct, I fear, on Keston Common. *R. sulcatus* Vest. (5), *R. Lejeunii* Wh. & N. (102), and *R. ochrodermis* A. Ley (147), are new discoveries of mine in the Forest of Bleas, and *R. hesperius* (Rogers) (49) in Seal Chart, where it accompanies *R. longithyriger* Bab. (118), *R. angustifrons*, var. *pallidisetus* Sudre (137) and *R. conspectus* Genev. (=the *R. scaber* of Rogers's Handbook). *R. gratus* Focke (39) is proving frequent in N.W. Kent, *R. calvatus* Blox. (35d) so far only at Shirley and Selsdon, Surrey. *R. ramosus* Briggs (41) is general on the N.W. Kent and E. Surrey commons, but the *R. thyrsoideus* Wimmer (42) group I have encountered only at Claygate, Surrey, and at Farnborough Common, Kent, in the form of *R. candicans* Weihe. *R. Lindebergii* P. J. M. (31) I have seen at Witley Sandhills, Surrey, and, I believe, *R. Genevierii* Bor.

I have found no name for a bramble that I have seen growing at Worms Heath, Surrey; Keston Common, Hays Common, West Wickham Common, and Holwood, W. Kent. It is abundant, quite uniform and fertile, and seems to come nearest to *R. Bloxamii* Lees. Rogers says that *R. Bloxamii* is remarkably constant; Focke that it is remarkably inconstant. I have, therefore, studied *R. Bloxamii* very closely in several stations in Holmesdale, between Wrotham and Malling, and I cannot find that in any of its stations there it makes any approach to my bramble on the plateau. I have seen dried specimens that are certainly this named as follows:—

From Keston Common—“*R. rudis*, untypical.”

From Hayes Common—“*R. scaber*.”

From Worms Heath—“*R. Koehleri*, sub-sp. *dasyphyllus*.”

From Featherbed Lane, Addington—“*R. radula*, sub-sp. *echinatoides*.”

I should not be surprised if my bramble proved eventually to belong to the large group-species, *R. Menkei* Wh. & N. Certainly it has much likeness to *R. propexus* Frid., which belongs to that group. The chief objection is, however, that its affinities are with our English *R. “Godroni,”* rather than *R. vestitus*. The description is as follows:—

R. LARGIFICUS mihi (109). Stem obtuse-angled, sulcate above, green to reddish, glaucescent, felted and villose. Prickles long-based, abruptly narrowed, falcate or straight, sharply deflexed; many minute pricklets and short-stalked glands; a very few intermediate gland-tipped pricklets. Leaves 5-nate, glabrous above, thinly greenish-grey felted beneath and hairy on the nerves, thick, plicate and rugose. All leaflets sub-cordate. Terminal leaflet obovate-oblong, with straight sides when large, a short point, irregularly or doubly, rather coarsely mucronate-dentate, the principal teeth patent or repand. Flowering branch angled and sulcate, becoming red, with strong and long-based crimson falcate prickles below; with yellowish leaves having soft glittering grey

pubescence beneath, an undulate margin and impressed veins. Panicle rachis stout and rigid, villose, a few stalked glands longer than the villi and than the diameter of the pedicels and many sunken, and rather weak, aciculate prickles. Panicle lax, narrowly pyramidal, blunt, leafy but not in the upper fourth. Terminal flower sub-sessile; sub-terminal branches 1-2-flowered (bracteoles = pedicels), middle branches patent 3-flowered, lower branches remote, about 4-flowered and accompanied by a solitary stalked flower at the base. Flowers not exceeding 2 cm., often less. Petals obovate, incurved, white, with a broad yellowish claw. Stamens erect, white, equalling or shorter than the yellowish styles, which turn rosy at the base. Calyx light yellowish-green, felted, segments with a narrow, white margin, gradually acuminate, reddening at the base within, reflexed during flowering, becoming exactly patent after the petals have fallen, finally erect or partly loosely reflexed. Young carpels hairy. Fruit abundant, very large, ovoid.

R. Kaltenbachii Metsch. Sudre asserts that the English plants put to this belong to the group of *R. Menkei*. Focke and Keller give no station for *R. Kaltenbachii* nearer to Britain than the Belgian Ardennes. Certainly there is much general resemblance, but the Central European plant has white flowers, glabrous carpels, fruiting calyx-segments patent to more or less erect, and leaves narrow ovate-oblong, the upper half of the leaflets tapering into a long point (a *very* long point on flowering branches), the base cordate; whilst our plant, *R. diversus* mihi (109(2)), has pinkish or bright pink flowers, hairy carpels, fruiting calyx segments loosely reflexed, leaves rhomboid, the principal teeth large, triangular, patent or repand, nerves pectinate, and upper panicle leaves greyish-felted—looking altogether intermediate between *R. pyramidalis* and *R. foliosus*, with which it grows at Lessness and at Hayes, N.W. Kent. So it may well approach, if it does not belong to, the group of *R. Menkei*. Sudre, indeed, in his copy of Rogers's *Handbook*—now in my possession—notes that Set No. 48 = *R. distractus* P. J. M. Boulay's description of that species, which he places as sub-sp. No. 1 to *R. Menkei*, marks quite a different plant from ours, however. Further localities in which this bramble occurs in our district are Northumberland Heath and Shooters Hill, N.W. Kent, and Selsdon and Frith Wood, Farleigh, Surrey. In the last-named locality it was gathered by C. E. Britton long ago, and was named by Rogers as *R. Bellardii* "type," and is so recorded in the *Journal of Botany* for March 1903. It is, however, not *R. Bellardii* but "*R. Kaltenbachii*." I know no station for *R. Bellardii* in either Kent or Surrey.

At Fairchilds, Chelsham, Surrey, I have found *R. dumetorum*, var. *raduliformis* A. Ley, which may be new to Surrey. In Warren Wood, Shooters Hill, and again between Eltham Park and Avery Hill, N.W. Kent, we have *R. serpens* Weihe with sub-cordate-ovate leaves, shallowly denticulate, with finely pointed teeth, as originally described in *Comp. Fl. Belg.*

THE DISTRIBUTION OF THYMUS IN BRITAIN.

By KARL RONNIGER, Vienna.

(See *Botanical Exchange Club Reports* 226-239, 1923; 167-8, 1926; and 679, 1927.)

On pages 226-239 of the *Report of the Botanical Exchange Club* for 1923, I gave a review of the British species and forms of the genus as represented in Dr G. C. Druce's herbarium. Since then the forms enumerated have been added to by *T. zetlandicus* Ronniger and Druce with f. *nanus* (*Report* 679, 1927), *T. carniolicus* Borbas and *T. pseudo-lanuginosus* Ronn. (*Report* 167-8, 1926). I have since been able to examine the material in the British Museum, as well as numerous further specimens sent by Dr G. C. Druce, and have consequently met with many additional locality records which are here treated of.

I. Species collectiva, THYMUS PULEGIOIDES L.

T. PULEGIOIDES L.

4. North Devon. Westward Ho, DRUCE.
8. South Wilts. Mere Down, R. P. MURRAY.
9. Dorset. Compton Abbot, LINTON, *H.B.M.*
15. East Kent. Dover, DRUCE.
17. Surrey. Epsom, GROVES, *H.B.M.*; Esher, f. *confusus* Brign. with narrow leaves and capitate inflorescence, LEY, *H.B.M.*; Betchworth, with proliferation as in Linneaus' plant, LEY; Hursting, on chalk, MONCKTON.
20. Herts. Chorley Wood, WERNHAM, *H.B.M.*
21. Middlesex. Harefield, DRUCE.
22. Berks. South Hinksey, DRUCE.
23. Oxon. Beckley, Peppard, DRUCE.
24. Bucks. Hyde Heath, DRUCE.
31. Stafford. Mocktree, DRUCE.
32. Northants. Harlestone, 1873, DRUCE.
33. East Gloster. Andoversford, DRUCE.
35. Monmouth. Llangattock, Vibon-avel, LEY, *H.B.M.*
40. Salop. Shrewsbury, MOYLE ROGERS, *H.B.M.*

T. PULEGIOIDES × SERPYLLUM = T. OBLONGIFOLIUS Opiz.

Examination of the original specimen has led me to the conclusion that the oldest binomial for this hybrid is not *T. Celakovskyanus* M. Schultze, but *T. oblongifolius* Opiz *Naturalientausch*, p. 24, 1825. Compare also remarks in Fedde *Repertorium* xxiv., 24, 1927.

11. South Hants. Farley Mount, GROVES, *H.B.M.*
17. Surrey. Kew, DRUCE.

- 28. West Norfolk. Swaffham, DRUCE.
- 32. Northants. Kingsthorpe, Miss SHEPARD, *H.B.M.*
- 49. Carnarvon. Portmadoc, BAILEY, *H.B.M.*
- 62. North East Yorks. Hambleton Hills, cult., J. G. BAKER, *H.B.M.*
- 88. Mid Perth. Killiechonan, Loch Rannoch, DRUCE.
Ireland. Galway. Rossmore, LINTON, *H.B.M.*

T. PULEGIOIDES × PYCNOTRICHUS = T. HENRYI RONN.

- 6. North Somerset. Clevedon, PAINTER, *H.B.M.*
- 10. Wight. Ventnor, BAILEY, *H.B.M.*
- 14. East Sussex. Telscombe, DRUCE.
- 17. Surrey. Reigate, SYME, *H.B.M.*
- 34. West Gloster. St Vincent Rocks, DRUCE, *H.B.M.*
- 36. Hereford. Valley of Dwr, RIDLEY, *H.B.M.*
- 41. Glamorgan. Glyn Neath, LINTON, *H.B.M.*
- 74. Wigtown. Barnbarroch, Miss HIGGINS; Newton Stewart, DRUCE;
H.B.M.; Portwilliam, DRUCE.
- 80. Roxburgh. Barnes, BROTHERSTON, *H.B.M.*

T. GLABER Mill., f. CHAMAEDRYS (Fries).

See *Rep. B.F.C.* 168, 1926. Leaves more ovate, ± twice as long as broad.

- 6. North Somerset. Twickenham Hill, Miss I. M. ROPER, *H.B.M.* &
Hb. Dr.
- 7. South Wilts. Odstock, DRUCE.
- 9. Dorset. Cranbourne Chase, *Hb. Druce*; Edmondsham, E. F. LINTON, *H.B.M.*; Wool (floribus albis), R. P. MURRAY, *H.B.M.*
- 10. Wight. Apes Down, 1887, C. E. PALMER.
- 12. North Hants. Hook Common, C. E. PALMER.
- 14. East Sussex. Chailey Common, T. H. HILTON; Cuckfield, DRUCE.
- 15. East Kent. Highnam, DRUCE; Canterbury, C. E. PALMER, *Hb. Dr.*
- 17. Surrey. Limpsfield, H. E. FOX; Woking, GROVES, *H.B.M.*; Englefield Green, Pyrford, DRUCE.
- 18. South Essex. Galley Wood, G. C. BROWN.
- 19. North Essex. Walden Chalkpit, DRUCE.
- 20. Herts. Langley, Welwyn, BLAKE; Hitchin, Ware, DRUCE.
- 21. Middlesex. Hounslow, DYER; Harefield, TRIMEN, *H.B.M.*; Stanmore Heath, *Hb. Druce*.
- 22. Berks. Streatley, Burghfield, V. MURRAY; Tubney, Brimpton, Wytham, Besilsleigh, DRUCE.
- 23. Oxon. Peppard, chalk rubble at Oxford, Henley, Pool Bottom, DRUCE.
- 24. Bucks. Seer Green, Chenies, Fawley, Whaddon, Hyde Heath, DRUCE.
- 25. East Suffolk. Bungay, ATKINS, *H.B.M.*; Somersham, D. BROWN.
- 28. West Norfolk. Swaffham, LINTON, *H.B.M.*
- 29. Cambridge. Unlocalised, NEWBOLD, *H.B.M.*
- 30. Beds. Barton, T. Blow and D. HIGGINS; Flitwick, SAUNDERS, *H.B.M.*

32. Northants. Plain Woods, DRUCE, *H.B.M.*; Cosgrove, DRUCE.
 36. Hereford. Great Doward, DRUCE.
 38. Warwick. Yarninghall Common, BROMWICH, *H.B.M.*
 55. Leicester. Billesdon, Coplow, HORWOOD, *Hb. Druce.*
 65. North West Yorks. Thirsk, FOGGITT, *H.B.M.*
 74. Wigtown. Barnbarroch, D. M. HIGGINS, *H.B.M.*
 79. Peebles, DRUCE, *H.B.M.*
 112. Zetland. Lerwick, DRUCE.

Forma GLABER (Mill.). Leaves more lanceolate, \pm three times as long as broad.

3. South Devon. Christow Down, MOYLE ROGERS, *H.B.M.*
 5. South Somerset. East Pennard, R. P. MURRAY, *H.B.M.*, sub-f. *gracilicaulis*; Blackdown Hills, Leigh Common, R. P. MURRAY, *H.B.M.*
 6. North Somerset. Near Failand, H. E. THOMPSON, *H.B.M.*
 9. Dorset. Cranborne Chase, MELVILL; Spretisbury, R. P. MURRAY, *H.B.M.*
 10. Isle of Wight. Apesdown, DRUCE, sub-f. *gracilicaulis*.
 13 or 14. West or East Sussex. Pitt Down, STANDON, *H.B.M.*
 15. East Kent. Dover, R. P. MURRAY, *H.B.M.*; Folkestone, V. MURRAY.
 17. Surrey. Warlingham, GROVES; Walton on the Hill, GROVES; between Kew and Richmond, MIDDLETON; Fairlop, Limpsfield, H. E. FOX, *Hb. Druce* and *H.B.M.*; Buckhurst Hill, GROVES, *H.B.M.*
 18. South Essex. Epping Forest, E. FORSTER; Woodford, YOUNG.
 20. Herts. Welwyn, BLOW, *H.B.M.*, sub-f. *gracilicaulis*; do., BLAKE, *Hb. Druce.*
 21. Middlesex. Harefield, TRIMEN, *H.B.M.*; Stanmore, *Hb. Druce*, sub-f. *gracilicaulis*.
 22. Berks. Streatley Hills, V. MURRAY, *Hb. Druce*, sub-f. *gracilicaulis*.
 23. Oxon. Bretch, FRENCH; Goring, DRUCE, sub-f. *gracilicaulis*; Lewknor, FRENCH, *H.B.M.*; Hardwick, Caversham, Warrenhill, V. MURRAY, *Hb. Druce.*
 28. West Norfolk. Thorpe, LINTON, *H.B.M.*
 31. Hunts. Abbots Ripton, LINTON, *H.B.M.*, sub-f. *gracilicaulis*.
 33. East Gloster. Leckhampton Hill, V. MURRAY
 35. Monmouth. Chepstow, MONINGTON, *H.B.M.*
 36. Hereford. Ensop Hill, LEX, *H.B.M.*, sub-f. *gracilicaulis*.
 Ireland. Wicklow, YOUNG, *H.B.M.*

II. Species collectiva, THYMUS FROELICHIANUS Opiz.

T. CARNIOLICUS Borbas.

See *Rep. B.E.C.* 167, 1926.

14. East Sussex. Telscombe, HINTON, *H.B.M.*
 29. Cambridge. Gogmagog, HUNNYBUN, *H.B.M.*
 74. Wigtown. Barnbarroch, Miss HIGGINS, *H.B.M.*

III. Species collectiva, THYMUS SERPYLLUM (L.) Fr.

T. SERPYLLUM L., sens. strict.

Forma LINNAEANUS Gren. & Godr. Leaves elliptic, about 2 mm. broad.

Guernsey. Barton (N.125), *H.B.M.* Jersey. St Ouen, Plemont, *DRUCE.*

23. Oxon. Goring, *DRUCE, H.B.M.*; Henley, *DRUCE.*

41. Glamorgan. Barry Isle, *WADE, Hb. Druce.*

37. Worcester. Malvern, *WILMOTT, H.B.M.*

57. Derby. *WILMOTT (712), H.B.M.*

66. Durham. Widdy Bank, *DRUCE.*

72. Dumfries. Moffat, *CARRUTHERS, H.B.M.*

90. Angus. Barry Sands, Round Loch, *DRUCE.*

91. Kincardine. Banchory, *DRUCE.*

92. South Aberdeen. Ballater, *DRUCE.*

105. West Ross. Gairloch, Big Sands, *Druce.*

Forma ERICOIDES Wimm. & Grab. Leaves small, linear-elliptical, about 2 mm. broad.

Jersey. Quenvais, *DRUCE.*

26. West Suffolk. Thetford, *NEWBOLD, H.B.M.*

29. Cambridge. Deirly Ditch, *NEWBOLD, H.B.M.*

54. North Lincoln. Alford, *BURTT DAVY, H.B.M.*

57. Derby. Baslow, *BAILEY, H.B.M.*

66. Durham. Newbiggin Moor, *J. G. BAKER, H.B.M.*; Siney Bank, *H. E. Fox, Hb. Druce*; Widdy Bank, *DRUCE.*

90. Angus. Little Culrannoch, Sands of Barry, *DRUCE.*

91. Kincardine. Banchory, *DRUCE.*

105. West Ross. Gairloch, *DRUCE.*

Forma EMPETROIDES Wimm. & Grab. Leaves small, linear, 1-1½ mm. broad.

3. South Devon. Buckland Monachorum, *T. R. BRIGGS, H.B.M.*

26. West Suffolk, *WILMOTT, H.B.M.*

Forma SILVICOLA Wimm. & Grab. Leaves obovate or elliptical, remote, 3-4 mm. broad.

Guernsey. Albecq, *BARTON (N. 126), H.B.M.*

Jersey. St Brelade, *PIQUET*; St Ouen, St Aubin, *DRUCE.*

2. East Cornwall. Polruan, *C. E. PALMER.*

23. Oxon. Wychwood, *DRUCE.*

24. Bucks. Westbury, *DRUCE.*

32. Northants. Colley Weston, *DRUCE.*

38. Warwick. Balsall Common, *DRUCE.*

Ireland. Galway. Roundstone, *DRUCE.*

Var. RIGIDUS Wimm. & Grab.

See *Rep. B.E.C.* 232, 1923.

91. Kincardine. St Cyrus Cliffs, *DRUCE.*

T. PYCNOTRICHUS (Uechtritz) Ronn.

- Guernsey. Vazon Bay, BARTON, *Hb. Druce*. Jersey. St Aubin, La Moye, St Ouen, Quenvais, Don Bridge, DRUCE.
2. East Cornwall. Polruan.
 3. South Devon. Erme Estuary, BRIGGS, *H.B.M.*
 5. South Somerset. North Hill, Minehead, *H.B.M.*
 6. North Somerset. Uphill, DRUCE.
 9. Dorset. Abbotsbury, Chesil Beach, DRUCE.
 10. Isle of Wight. Freshwater, DRUCE.
 13. West Sussex. Arundel, DRUCE.
 17. Surrey. Englefield Green, DRUCE.
 19. North Essex. Saffron Walden, BULLOCH.
 20. Herts. Langley, LITTLE, *Hb. Druce*.
 21. Middlesex. Harefield, DRUCE.
 22. Berks. Tubney, Wytham, DRUCE; Streatley, V. MURRAY.
 23. Oxon. Peppard, DRUCE.
 24. Bucks. Chenies, Chalfont, Whaddon, DRUCE.
 32. Northants. Harleston, DRUCE.
 41. Glamorgan. Barry Isle, WADE.
 42. Pembroke. Penally, TRIMEN, *H.B.M.*; Fishguard, DRUCE.
 59. South West Lancs. Southport, DRUCE.
 78. Selkirk. Elibank, DRUCE.
 79. Peebles. Thornilee, DRUCE.
 81. Berwick. Duns, DRUCE.
 83. Edinburgh. Arthur's Seat, MACGRAB, *H.B.M.*
 85. Fife. St Andrews, BAILEY; Balmuto, DRUCE.
 88. Mid Perth. Struan, DRUCE.
 89. East Perth. Bruar, DRUCE.
 95. Moray. Culbin, DRUCE.
 96. Easternness. Kincaig, SOMERVILLE, *H.B.M.*; Aviemore, DRUCE.
 97. Westernness. Glen Spean, DRUCE.
 104. Sky. LINTON, *H.B.M.*
 105. West Ross. Gairloch, Kinlochewe, Cnochan, Gruinard, Melvaig, Aultbea, Big Sands, DRUCE; Loch Duich, DRUCE, *H.B.M.*
 106. East Ross. Rosehaugh, DRUCE, *H.B.M.*
 108. West Sutherland. WILMOTT, *H.B.M.*; Cnochan, Elphin, Betty Hill, DRUCE; Melvich, MARSHALL, *H.B.M.*
 112. Zetland. Lerwick, DRUCE.
- Ireland. Kerry. Waterville, DRUCE. Clare. Ballycallanoin Lough, TRAPNELL, *Hb. Druce*. Antrim. Cave Hill, DRUCE. Kerry. Summit of Mangerton, RIDLEY.

T. LANUGINOSUS Mill.

1. W. Cornwall. St Germain's Beacon, BRIGGS, *H.B.M.*; Hayle, GROVES, *H.B.M.*
22. Berks. Streatley Hill, DRUCE.

33. East Gloster. Sapperton, DRUCE; Alveston, TRAPNELL, *Hb. Druce*;
Cheltenham, Leckhampton Hill, V. MURRAY, *Hb. Druce*.
49. Carnarvon. Snowdon, DRUCE.
92. South Aberdeen. Braemar (N.128), CROALL, *H.B.M.*

T. PSEUDO-LANUGINOSUS Ronn.

See *Rep. B.E.C.* 168, 1926.

9. Dorset. Cliffs near Dancing Ledge, SALMON, *H.B.M.*; Portland,
near Easton, MURRAY; Durlleston, LINTON.
33. East Gloster. Leckhampton Hill, V. MURRAY.

T. DRUCEI Ronn.

23. Oxon. Aston Downs, DRUCE.
33. East Gloster. Sapperton, DRUCE.
49. Carnarvon. Snowdon, DRUCE.
74. Wigtown. Port William, DRUCE.
88. Mid Perth. Ben Lawers, Bishop MITCHINSON, *Hb. Druce*; Ben
Laoigh, DRUCE.
89. East Perth. Blairgowrie, Killiechonan, Rannoch, DRUCE.
90. Angus. Winter Corrie, Sands of Barry, DRUCE.
91. Kincardine. Banchory, DRUCE.
92. South Aberdeen. Ballater, DRUCE.
96. Easterness. Boat of Garten, DRUCE, *H.B.M.*
98. Argyll. Ben Laoigh, DRUCE.
105. West Ross. Cnochan, Gairloch, DRUCE.
108. West Sutherland. Cnochan, DRUCE. Ireland. Londonderry.
Binevenagh, TRAPNELL.

T. ZETLANDICUS Ronn. & Druce.

1. West Cornwall. Helston, R. P. MURRAY.
41. Glamorgan. Cold Knap, A. E. WADE, *H.B.M.*
83. Edinburgh. Arthur's Seat, YOUNG, *H.B.M.*
88. Mid Perth. Ben Laoigh, GROVES; Fortingal, LINTON, *H.B.M.*
95. Moray. Culbin Sands, DRUCE.
98. Argyll. Ben Laoigh, DRUCE, *H.B.M.*
105. West Ross. Big Sands, DRUCE.
108. West Sutherland. WILMOTT (977), *H.B.M.*; Betty Hill, DRUCE.
111. Orkney. Hoy, JOHNSTON, *H.B.M.*; MARSHALL (2744), *H.B.M.*
112. Zetland. Lerwick, TATE; Bressay, SMITH, *H.B.M.*
Ireland. Kerry. Brandon Mt., 2500 ft., TRAPNELL, *Hb. Druce*.
Wicklow. Arklow Sands, FAWCETT, *H.B.M.*

T. NEGLECTUS Ronn.

1. West Cornwall. Whitsand Bay, BRIGGS, *H.B.M.*
2. East Cornwall. Shepherds, DRUCE.
3. South Devon. Roborough Down, BRIGGS, *H.B.M.*; Halford,
TOWNSEND, *Hb. Druce*.
6. North Somerset. Mendip, R. P. MURRAY, *H.B.M.*; Uphill, DRUCE.

7. South Wilts. Odstock, DRUCE.
 9. Dorset. Chesil Beach, DRUCE.
 11. South Hants. Winchester, DRUCE.
 12. North Hants. Between Odiham and Upton Grey, C. E. PALMER.
 14. East Sussex. Seaford, STANDEN, *H.B.M.*; Bovendean, HILTON, *H.B.M.*; Hassocks, Newtimber, DRUCE.
 15. East Kent. Kingsdown, H. E. FOX.
 17. Surrey. Boxhill, YOUNG, *H.B.M.*
 22. Berks. Compton Downs, DRUCE; Streatley, MURRAY.
 23. Oxon. Bretch, Gibraltar Rocks, DRUCE.
 24. Bucks. Princes Risborough, DRUCE.
 38. Warwick. Lighthorne, C. E. PALMER.
 41. Glamorgan. Caerphilly, WADE, *H.B.M.* and *Hb. Druce*; Barry, DRUCE.
 43. Brecon. Pennywill, BARTON, *H.B.M.*
 45. Monmouth. Wells of Birchwood, V. MURRAY.
 48. Merioneth. Harlech, Dolgelly (687), BARTON, *H.B.M.*
 49. Carnarvon. Criccieth, BAILEY, *H.B.M.*
 57. Derby. Cromford, BAILEY, *H.B.M.*; Ellaton, LINTON, *H.B.M.*
 66. Durham. Teesdale, DRUCE.
 69. Westmorland. Duddon, HODGSON, *H.B.M.*
 72. Dumfries. Corrie, DRUCE.
 73. Kirkcudbright. Tongland Hill, COLES, *H.B.M.*
 74. Wigtown. Castle Kennedy, 1883, DRUCE.
 76. Renfrew. Gourrock, MATHESON, 1846, *Hb. Druce*.
 83. Edinburgh. Roslin, GREVILLE, *H.B.M.*
 88. Mid Perth. Tummel, DRUCE.
 90. Angus. Sands of Barry, DRUCE.
 91. Kincardine. Feugh, Strachan, Banchory, DRUCE.
 94. Banff. MARSHALL (2894), *H.B.M.*; Tomintoul, DRUCE.
 96. Easternness. Boat of Garten, DRUCE.
 104. Skye. Sligachan (2894), DRUCE.
 105. West Ross. Gairloch, Mellon Charles, Port Henderson, Big Sands, Bealach nam Bo, DRUCE.
 106. East Ross. Tain, DRUCE.
 107. East Sutherland. Golspie, DRUCE.
 108. West Sutherland. Betty Hill, DRUCE.
- Ireland. Cork. CARROLL, *H.B.M.* Kerry. Derryvane, 1906, DRUCE. Waterford. Tranmore, NICHOLSON, *H.B.M.* Wicklow. Arklow, FAWCETT, *H.B.M.* Down. Killard Point, WADDELI, *H.B.M.*

T. BRITANNICUS Ronn.

- Guernsey. Vazon Bay, DRUCE.
1. West Cornwall. Porthgarra, St Just, GROVES, *H.B.M.*; Boscawen, SLATTER, *H.B.M.*; St Ives, Sennen, TRAPNELL, *Hb. Druce*; Polzeath, H. E. FOX, *Hb. Druce*, fl. alb.
 2. East Cornwall. St Dominick, BRIGGS, *H.B.M.*

3. South Devon. Bickleigh Downs, BRIGGS, *H.B.M.*; Torbryan, LIGHTFOOT.
4. North Devon. Saunton Down, HIERN; Ilfracombe, HORT; Thurleston, MARSHALL, *H.B.M.*
5. South Somerset. Banwell, STODDART, *H.B.M.*
6. North Somerset. Uphill, DRUCE.
8. South Wilts. Odstock, DRUCE.
9. Dorset. Swanage, Weymouth, Corfe, DRUCE; Wool, Kingsdown, LINTON*; near Easton, V. MURRAY; Badbury Rings, Seacombe, LINTON, *H.B.M.*
10. Isle of Wight. Ventnor, BAILEY; St Helens, Freshwater Gate, BAKER (and) FAWCETT, *H.B.M.*
11. South Hants. Winton, Crabtree, DRUCE; Milton, Exbury, GROVES, *H.B.M.*
12. North Hants. Between Odiham and Upton Grey, DRUCE.
14. East Sussex. East Rottingdean, Telscombe, HILTON; Brighton Cliffs, HORT, *H.B.M.*; Newtimber, DRUCE.
15. East Kent. St Margaret's, DRUCE.
17. Surrey. Boxhill, YOUNG; Warlingham, GROVES, *H.B.M.*
18. South Essex. Woodford, YOUNG, *H.B.M.*
22. Berks. Hinksey, DRUCE; Aldworth, V. MURRAY.
23. Bullingdon, Oxon, on chalk rubble; Pool Bottom, DRUCE; between Charlbury and Wychwood, H. E. FOX, *Hb. Druce.*
32. Northants. Plain Woods, DRUCE.
34. West Gloster. St Vincent Rocks, E. FOSTER, *H.B.M.*
41. Glamorgan. Cold Knap, WADE; Caerphylly, WADE (33), *Hb. Druce.*
48. Merioneth. Harlech (132, 135, 136, 139, 141); Dolgelley (687), BARTON; Harlech, RIDLEY, *H.B.M.*; Harlech (132, 135, 136, 139, 141, 173); Fairbairn Sands (132); Arthog (137), BARTON, *Hb. Druce.*
49. Carnarvon. Criccieth, BAILEY.
65. North West Yorks. Wensleydale, COTTON, *H.B.M.*
69. Westmorland. WILMOTT (1136), *H.B.M.*
74. Wigtown. Newton Stewart, Mull of Galloway, DRUCE.
79. Peebles. Glen, DRUCE.
80. Roxburgh. Vale of Bowmont, BROTHERSTON, *H.B.M.*
82. East Lothian. Ferrygate Links, DRUCE.
85. Fife. Burntisland, AGNES THOMSON.
89. East Perth. Ben y Vrackie, DRUCE.
90. Angus. Sands of Barry, GARDINER, *H.B.M.*; do., DRUCE.
91. Kincardine. Banchory, DRUCE.
92. South Aberdeen. Ballater, DRUCE.
95. Moray. Forres, DRUCE, *H.B.M.*; Culbin Sands, DRUCE.
98. Argyle. Mull, Ross, *H.B.M.*
105. West Ross. Big Sands, Bealach nam Bo, Loch Luichart, Gairloch, DRUCE.
107. East Sutherland. Dornoch Links, STANDEN, *H.B.M.*

*This is described on the label as *T. Lintoni* Domin. I had not known this name before.

108. West Sutherland. WILMOTT (1002), *H.B.M.*; Melvich, MARSHALL, as *prostratus*; Ben Hope, Betty Hill, DRUCE.
 109. Caithness. Thurso, DRUCE.
 112. Zetland. Hoo Hill, Balta, DRUCE.
 Ireland. Galway. Clifden. Clare. Black Head. Sligo. Ben Bulben, DRUCE. Antrim. Portrush, ATKINS, *H.B.M.*; do., DRUCE.

Though the races *pycnotrichus*, *neglectus* and *britannicus* vary in the leaf-breadth similarly to *T. Serpyllum*, I hesitate to create new names for these insignificant forms. In the races of *Serpyllum* sp. coll. it often happens that some of the prostrate shoots end in an inflorescence, also that isolated individuals have no sterile runners, but such plants can always be clearly distinguished from the races of *Thymus Pulegioides* sp. coll. by their low-growing flowering shoots and their small hard leaves. Moreover the races of *Thymus Serpyllum* sp. coll. are never so completely goniotrichous as are the races of *Thymus Pulegioides* sp. coll.

We are indebted to Dr S. H. Vines, F.R.S., for translating Dr Ronniger's notes. The Secretary has arranged the various localities in the comital sequence of Watson's "Topographical Botany."

SOME ENGLISH ALCHEMILLAS.

ORIGINAL DESCRIPTIONS AND DISTRIBUTION IN THE REGION OF THE SWISS FLORA.

By F. JAQUET.

A. HYBRIDA Mill.

A. pubescens Lam. *A. vulgaris* L., var. *subsericea* Gaud., K. *A. minor* Bus. Notes 1891, non Huds.

Plant rather strong-growing, leafy, spreading, light coloured. Leaves 9-lobed, rather wavy, silky and somewhat shining beneath. Lobes of summer leaves parabolic, slightly truncate, with short teeth, rather wide, obtuse. Upper branches divaricate. Glomerules very compact. Pedicels very shaggy, slightly shorter than the urceoles, which are at first campanulate, afterwards spheroid-turbinate.

Plentifully scattered over meadows and bare, sunny pastures, from the hilly districts almost to the snow line at 2500 metres. From the Maritime Alps to the Tyrol, in Carinthia, the Vosges, Central France, Pyrenees, Asia Minor.

[I discovered this as a native plant in Britain before the year 1892, when it was sent to M. Buser, but having lost his eyesight M. Buser is unable to give me the locality or the specimen (see *Rep. B.E.C.* 23, 1926). Hambledon Common, Surrey, Mrs WILDE, almost certainly from a neighbouring garden (*Rep. B.E.C.* 283, 1918), G. C. DRUCE.]

A. PRATENSIS Schmidt.

A. vulgaris L. et auct. *A. vulgaris* L., ssp. *pratensis* (Schmidt) Camus, var. *typica* R. Keller.

Plant tall, slender, often very large, of a bright yellowish colour. Summer colouring (edges of leaves, stalks) brick-red. Stems and petioles shaggy throughout, up to the stipulium. Leaves rounded, flat (folded in the living plant), glabrous beneath, with longish lobes, sub-triangular or parabolic, $\frac{1}{3}$ of their radius, more rarely shorter and rounded, $\frac{1}{4}$ of their radius, serrate. Stipules short and narrow, not coloured, soon disappearing. Stems fistular, flattening under pressure, erect, terminated by loose, leafy, often diffuse panicles. Flowers small, yellow, stunted, glabrous, or having a few hairs at their base. Urceoles at first narrow-obconic, later obovate or spheric-turbinate, veins well marked. Sepals open and wavy after fertilisation, showing the much exerted styles. Pedicels divergent. This and *effusa* are our largest species the stems often being half a metre long, with voluminous clusters of yellow flowers, making a pleasing sight. Notwithstanding its size the plant is delicate and dries quickly.

It appears on the meadows of the slopes of the middle region, is abundant in the lower grassy pastures, becomes rare among the Rhododendrons, but reaches, in a stunted form, our mountain chains up to the bare pastures under the snow line region at 2500 metres.

[Tring, Herts; Pyrton, Oxon; North Dean, Tring, Bucks, DRUCE; Caswell, W. Gloster, BAILEY; Crydack, Brecon, DRUCE; Dolgelly, Merioneth, BARTON; Athelstanes Wood, Hereford, LEY; Buxton, Derby, WHITE; Albrighton, Staffs; Accrington, Lancs; Westmorland; Baildon, Jervaulx, Greenfield, Yorks; Silverdale, Lake Lancs; High Force, Durham; Falldon, Northumberland, DRUCE; Melrose, Roxburgh, MISS PALMER; Dollar Law, Peebles; Selkirk; Creag Mhor, Lawers, M. Perth; Dunning, E. Perth; Callander, W. Perth; Dun Bridge, Angus; Banchory, Strachan, Kincardine; Fochabers, Elgin; Ballater, S. Aberdeen; Corgarff, Huntly, Alford, N. Aberdeen; Arisaig, Westernness; Gairloch, Braemore, W. Ross; Black Mt., Antrim, DRUCE.]

A. CURTILOBA Bus.

A. vulgaris L., ssp. *pratensis* (Schmidt) Camus, var. *curtiloba* (Buser) R. Keller.

Plant from 30 to 40 cm. high. Stems few (1-2), upright, erect. Basal leaves large, reniform. Lobes 9, wide, shallow, $\frac{1}{5}$ - $\frac{1}{4}$ of their radius. Stipules narrow, but up to 7 cm. long. Leaves glabrous above, bluish-green, pale green beneath, hairy only on the veins (in the Swiss plant); teeth 8-9 on each side, medium-sized, wide, shallow, rounded-ovate; mucronate, passing gradually into wide but short stipulium, the latter in the form of a small collar, unequally and coarsely crenulate-dentate. Inflorescence lax, diffuse, lower peduncles $1\frac{1}{2}$ to 4 times as long as the sepals; flowers deep yellowish-green, glabrous, sepals very wide-oval, acuminate. Divisions of the calicule large, similar to the sepals. Styles not exceeding the stamens.

Slopes among tall herbage in the subalpine and alpine regions from 1450 metres. Very rare. Switzerland, Friburg, Savoy. The chief habitat with us of this beautiful species is on the steep slope of the declivity west of the Dent de Lys. It is found in great abundance all along the slope descending from the summit towards the chalet of the Joux Vertes above, 1468 metres. In the very few stations where we noticed it formerly it appears in the very smallest quantities and in some years is not even to be found at all F. Jaquet, Contribution vii., 1905, p 15.

Goathland, N.E. Yorks, 1895, Miss M. MENNELL; Banchory, Kin-cardine, DRUCE.

A. MINOR (Huds.) Schinz & Keller.

A. filicaulis Buser.

Plant medium or small, slender, dry, bright glaucous green, with slight summer colouring. Leaves reniform or roundish reniform, flat, upper with triangular lobes, 1/3 of the radius, with scattered hairs or rather shaggy on both sides (rather more so above than below), bristly on the nerves. Lower stipules vinous red. Serration often unequal. Stems bristly in the lower half, glabrous in the upper (caulis semipilosus), slender, stiff, wiry, ascending. Petioles hairy all over. Upper stem leaves deeply cut, spreading. Inflorescence scanty, with short branches, flowers more or less clustered, large, yellowish. Urceoles elongated, at first obconic, later pyriform, inferior scorpoid, generally hairy or bristly, the upper smooth. Sepals relatively large, broadly oval or triangular-oval shaped. Calicule well developed.

Xerophilous species, widely spread. Dry grassy places, bare pastures, exposed sunny borders of woods from the hilly region almost to the edge of the snow line.

[Odiham, N. Hants, Miss PALMER; Finchingfield, N. Essex, VAUGHAN; Denhamburn, Middlesex; Beechwood, Herts; Bagley, Berks; Wroxton, Park Corner, Oxon; Brickhill, Chesham, Bucks; Woburn, Beds; Wakerley, Whittlebury, Northants; Stanner Rock, Radnor, DRUCE; near Tintern, Monmouth, SHOOLBRED; Dolgelly, Merioneth; Llanberris, Carnarvon; Blockley, Worcester, DRUCE; Packington, Warwick, Miss PALMER; Clevebank, Hereford, PURCHAS; Patshull, Staffs, Lady JOAN LEGGE; Matlock, Derby; Scampton, Knighton, Leicester; Greetham, Rutland, HORWOOD; Greenfield, Yorks; Silverdale, Lake Lancs; St Mary Isle, Kirkcudbright; Wigtown; Moffat, Dumfries; Glen, Peebles, DRUCE; Dolphinton, Midlothian, TEMPLETON; Glen Tilt, E. Perth, TEMPLEMAN; Cortachy, Angus, DRUCE; Arran, SOMERVILLE; Setter, Syredale, Kirbister, Orkney; Tingwall, etc., Zetland; Ballyvaughan, Clare; Garrontower, Antrim; Morley Bridge, Kerry; Cave Hill, Belfast, Antrim, DRUCE.]

[I should write this *A. minor* Huds. or em. Schinz & Keller.—Ed.]

A. PASTORALIS BUS.

A. vulgaris L., var. *pastoralis* (Buser) Schinz & Keller.

Plant of a medium size, robust, erect, of a bluish-green when fresh,

dull brownish when dry, summer colouring deep reddish-brown. Leaves rounded, folded in a keel in the living plant, flat when dry, rather thick, shaggy on the two sides (more strongly so beneath), more or less silky when young, hairs loosely appressed, often covered with brown spots. Stems and petioles shaggy as far as the stipulium. Lobes of the lower leaves arcuate, $\frac{1}{4}$ of the radius, those of the large leaves semi-oval or parabolic, $\frac{2}{5}$ of the radius. Teeth (characteristic) rather small, rather straight and very equal, conic or mammiform, a little connivent, lateral tooth of the large leaves often elongated, incurved, forming a small corner. Stems more or less erect, slender; stem leaves small. Stipulium with coarse, almost digitate teeth. Flowers clustered, rather shortly stalked (pedicels as a rule shorter than the urceole), of a dull yellow, the inferior often bearded at the base, the upper smooth or almost smooth. Urceoles at first obconic, a little longer than the sepals, at length turbinate or narrowly campanulate. Styles hidden.

Probably the commonest species of the *Vulgares*, it is to be found in every rather dry, bare pasture, in short turf, often in extraordinary quantities. It grows at its best in the hilly and subalpine region; from there it mounts on warm slopes up to the snow-line and descends frequently to the plains at the outlets of the mountain valleys and sometimes along the rivers even to the sands of the Rhone in Valais. When the plant is not very large it has been up to now with us frequently confounded with *pubescens* Lam. either as *montana* W. or as *hybrida* L., but a glance at the inflorescence is sufficient to distinguish the two plants.

[Arley Castle, Worcester, DRUCE and Lady JOAN LEGGE; Lansdon Beck, Durham, 1903, HUME (see *Bab. Man.* 579, 1922).]

A. SUBCRENATA Bus.

A. vulgaris L., var. *subcrenata* (Buser) Camus.

Plant medium sized or rather large but slender, weak, small in all its parts and withering quickly, of a bluish-green, yellowish-green in the young state, early summer colouring coral-red, with sparse down, making it appear glabrous at first sight. Leaves round, strongly undulate, with lobes rather broad and deep, $\frac{1}{4}$ - $\frac{2}{5}$ of the radius, semi-obovate or semicircular, those of the large leaves parabolic, hairy on the two sides, but only on the folds and edges above, more rarely over the whole surface. Teeth short and broad, coarse crenulate-mammiform in the large leaves. Petioles shaggy all over. Stipules long and straight, colourless. Stems spreading or arcuate-ascending, slightly shaggy as a rule as far as the lower branches. Stem-leaves relatively well developed, with deep divergent lobes; stipulium with numerous sharp teeth; the scant inflorescence is relatively leafy and elegant. Flowers close together, small, stunted, smooth, or the lowest with a few hairs at the base, of a bright yellow or greenish. Urceoles campanulate, equalling the sepals, at length turbinate-obovoid. Sepals upright after flowering and concealing the styles.

Meadows, grassy pastures, borders and clearings of woods in the subalpine region. A good fodder plant. One of the most widely spread species, often occurring in large colonies.

[Near Tintern, but in Gloucester, DRUCE (see *Rep. B.E.C.* 113, 1926); Aviemore, Easternness, 1922, SALMON.]

A. TENUIS Bus.

A. vulgaris L., var. *tenuis* (Buser) Schinz & Keller.

Plant medium sized, rather graceful, squat, dull green. The earliest petioles glabrescent. Clothing of the lowest petioles and of the stem bristly. Lowest stipules vinous-purple. Cauline leaves cut to 1/3, with slender teeth; upper stipuliums in the form of a finely toothed collar-ette. Inflorescence narrow; branches spreading at acute angles; flowers fascicled, yellowish, small and narrow. Urceoles at first obconic, equaling the sepals and the pedicels or a little shorter than the latter, at length turbinate. Sepals broadly oval. Pedicels capillary.

Grassy pastures, borders of woods in the hilly and subalpine region, widely distributed and often abundant, occurring here and there up to the snow-line.

[Box Wood, Herts, LITTLE, as *vulgaris* (see *Rep. B.E.C.* 113, 1926); Meall Greigh, Mid Perth; Sow of Atholl [? 89], Dalnaspidal, East Perth; by the Spey, Aviemore, Kincaig Bridge, Boat of Garten, Easternness, SALMON.]

A. ALPESTRIS Schmidt.

A. vulgaris L., ssp. *alpestris* (Schmidt) Camus.

Plant medium sized or large, but often very small or very large, rather slender, hardy and tough, of a bright bluish-green with a yellowish tinge in the young state. Leaves reniform or rounded-reniform, undulate, glabrous on the two sides, very ciliate, pale, a little glaucous beneath. Lobes rather broad, moderately deep, $\frac{1}{4}$ to $\frac{1}{3}$ of the radius, those of the lower leaves rounded, of the upper triangular, dentate all round. Teeth medium sized, oblique oval or mammiform, narrowly acuminate, connivent, often very unequal. The earliest petioles glabrous, or all hairy or pubescent (silky in the young state) with loosely appressed hairs. Stipules in sunshine of a vinous purple, with large auricles. Stems arcuate-ascending or erect, straight, hairy or sub-pubescent at the base with loosely appressed hairs. Stem leaves medium sized, the lobes not divergent, with connivent teeth. Inflorescence rather broad. Flowers medium sized, yellowish, slightly elongated; urceoles at first obconic, equalling the sepals, at length obovoid. Styles sometimes visible, sometimes hidden.

A common and generally distributed species from the plains to the snowy region, still rather frequent in the valleys of the Glâne and in the environs of Friburg. As to the highest zones one may include the whole of the alpine pastures of the Canton and of Switzerland.

[Stanmore, Middlesex; Craig Cille, Brecon Beacon, Brecon, DRUCE; Arthog, Merioneth, BARTON; Nant Francon, Carnarvon, DRUCE; Mor-

ridge, Staffs, ROUTH and JACKSON; Harlington, Derby, DRUCE; Clapham, Miss TODD; Ingleborough, Yorks; Penrith, Cumberland; Grassington, York, CRYER; Slodday, Broughton, Lancs; Patterdale, Westmorland; Teesdale, Durham; Edinburgh; Giffnock, Kelvinside, Renfrew, DRUCE; Cupar, Fife, TEMPLEMAN; Gatehouse of Fleet, Kirkcudbright; Port William, Wigtown, DRUCE; Hopetown, Linlithgow, M'TAGGART COWAN; Selkirk; Glen, Peebles; Thulachan, Blairgowrie, E. Perth; Lawers, Kenmore, etc., M. Perth; Rescobie, Dun Bridge, Cortachy, Angus; Strachan, Kincardine; Ballater, S. Aberdeen; Alford, N. Aberdeen; Kingussie, Easternness; Ben Nevis, Westernness; Ben Laig, Argyll; Sligachan, Skye; Loch Maree, Cnochan, etc., W. Ross; Ben Garbh, W. Sutherland; Kirbister, Orkney; Balta Sound, Zetland; Ben Bulbin, Sligo, as forma *truncata*; Ballycastle, Antrim; Formoyle, Londonderry; Ballyvaughan, Co. Clare; Waterville, Kerry, DRUCE.]

A. ACUTIDENS BUS.

A. vulgaris L., ssp. *alpestris* (Schmidt), var. *acutidens* (Buser) A. et G.

Plant slender but firm and tough, showy, of a rather shining green, a little yellowish. Root stout, almost woody. Leaves rounded, strongly undulate, coriaceous, subconcolorous, sub-opaque, glabrous or in the case of the upper silky at the folds above and at the exterior lobes below. Lobes rather deep, $\frac{2}{5}$ to $\frac{1}{2}$ of the radius, those of the lower leaves semi-obovate or semi-elliptical, terminating in a long corner with 2 to 3 teeth, those of the upper leaves parabolic-triangular, pointed, toothed all round. Teeth small or medium sized, very equal, finely pointed, connivent. Petioles all or in part furnished with loosely appressed hairs. Stems upright, strongly flexuous, tough, sub-hairy at the base. Stem leaves medium sized with rather deep lobes, spreading in the upper ones. Inflorescences diffuse. Flowers loosely glomerulate, rather large, turning yellow at maturity. Urceoles at first broadly obconic, a little shorter than the triangular sepals, oval and pointed, at length turbinate or turbinate-ovoid. Calyx and calicule well developed, recalling the Calycinae.

Alpine region: grassy, dry, well exposed pastures, notably at the upper limit of the Conifers.

[Near Grassington, Yorks; Cross Fell, Westmorland, SALMON; Balmuto, Fife, 1870, F. STRATTON, as *vulgaris*, the earliest British example known; Ben Lawers, 1911, DRUCE and OSTENFELD; Lochan na Chat, M. Perth, 1913, SALMON; Glen Falloch, W. Perth, MARSHALL.]

A. GLOMERULANS BUS.

A. vulgaris L., ssp. *alpestris* (Schmidt), var. *glomerulans* (Buser) A. et G.

Leaves very undulate, sub-orbicular, with 9 to 11 lobes. Lobes broad, of medium size, those of the intermediate leaves semicircular, $\frac{1}{4}$ to $\frac{1}{3}$ of the radius. Serration characteristic, rounded. Teeth as broad as long or twice as broad, ovate-rounded or mammiform, crenulate, macro-

nulate. Leaves rather thick, flexible even after drying, in the young state of a pale yellowish-green, when mature pale glaucous, with a narrow reddish brown border. Large summer leaves hairy on the two sides, sometimes sub-silky with appressed hairs. Petioles of the large leaves silky, the last very shining. Stipules broad and loose, brownish. Stems prostrate or arcuate-ascending, not flexuous, of a brownish red in the sun, pubescent for almost their whole length, often up to the pedicels, with appressed or lightly scattered hairs. Flowers clustered, rather short and broad, pale yellow. Urceoles at first broadly infundibuliform, equalling the sepals, at length turbinate. Sepals almost as broad as long, upright after flowering and showing the very exerted styles. Pedicels shortened.

Scarce in the subalpine region, more frequent in the alpine region. Often very abundant in bare and cold pastures, and in the snowy corries near the snow line.

[Glen Eunach, Easternness, 1917, ROFFEY; Ben Lawers, M. Perth, MARSHALL; Cairngorms, Easternness, SALMON; Lochnagar, S. Aberdeen, DRUCE.]

A. MONTANA Schmidt.

A. vulgaris L., var. *montana* (Schmidt) A. et G. *A. connivens* Bus. Plant very slender, elegant, of a clear deep green, rather shining. Leaves rounded, forming in the living plant a cup with the keeled folded lobes, flat when dry, coriaceous, marked with silky lines on the folds of the lower leaves, or silky above all over the lobes of the upper leaves, glaucous below, with shining nerves and with the exterior lobes silky. Lobes and serration the same as the preceding but with the lobes less deep, $\frac{1}{4}$ to $\frac{1}{3}$ of the radius, the serration finer, the teeth smaller. Petioles covered with long and soft hairs, at first loosely appressed, at length upright or spreading. Stems decumbent, rough and narrow or arcuate-ascending towards the top, fistulose and becoming flat in drying, hairy or sub-shaggy up to the first branches, with the hairs half spreading. Stem leaves rather small, deeply (up to $\frac{2}{3}$) incised, with narrow lobes, narrowed at the base, very spreading. Inflorescence large, with numerous flowers. Flowers rather small, like those of the preceding. Styles generally visible.

Subalpine and alpine regions, ascending rarely to the snowy region. A xerophilous species like the preceding, which it resembles, preferring dry pastures and open coniferous woods, often met with in scattered groups or in masses. Very widespread.

[Beinn a Chroin, M. Perth, MARSHALL; Dalnaspidal, E. Perth, SALMON.]

A. COLORATA Bus.

A. hybrida Mill. (*A. pubescens* Lam.), var. *colorata* (Buser) R. Keller.

Plant slender, with rather upright stems, of a dark greyish colour, summer colouring dark. Leaves often 7-lobed, very undulate, smaller

than in *A. pubescens* and less shaggy, not shining, the earliest almost always glabrous. Lobes of the summer leaves shortened, \pm truncate. Teeth deeper, narrower and more pointed than in *A. pubescens*. Pedicels glabrescent, elongated, glomerules therefore laxer, urceoles a little more elongated, turbinate. Interior of the flower of a deep purple colour at maturity.

Not less widely distributed than *A. pubescens* but less abundant, in patches as if practically independent of altitude, preferring siliceous ground (not found in the Friburg Alps), extending from the hilly region to the snowy region at 3000 metres. Valais, Teesin, Zurich, Grisons—Savoie.

[Cave Hill, Belfast, Antrim, DRUCE and STEWART.]

A. CORIACEA Bus.

A. vulgaris L., ssp. *coriacea* (Buser) Camus, var. *typica* A. et G. Plant large, strong, of a glaucous colour, opaque (resembling the colouring of the leaves of *Gentiana lutea*). Stems and petioles wholly glabrous. Leaves often very large, rounded, undulate in the living plant, with small folds in the angles in the dried plant, coriaceous, thick. Lobes semicircular or parabolic-rounded, $\frac{1}{4}$ to $\frac{1}{3}$ of the radius, crenulate-dentate all round. Teeth 7-10. Stems more or less upright, half as long again as the leaves. Inflorescence narrow. Flowers loosely fascicled, rather large, greenish. Urceoles, when mature, turbinate-ovoid or ovoid, almost twice as long as the short sepals. Styles hidden.

In the hilly region in damp meadows, scrubby places, clearings, on slopes among tall herbage. Frequent.

[Roadside near Fröckheim, Angus, R. & M. CORSTORPINE (*Rep. B.E.C.* 342, 1915).]

A. SALMONIANA F. Jaq.

Plant small or medium in size, tinged with a decided bluish-green, but later becoming purplish or pale yellow. Basal stipules lightly tinged with pink, glabrescent. The earliest petioles with a slight covering of upright spreading hairs, the later more strongly bristly with hairs spreading horizontally. Leaves rather small, 7-9 lobed, lobes $\frac{1}{3}$ to $\frac{1}{4}$ of the radius, with rather fine regular teeth, very ciliate and tinged with brown at the tip on the upper surface, oval, acute. Leaves hairy, more strongly so above than below, with appressed hairs, silky on the nerves, the large summer leaves becoming almost completely glabrous beneath, thin but rather firm. Stems rather stout and straight, bent at the foot, attaining twice the length of the leaves, slightly bristly on the lower half or two-thirds, quite glabrous higher up, often here and there tinged with a dirty violet as in the stem leaves, the teeth of which are rather acute and connivent; the upper leaves, as well as the stipuliums, are rather deeply and irregularly incised. The branches form very sharp angles with the stem, are twice as long as the stem leaves, terminating in 2-3 small compact corymbs with rather large flowers $4\frac{1}{2}$ to 5 mm. in diameter. Pedicels upright or slightly recurved,

shorter than the urceoles in the upper flowers, longer in the lower. Urceoles narrow, obconic, glabrous, or with a few appressed hairs. Calyx segments oval-triangular, upright after flowering, ciliate, with very few long hairs. Divisions of the calicules half the width of the sepals and $\frac{3}{4}$ of their length. Flowers of a dull green, turning slightly yellowish-green.

Among calcareous rocks in Cumberland in the North of England. Leg. C. E. Salmon.

This plant recalls the *Splendentes* in its growth, form, colouring and structure of its leaves and stems but must be placed, on account of its other characters, among the *Heteropodae*, beside *A. tenuis* Bus.

A. FIRMA Bus. apud Magnier Scrinia Fl. Sel. 1893, 279.

"Species of medium size, rather strong, rather clustered, of a beautiful glaucous green, summer colouring deep vinous red. Lobes 9, $\frac{2}{5}$ of the radius of the limb, rather wide apart, with lateral incision short but distinct. Teeth large. Leaves glabrous, whitish-green below. Stems straight, rough, feebly hairy at their base and on the petioles of the summer leaves, hairs loosely appressed. Inflorescence rather close. Flowers, like those of *glaberrima*, large. Sepals equalling the urceoles. General impression that of a luxuriant *glaberrima* with the characters indistinct. 'It seems to me to come midway between the *Vulgares* and *glaberrima* = *fissa* Schummler' (Rapin in Sched. under *fissa*). Grassy pastures among the willows and the rhododendrons, in forests among the arollas and larches of the alpine region . . . Very widely spread in the Vaudoise and Friburg Alps, the Bas-Valais and the Bernese Alps, 1300-1900 (-2200m.)." Original description by the namer, R. Buser, in H. Jaccard Catal. Flore Valaisanni, p. 116. *A. firma* belongs to the section *Calycinae*. It is up to the present the only species that I have seen of that section from Great Britain.

[Ben Lawers, M. Perth, 1913, C. E. SALMON, as *acutidens*.]

ADVICE TO COLLECTORS.

1. Do not gather too young. When without petals there is no necessity to gather in two states—flowers and fruit. The best condition for gathering is when approaching maturity. Then the inflorescences and the calyx tubes have acquired their definite shape which is often characteristic. Nothing is more deceptive than the young state with its compact inflorescence resembling a tiny cauliflower which gives one no idea of what the adult plant will be like. How many erroneous descriptions—statements of "flowers in glomerules"—are made because they are founded on young conditions whereas in mature states the same plants would have shown a diffuse and corymbiform inflorescence! When travelling about one is obliged to gather what one finds but when one may choose the time it is better to gather rather late than too early.

2. Preserve the whole plant. There are some *Alchemillas* (*Heteropodae*) in which the spring leaves are glabrous whilst the large summer

leaves are strongly hairy. When mounting the specimens, in stripping the plants of these earliest leaves because they are withered and unsightly, one removes one of the essentials for determination. On the other hand, it is unnecessary to press the underground parts in their entirety.

3. Arrange the leaves suitably. Differences between allied species being frequently slight and inconspicuous it is important not to make these still more difficult to discern by mounting a defective specimen. Therefore care should be taken to display the summer leaves as well as the stem leaves and stipuliums.

4. Choose specimens of normal growth. The smaller the specimen is, the more difficult is its specific determination. Where the climate is dry and the habitat deficient in moisture, resulting in a corresponding shrinkage in size, one can avoid the difficulty by looking for plants in a more favourable locality.

The drying of *Alchemillas* is very easy. These plants, if they are put into the press dry and if the paper itself is very dry, lose nothing of their grace or colour in the course of drying—in fact these characteristics are often accentuated. Provided one proceeds with a little care *Alchemillas* never turn black in the press.

November 1927.

EXPERIENCE AND OPINION.

By E. ALMQUIST.

In the last *Reports* I spoke of newbred plant species and of Nature's way for producing species. The wild Linnean species are not at all arbitrary, they are real, limited by Nature and commonly quite constant. In nature growing plants fit in with their environment. All forms that do not agree with their environment disappear in a short time. Plants produce an immense number of seeds, and the same forms grow everywhere in favourable localities. New forms are bred by crossing or mutation. The spontaneous plants cross remarkably seldom, a great many grow apart from their relatives, for which reason they only cross accidentally. The kindred ones often live together near human dwellings, nevertheless they do not cross spontaneously (Alexis Jordan, 1873). On the other hand, newly imported forms often cross with meeting species, but most of these hybrids do not spread. Wild plants often degenerate in culture, become sterile, or lose some important organs. By this mutation or single variation we observe as a rule only one character altered. However, with defective nutrition, some bacteria, e.g. *Spirillum cholerae* gradually lose several of their characters for good. New crosses and mutations really do not cause great changes in our Floras. New forms with power to spread are very rare. The list of newbred Swedish species is poor. De Vries

did not reach much further. This experience proves the insignificance of the movement. In these examinations it is quite necessary to separate the constant forms from the varieties that are not thoroughly hereditary. Among higher plants, but more especially in bacteriology, we very often come across varieties that seem to be constant, but which revert to the original form in suitable culture. I call this variation relative inheritance.

The related facts belong to our experience. We claim that all important facts are to be found in scientific works. Nevertheless, we look in vain, for example, for the comprehensive cultures of Linné and Jordan. This manner is not occasional, but in certain parts of biology rather common. Some scientists prefer interpretation to observation. Thus theories prevail and facts are subordinate. This bad custom continues throughout periods. Sometimes all varieties were considered to be beginning new species, or the spontaneous allogams were all hybrids, or the species were created by repeated mutations, &c. The fashion to-day seems to be some kind of Lamarckianism. An important work insists that only the individuals, not the species, are real! Even in bacteriology dialectics prevail, but in the year 1927 two new text books were published by Philip Hadley in U.S.A. and E. Gotschlich in Germany. Both find it not at all satisfying to exclude all observed bacterial forms that do not agree with this convenient doctrine, and which prefer interpretation to observation. We hope for a new era in science on that account.

But it is not only biology that suffers to-day. I read lately in my English newspaper as follows:—"Our politicians are so imbued with the fallacy that progress and democracy are synonymous terms, so bemused with catchwords, that they lose their sense of reality." Thus it is the same in science and politics! The well-known Anglo-Saxon instinct feels at present much ado about the common sense. It gains the victory without doubt. The fear will be actual only when the instinct disappears from our cultivated nations.

So in science as in politics, experience and facts are the masters and must prevail against opinions, theories, doctrines, *pia desideria*, and interpretations. To-day these are a powerful menace to facts, but they must give way to experience.

PLANT NOTES.

By Dr E. DRABBLE.

RANUNCULUS LENORMANDI × PELTATUS. Tresillian, near Truro, Cornwall, April 1908, HILDA DRABBLE. This agrees exactly with the figure and description in *Journ. Bot.* 39 (1901), p. 121, tab. 420, and also with material collected at Cophthorne Common in May 1904 (E. D.).

RANUNCULUS PELTATUS L., var. TRUNCATUS Koch. Grange Hill, Essex, and Mitcham Common, Surrey, May 1904. These plants are the best *truncatus* I have seen from this country and are far more characteristic than the specimens so named in Wirtgen's *Herb. Pl. Select. Fl. Rhen.*, ed. ii., fasc. 12 and 17, in my own herbarium.

PAPAVER RHOEAS L., var. PRYORII Druce. Misson, Notts, August 1909.

PAPAVER RHOEAS × DUBIUM. Certain plants which have been thus named seem to me to be *P. dubium* with spreading hairs on the peduncle, e.g. plants collected by Mr C. E. SALMON at Chilworth, Surrey, July 27, 1918. Just as in *P. rhoeas* we have hairs adpressed (var. *strigosum*) or spreading (the common form), so in *P. dubium* occur plants with hairs adpressed (the common form) or spreading (Mr Salmon's Chilworth plant). In the same way *P. hybridum* has hairs spreading or adpressed according to Rouy and Foucaud *Fl. Fr. t. i.*, p. 161.

PAPAVER ARGEMONE L., β GLABRATUM Rouy & Foucaud (sub-var. GLABRATUM Coss. et Germ. *Fl. Par.*), "capsules munies seulement de quelques soies au sommet." Flamborough, Yorks, July 1907, growing with the typical plant, of which it appears to be a mere state.

RADICULA NASTURTIUM Dr., var. SIFOLIUM (Reichb.). Flamborough, Yorks, July 1907. The best examples we have seen; var. MICROPHYLLUM (Boenn.). Hightown, Lancs. I think both these are mere states.

EROPHILA STENOCARPA Jord. Claygate, Surrey, May 1865, H. C. Watson, in *Hb. E. & H. Drabble*.

EROPHILA BRACHYCARPA Jord. Wroxham, near Stalham, Norfolk, April 1909, Miss M. PALLIS; Milltown and Fallgate, Derbyshire; Nether-ton, near Frodsham, Cheshire, March 1867 (no collector's name); Lancing, Sussex, April 1872, T. COMBER. All in *Hb. E. & H. Drabble*.

COCHLEARIA PANICA L. This plant in cultivation retains its characteristic features unmistakably. The leaves become larger, but the shape of the leaf is unchanged.

COCHLEARIA ARMORACEA L. Abundantly established on the sand-hills at Wallasey, Cheshire, where the form with deeply pinnately lobed leaves occurs as well as the entire-leaved form.

SISYMBRIUM SOPHIA L. Gringley, Notts, August 1908.

BRASSICA RAPA L., with flowers in a long raceme instead of the usual corymb. Waste ground, Finchley, Middlesex, July 1912.

LEPIDIUM BONARIENSE L. Birkenhead, Cheshire 1907.

SAPONARIA OFFICINALIS L., var. PUBERULA Weirzb. Hightown, Lancs, September 1905.

LYCHNIS GITHAGO Scop., var. NICAENSIS Willd. Wallasey, Cheshire, 1906. A state, I think, but a very striking one.

SILENE CONOIDEA L. Waste ground, Upper Brighton, Cheshire, July 1907.

CERASTIUM VULGATUM L., var. HOLOSTEOIDES Fr. Wallasey Sandhills, Cheshire, May 1907.

SAGINA MARITIMA G. Don, var. Densa (Jord. Obs. iii., tab. 3 B.). Leasowe, Cheshire, June 1908; var. DEBILIS (Jord. Obs. iii., tab. 3 C.). Hightown, Lancs, June 18, 1887, A. E. LOMAX in *Hb. E. & H. Drabble*.

SPERGULARIA RUPICOLA Lebel, var. GLABRESCENS Bréb. Bidston, Cheshire; Filey, Yorks.

SPERGULARIA MEDIA Pers. = MARGINATA Kittel, var. GLANDULOSA DRUCE. Swanscombe Marshes, Kent, July 1903; Yarmouth, Isle of Wight, July 1913.

HYPERICUM LINARIIFOLIUM Vahl, var. APPROXIMATUM Rouy. Beaumont, Jersey, July 1894, J. D. GRAY in *Hb. E. & H. Drabble*.

TILIA PLATYPHYLLOS Scop. Langwith, Derbyshire.

GERANIUM SANGUINEUM L., var. PROSTRATUM (Cav.). Perranzabuloe, Cornwall, July 1910.

GERANIUM MOLLE L., var. AEQUALE Bab. Hendon, June 1912.

MEDICAGO SYLVESTRIS Fries. Morfa Nevin, Carnarvonshire, September 1926. This plant was sent to me by Canon F. L. SHAW, who writes—"It grows in great profusion in a pit near to a cornfield and, from the quantity of it, it must have established itself years ago. I can only think that years ago the farmer must have purchased some East Anglian seed, and as the pit is uncultivated it gave the plant an opportunity to establish itself."

MEDICAGO FALCATA L., var. TENUIFOLIATA Vuyck. Cornfield weed at Spital, near Chesterfield, Derbyshire, June 1918.

TRIFOLIUM PRATENSE L., "var." PARVIFLORUM Bab. Totland, Isle of Wight; Gringley, Notts, August 1914.

ANTHYLLIS MARITIMA Schweigger. St Ives, Cornwall, July 1908.

LOTUS CORNICULATUS L., var. HIRSUTUS Rouy. Freshwater Downs, Isle of Wight.

LOTUS ULIGINOSUS Schkuhr, var. GLABRIUSCULUS Bab. Spital, near Chesterfield, Derbyshire; Truro, Cornwall.

LATHYRUS MONTANUS Bernh., var. TENUIFOLIUS Asch. Linacre, Derbyshire.

CRATAEGUS MONOGYNA Jacq., var. LACINIATA (Wallr.). Common round Finchley, Middlesex.

CRATAEGUS MONOGYNA Jacq., var. LEIOCALYX Druce (=var. GLABRATA Sond.). Freshwater, Isle of Wight.

CRATAEGUS OXYACANTHOIDES Thuill., var. ERIOCALYX Druce. Mill Hill, Middlesex, June 1909.

SEDUM FABARIA Koch. Near Grasmere, Westmorland, August 1906.

LYTHRUM SALICARIA L. Meols, Cheshire, 1905, and onwards, a peculiar form with the flowers generally solitary in the axils and the lower bracts leaf-like. This plant differs from *β gracile* DC. Cat. Herb.

Monspel., p. 123 (Grenier & Godron Fl. Fr. i., p. 593), in being only slightly downy, instead of "pubescente-veloutée, presque blanchâtre," Rouy & Fouc. Fl. Fr., viii., p. 159.

EPILOBIUM LAMYI Schultz. Finchley, Middlesex, July 1912; Freshwater, Isle of Wight, 1924, and onwards.

EPILOBIUM TETRAGONUM L., em. Curt. Finchley, Middlesex, July 1909.

EPILOBIUM LANCEOLATUM Seb. & Maur. Launchy Ghyll, Thirlmere, Cumberland, August 1908.

CIRCAEA LUTETIANA L., var. *CORDIFOLIA* Lasch. Spital, near Chesterfield, Derbyshire.

CONOPODIUM MAJUS Loret. A very striking form with the stalks of the partial umbels and of the flowers so short that the whole compound umbel forms an almost spherical head about $\frac{1}{2}$ inch in diameter. There was no sign of fungal or insect infection. The plant was sent to me from Ashbourne, Derbyshire, by Canon F. L. Shaw.

CAUCALIS NODOSA Scop., var. *PEDUNCULATA* (Rouy) Druce. Finchley, Middlesex.

SCABIOSA SUCCISA L., var. *HISPIDULA* Peterm. Carbis Bay, Cornwall, August 1905; var. *GLABRATA* Schultz. Wythburn, Cumberland, August 1906. These seem to be merely states, respectively more or less hairy than the usual plant.

GALINSOGA PARVIFLORA Cav. East Barnet, Middlesex, September 1912.

MATRICARIA INODORA L., entirely without ray florets. A particularly large and well developed plant, Chesterfield, Derbyshire, September 1925.

ARTEMISIA VULGARIS L. Hooker, *Stud. Flora*, ed. iii., and Rouy, *Fl. Fr.* viii., describe the leaves as glabrous above. I have plants from Bridlington, Yorks, with leaves distinctly hairy on the upper surface. These may come under var. *VESTITA* Corb. Fl. Norm. (*β canescens* Rouy Fl. Fr. viii.).

CIRSIUM ARVENSE Scop., var. *MITE* Koch. Finchley, Middlesex, September 1909; Staveley, Derbyshire, September 1902; var. *VESTITUS* Koch. Chesterfield; var. *INTEGRIFOLIUS* Wimm. & Grab. Fl. Siles. Finchley, Middlesex.

ONOPORDON ACANTHIUM L. Misson, Notts, August 1908.

SERRATULA TINCTORIA L., var. *INTEGRIFOLIA* Koch. Llanberis, Carnarvonshire, August 1871 (no collector's name).

LAPSANA COMMUNIS L. With green corollas, Totland Bay, Isle of Wight, August 1927.

CREPIS CAPILLARIS Wallr. (*VIRENS* L.), var. *DIFFUSA* (DC.). Chesterfield, Derbyshire; Sherwood Forest, Notts; Alum Bay, Isle of Wight; var. *ANGLICA* Druce & Thellung. Barlow, Derbyshire; Wallasey and West Kirkby, Cheshire; Totland, Isle of Wight.

HYPOCHAERIS GLABRA L. Totland, Isle of Wight, in a very sandy field, September 1925. Plants over 50 cms. in height; leaves nearly glabrous, large, up to 13 cms. in length by 2 cms. in width; stems much branched with several small scale-leaves widely spaced on the branches;

inflorescence axes considerably thickened below the capitula; capitulum very short and stout, about 1 cm. in length; fruiting head large like that of *H. radicata*; outer fruits without beak, inner beaked, fruit and pappus nearly 2 cm. in length. The plants differed remarkably from the ordinary typical form which grows in quantity in the neighbourhood (on Headon Hill). Clearly the plant has much in common with that mentioned in *Rep. B.E.C.* v., pt. 3, 288, from Pyrford, Surrey. It appeared possible that it was a distinct variety. Fruits were therefore sown in the following spring in a cleared bed in the garden. These gave rise to large plants with upwards of twenty flowering stems spreading from the base and with broad capitula, but otherwise approaching the usual form. These were allowed to seed themselves, and in 1927 grew amongst other vegetation with the result that they have approached still more nearly to the normal small form. It is therefore unlikely that the plant is a genetically distinct variety. A mere state though a very striking and unusual one seems to be indicated.

HYPOCHAERIS GLABRA L., var. *ROSTRATA* C. & G. (= var. *LOISELEURIANA* Godr. = *H. BALBISII* Lois.). With all the fruits beaked. New Romney, Kent, 1875 (no collector's name).

HYPOCHAERIS RADICATA L., var. *LEIOCEPHALA* Regel. (= var. *TYPICA* Beck.). Involucral bracts glabrous and without black pectinations on the middle of the outer surface. Chesterfield, Derbyshire; Highwood Hill, Middlesex; Freshwater, Isle of Wight. Var. *HISPIDA* Peterm., involucral bracts roughly hairy and generally but not always with pectinations down the middle of the outer surface. Freshwater, Isle of Wight.

VACCINIUM MYRTHILLUS × *VITIS-IDAEA*. Eastmoor, Derbyshire.

CALLUNA VULGARIS Hull, var. *INCANA* Reichb. Edwinstowe, Notts.

SYMPHYTUM PERGRINUM Ledeb. Hasland, Derbyshire; Finchley, Middlesex.

MYOSOTIS VERSICOLOR Sm., var. *DUBIA* AIT. (*M. dubia* Arrondeau Cat. Pl. Morbihan, p. 70; sub-var. *dubia* Rouy Fl. Fr. x., p. 327). A striking colour variety; flowers white (not cream or yellow as usual), changing to blue. Freshwater Downs, Isle of Wight.

ECHIU M VULGARE L. (i.) Flowers white, (ii.) flowers pink, (iii.) flowers pale blue, (iv.) flowers dark blue. In all cases these were the final colours at maturity. Near Truro, Cornwall, July 1910.

SOLANUM DULCAMARA L., var. *TOMENTOSUM* Koch. Reigate, Surrey; Woodside Park and Finchley, Middlesex; Freshwater, Isle of Wight.

VERBASCUM NIGRUM L., var. *TOMENTOSUM* Bab. Mullion, Cornwall, August 1904, exactly like the Channel Islands plant.

LINARIA VULGARIS L., var. *LATIFOLIA* Bab. Lizard, Cornwall, August 1904; Whaley and Roseland Wood, Derbyshire, August 1909, E. & H. DRABBLE; Northfleet, Kent, August 1852 (as *speciosa* Ten.), J. T. SYME.

SCROPHULARIA NODOSA L., var. *BRACTEATA* Druce. Romford, Essex, 1913, Miss A. E. COOK.

SCROPHULARIA AQUATICA L., var. *PUBESCENS* Bréb. Freshwater, Isle of Wight; by Thames at Kew; Spital, near Chesterfield, Derbyshire. Is not this the common form? I have glabrous-leaved plants from St Osyth and Truro.

SCROPHULARIA AQUATICA L., var. *APPENDICULATA* Mérat. Common at Freshwater, Isle of Wight.

VERONICA CHAMAEDRYIS L., var. *LAMIIFOLIA* Beck. Spital, near Chesterfield, Derbyshire, with large leaves, the upper ones petioled and cuneate based. I do not think that any distinction can be made between *lamiifolia* Beck. and *Randolphiana* Hayne based on the opposite or alternate position of the racemes.

SCUTELLARIA GALERICULATA L., var. *PUBESCENS* Mutel. Spital, near Chesterfield, Derbyshire; var. *LEIOSEPALA* Druce. Loe Pool, Cornwall, August 1904.

PRUNELLA VULGARIS L., var. *NEMORALIS* Béguinot. Freshwater, Isle of Wight. Merely a luxuriant state.

PLANTAGO CORONOPUS L., var. *PYGMAEA* Lange. St Ives, Pentire, Perran, Carbis Bay, Lizard, Cornwall; Leasowe, Cheshire; Rottingdean, Sussex; Freshwater, Isle of Wight; var. *CERATOPHYLLON* Rapin. St Ives, Cornwall. Both merely states, we believe.

PLANTAGO MARITIMA L., var. *PUMILA* Kjellm. Carbis Bay; var. *LATIFOLIA* Syme. St Ives and Carbis Bay, Cornwall. Both states, we believe.

PLANTAGO LANCEOLATA L., var. *SPHAEROSTACHYA* Roehl. Hady, near Chesterfield, Derbyshire; Helvellyn, Cumberland; var. *ELLIPTICA* Druce. St Ives, Cornwall; Finchley, Middlesex; Scarborough, Yorks. A very curious form of *lanceolata* was found at Shirebrook, Derbyshire, in August 1913. From each of the two spikes which were otherwise normal, had grown vegetatively a new plant of the *sphaerostachya* type—quite similar to the plants from Helvellyn. Thus an ordinary *lanceolata* produced vegetatively two *sphaerostachya* plants on the inflorescences, lifted well above the surface of the earth with which they did not form any rooting connection.

PLANTAGO MAJOR L., var. *INTERMEDIA* Syme. Lizard, Cornwall; Walsley, Cheshire; Norton, Isle of Wight. I agree entirely with E. S. Marshall in regarding the plant named *P. major* L., var. *nana* Tratt. [Ref. No. 325] by W. C. Barton, and distributed through the Wats. B.E.C. (*Report* 1917-18, p. 69) as merely a starved condition of var. *intermedia* Syme.

CHENOPODIUM LEPTOPHYLLUM Nutt. Spital, near Chesterfield, Derbyshire, fruiting a fortnight later than *C. album* with which it grows.

CHENOPODIUM BOTRYS L. Calow, Derbyshire, a wayside weed.

CHENOPODIUM POLYSPERMUM L. (typical form). East Barnet, Middlesex; var. *CYOSUM* Moq. Finchley, Middlesex.

URTICA DIOICA L. It does not seem to be recognised generally that the late autumnal growth of the ordinary nettle is often devoid altogether of the usual large leaves, but produces a plentiful crop of small ones like those of var. *microphylla* Haussm. Indeed, if gathered in this

late autumnal condition these plants might be taken for *microphylla*, which, however, has only small leaves throughout the year. The same sort of growth is sometimes, though less commonly, met with, in var. *angustifolia* W. & G. late in the season. We possess also a small-leaved form of *U. pilulifera*—without locality, date or collector's name—exactly similar in habit to var. *microphylla* of *dioica*.

NOTES ON ROSA.

By Lt.-Col. WOLLEY-DOD.

I have recently received a parcel of Roses from Dr Keller, to whom I had sent them for his opinion. His diagnoses of them may entail some alterations in nomenclature which I shall discuss at some future date. I give here his opinion on the only two Roses which have been distributed through the B.E.C. which involve any change in name.

R. rubiginosa × ? from Kidnal, Cheshire, collected by me in July 1906, see *Report* for that year. This is the hybrid I have since described as × *R. tomentelliformis*, from a supposed parentage of *R. tomentella*, var. *Borreri* and *R. rubiginosa*. Dr Keller remarks that the length of the peduncles, the direction of the sepals after flowering, the form of the styles and the lax pubescence seem to indicate that the second parent is not *rubiginosa* but *micrantha*. To judge from the points indicated Keller might be right, but he makes no mention of the aciculate armature below the inflorescence and on other parts of the stems, which to me are almost proof of the *rubiginosa* parentage, since acicles below the inflorescence are rare and on the stems unknown, at least to me, in *micrantha*. Moreover, *R. rubiginosa* is frequently cultivated in gardens, whereas *R. micrantha* is a very rare Cheshire species, and so far as I know, does not exist within several miles of the hybrid. In my opinion, therefore, the putative parentage may remain as *R. tomentella*, var. *Borreri* × *rubiginosa*.

The other is a Rose distributed as *R. micrantha* × *canina* [Ref. No. 2419] by Mr C. E. Britton (see *Report* 1921, pp. 560-1). On this Dr Keller writes, "This seems to me to be a hybrid between *R. rubiginosa* and *R. canina*. Branches beset with acicles are not infrequent in *R. rubiginosa*, but very rare in *R. micrantha*. The sepals of this specimen are partly reflexed, partly spreading or sub-erect after flowering, thus the parent plant with reflexed sepals (*R. canina*) asserts itself, while the other has them more or less erect (i.e. *R. rubiginosa*, not *micrantha*). The subfoliar glands are conspicuous enough for a variety of *R. rubiginosa*. The fertility of the fruits is reduced, hence the hybrid origin is most probable." I see no reason to dispute this diagnosis, and think now that *R. rubiginosa* is a more probable parent than *R. micrantha*, which Dingler thought was concerned.

PHENOLOGICAL OBSERVATIONS MADE AT OXFORD.

By F. A. BELLAMY, F.R.A.S.

Phenology includes insect and bird life, as well as observations in the domains of botany.

Essentially it is a record of the earliest observations annually made upon the opening of the petals of wild flowers, when the plant may be said to be "out," in flower, or in bloom. The subject may also include the foliation and defoliation of trees.

Observations of this nature have been made at Oxford since 1855, though my own observations began in 1882 with the list of 79 plants for the Royal Meteorological Society. After some years the Society reduced that list to thirteen trees and plants, as the longer list was considered to be unnecessary or too burdensome to get a full list of observations from the observers scattered over the British Isles.

Since 1882 I have retained most of those 79 plants on my observing list, and I have added more than the same number of wild plants that I considered useful for the purpose, and which were conveniently situated; many of these are water-loving plants and those by the hedgerow and wayside. The absence and distance of any "open" woodland near Oxford prevented me increasing my list of plants in such situations.

With such a long list of about 150 plants to visit and observe for first flowers each year, it is obvious that one who has exacting and daily routine duties to perform will be compelled to miss many plants each year. My reason in increasing the list, and in spreading the observations of the various plants through each month, was in the hope of securing some plants each month from January to August. This I have fairly succeeded in doing, except for the very scarce number of observations in the exceptionally strenuous years from 1897-1906, when I was practically working day and night upon an important piece of International Astronomical work: with that work and the serious illnesses of my two sisters I was prevented getting beyond the limits of Oxford.

Notwithstanding all hindrances to the full annual record for many of those plants, I have secured some thousands of these phenological observations during the past 45 years for Oxford and its immediate surroundings; have recently been tabulating and discussing these observations. The scope of this discussion has been extended considerably, with very interesting results: the investigation is proceeding in my leisure time.

The weather conditions form a strong factor in the acceleration and retardation of the flowering of plants; that is generally known. For Oxford I have reduced the phenomena to facts and figures.

In order that it may readily be seen how the weather of two years may affect the dates of the flowering of plants I append an example of two recent consecutive years of those plants which I observed in both

years. I will draw brief attention to them later; but, before doing so, I should first give a few explanatory remarks to the list of 90 plants.

The nomenclature given in the List is antique to most botanists; it is that, in almost every case, which prevailed in the early '80's. These names appear in all my earlier record and note-books; as it would obviously be inconvenient to have a variable name for the same plant in my observations, I have consistently retained the name as used nearly fifty years ago: the advanced botanist can readily read the most up-to-date name in substitution. With the adoption of the new name, I might have to restrict these observations to a particular sub-species or variety of a plant; e.g. the Hawthorn, my observations relate to the first flowers of hedgerow plant which goes down in my List as *C. Oxyacantha*, whether *C. oxyacanthoides* or *C. monogyna* be observed. I believe *C. oxyacanthoides* comes into flower usually several days before *C. monogyna*; I have not made special observations upon this so am not sure.

For the Hawthorn as for the Elm, Whitlow Grass, Lotus, etc., my observations are for the aggregate plant, and I have endeavoured to make my observations as consistent as possible with those limitations; a mere date is often supplemented by a note, these would take up too much space even for the two years 1922 and 1923. Each year the observations are made on the same trees and plants in the same area as far as possible.

The order of the plants in the List is as for the day of the year or month, thus plants 13-27 have their average date of first flowers from April 4 (*Potentilla Fragariastrum*) to April 29 (*Veronica Chamaedrys*), and so on. For the first 60 days of the year (all January and February) I have only six plants observed, two more have been recently added. More plants for the first 75 days of the year would be useful, but I can find none. *Primula vulgaris*, *Senecio vulgaris*, *Lamium purpureum*, *L. album*, *Sherardia arvensis*, *Bursa pastoris*, etc., continue in flower through the autumn and winter if mild. Other early flowering but cultivated plants may occur to one, I consider them useless; such are the Snowdrop, Crocus, Winter Aconite, Hellebore, Almond, etc. I have added *Vinca minor* and *Daphne Laureola* recently, both are accessible near Oxford, and in as wild a situation as they can be found; their average dates are approximately February 14 and February 21; I have also put on my observing List several plants for July and August. As yet I have few observations of these. *Tussilago Farfara* and 60 other plants are on my list, but are excluded here as not having been observed in both years.

Some explanatory and qualifying notes upon some of the plants in the list which follows may be of interest.

Corylus Avellana—the date is for the opening of the fertile flowers, not of the catkins, which usually, though not always come into flower 7 days earlier, and the wild woodland or hedgerow trees are observed.

Ulmus "campestris." The old and large field elms are observed, the young trees are avoided.

Linaria Cymbalaria (alien, but so well established about Oxford) is my most erratic plant. I observed it in flower on January 1 in 1923, while in 1922 the date was May 5. An early date will be observed if there has been an absence of one or two severe frosts before about the middle of February. The plant winters ordinary frosts, 10° is usually too much. In that case the exposed part is destroyed or damaged and new growth has to be waited for, hence an unusually late date results. This happened in the spring of 1922; the late autumn and early winter were so mild or free of strong frosts that an unusually early date was observed in 1923. After then, frost occurred, the plants were destroyed and the next flowers on the new growth were first observed on April 13. I have thought of removing the plant from my list, as also the Oxford Ragwort (*Senecio squalidus*), similarly erratic, also an alien. They behave like some perennial plants, a mild climate allowing them to continue in flower at abnormal times.

No. 17, *Prunus spinosa*, the date for 1922, March 23, appears to be exceptional. It is verified by notes and later observations. Rain preceded the date March 13 in 1923, the date in 1922 was some days later followed by snow which would have affected the more dwarf plants at once.

Nos. 32, 33, 38, and 40 are also aliens, but their inflorescence dates do indicate less exceptional climatic changes. Moreover, they are so well established and are beyond the control or interference of gardeners; and they are all conspicuous and old friends so one does not like to exclude them.

No. 62, *Myosotis palustris*, observed only when growing in the water, or wet, or muddy situations.

Nos. 64 and 87, *Pastinaca sativa* and *Daucus Carota*—these plants are erratic; situation and soil seem to have a marked effect.

No. 71, *Ligustrum vulgare*. Hedgerow plants observed.

To the foliage of some trees I have also given some attention. I append half a dozen pairs of observations for these years. The Elm, showing a green appearance, was 7 days later in 1922 than 1923. This lateness is in the same direction as for the other trees about that date (May 8), but the change in the weather in 1923 after May 1 delayed the full leaf condition until the date was fifteen days later than 1922. This is supported by the observations of the Plane. To me the leafage of the Plane and Elm moves more slowly than with the Chestnut, Lime, and Hawthorn, which appear to be readily accelerated by rain or moisture. The large differences of 15 to 30 days for the Lime, Chestnut, and Hawthorn leafage and the delayed time for full leaf of the Elm and Plane correlate with the more numerous plants in the list given herewith. The weather in April for these two years was of such a difference as caused an average difference, from 14 plants, of 20 days in the dates for first flowers. This divergence is reflected in the observations for those trees which should come into leaf about that month. If one refers to the list of plants given it can readily be seen that a considerable change came over the weather both in May and June in both years. About the middle of May in 1922 the lateness of plants,

very marked before, became less late, and before the end of May and through most of June and early July had become some days earlier than the average; while in 1923, the consistent earliness of the flowering of plants continued each month to about the middle of May, became about the average to the first days of June, then the plants were mostly from 7 to 20 days later than the average—a marked difference of weather as affecting plants in these two years.

With these remarks I have now to append the list of the plants observed, together with the deviation in days from the average order of flowering in each month.

LIST OF PLANTS OBSERVED.

No.	Plant's name.	Difference in Days from the Average.		Month for Average Flowering.
		1922.	1923.	
1.	<i>Corylus Avellana</i>	-14	-15	January.
2.	<i>Ulex europaeus</i>	+36	-16	February.
3.	<i>Draba verna</i>	+30	-34	February.
4.	<i>Ulmus campestris</i> [<i>U. sativa</i>]	-4	-35	February.
5.	<i>Taxus baccata</i>	+17	+1	February.
6.	<i>Ranunculus Ficaria</i>	+8	-26	February.
7.	<i>Mercurialis perennis</i>	+7	-25	March.
8.	<i>Anthriscus sylvestris</i> [<i>Chaerophyllum sylvestre</i>]	+10	-34	March.
9.	<i>Salix Caprea</i>	+2	-1	March.
10.	<i>Linaria Cymbalaria</i>	+42	-82	March.
11.	<i>Callitha palustris</i>	+16	0	March.
12.	<i>Anemone nemorosa</i>	+15	-4	March.
13.	<i>Potentilla Fragariastrum</i>	+15	-5	April.
14.	<i>Nepeta Glechoma</i> [<i>hederacea</i>]	+11	-18	April.
15.	<i>Primula veris</i>	+3	-9	April.
16.	<i>Sisymbrium Alliaria</i>	+13	-12	April.
17.	<i>Prunus spinosa</i>	-13	-23	April.
18.	<i>Saxifraga tridactylites</i>	+13	+1	April.
19.	<i>Erodium cicutarium</i>	+9	+2	April.
20.	<i>Scilla nutans</i> [<i>S. non-scripta</i>]	+13	-20	April.
21.	<i>Ranunculus auricomus</i>	+8	-15	April.
22.	<i>Cardamine pratensis</i>	+23	-5	April.
23.	<i>Stellaria Holostea</i>	+17	-15	April.
24.	<i>Plantago lanceolata</i>	+14	-8	April.
25.	<i>Geranium lucidum</i>	+5	-8	April.
26.	<i>Ranunculus acris</i>	+11	-11	April.
27.	<i>Veronica Chamaedrys</i>	+12	-7	April.
28.	<i>Pyrus Malus</i>	+11	-7	May.
29.	<i>Arum maculatum</i>	+8	-2	May.
30.	<i>Lychnis dturna</i> [<i>L. dioica</i>]	+23	-10	May.
31.	<i>Geranium Robertianum</i>	+15	-10	May.
32.	<i>Syringa vulgaris</i>	+6	-11	May.
33.	<i>Aeschylus Hippocastanum</i>	+6	-6	May.
34.	<i>Viburnum Lantana</i>	+11	-3	May.
35.	<i>Ajuga reptans</i>	+4	-9	May.
36.	<i>Viola sepium</i>	-1	-10	May.

No.	Plant's Name.	Difference in Days from the Average.		Month for Average Flowering.
		1922.	1923.	
37.	<i>Barbarea vulgaris</i> [<i>B. Barbarea</i>]	+15	-9	May.
38.	<i>Lycium barbarum</i> [<i>L. chinense</i>]	+9	-2	May.
39.	<i>Crataegus Oxycantha</i> agg.	+6	-7	May.
40.	<i>Cytisus Laburnum</i> [<i>Laburnum Laburnum</i>]	+8	-10	May.
41.	<i>Trifolium pratense</i>	+10	-5	May.
42.	<i>Galium Aparine</i>	+4	+5	May.
43.	<i>Potentilla Anserina</i>	+9	+3	May.
44.	<i>Chrysanthemum Leucanthemum</i>	+8	-4	May.
45.	<i>Veronica Beccabunga</i>	+3	+2	May.
46.	<i>Sambucus nigra</i>	0	-3	May.
47.	<i>Lychnis vespertina</i> [<i>L. alba</i>]	+6	-4	May.
48.	<i>Lotus corniculatus</i>	-4	-3	May.
49.	<i>Lychnis Flos-cuculi</i>	0	+1	May.
50.	<i>Viburnum Opulus</i>	+1	-6	May.
51.	<i>Hieracium Pilosella</i>	-1	+5	May.
52.	<i>Trifolium repens</i>	-4	-4	May.
53.	<i>Silene inflata</i> [<i>S. angustifolia</i>]	-2	+6	May.
54.	<i>Bryonia dioica</i>	-6	-3	June.
55.	<i>Nasturtium officinale</i> [<i>Radicula Nasturtium</i>]	-3	-18	June.
56.	<i>Solanum Dulcamara</i>	-3	0	June.
57.	<i>Rosa canina</i>	-5	-1	June.
58.	<i>Papaver Rhoeas</i>	-7	+5	June.
59.	<i>Orchis maculata</i> [<i>O. Fuchsii</i>]	+1	+7	June.
60.	<i>Myosotis palustris</i>	-1	+2	June.
61.	<i>Tamus communis</i>	-8	+5	June.
62.	<i>Pastinaca sativa</i> [<i>Peucedanum sativum</i>]	-12	-32	June.
63.	<i>Lathyrus pratensis</i>	-2	+7	June.
64.	<i>Sedum acre</i>	-4	+12	June.
65.	<i>Cornus sanguinea</i>	-4	+7	June.
66.	<i>Stachys sylvatica</i>	-2	+6	June.
67.	<i>Heracleum Sphondylium</i>	0	+4	June.
68.	<i>Prunella vulgaris</i>	-1	+12	June.
69.	<i>Ligustrum vulgare</i>	-11	+12	June.
70.	<i>Convolvulus arvensis</i>	-7	+18	June.
71.	<i>Astragalus glycyphyllos</i>	-7	+11	June.
72.	<i>Centaurea nigra</i>	-4	+11	June.
73.	<i>Ballota nigra</i>	-3	+21	June.
74.	<i>Scabiosa arvensis</i>	+2	+9	June.
75.	<i>Malva sylvestris</i>	+1	+14	June.
76.	<i>Galium Mollugo</i>	-10	+10	June.
77.	<i>Lapsana communis</i>	-6	+8	June.
78.	<i>Vicia Cracca</i>	+16	-2	June.
79.	<i>Agrimonia Eupatorium</i>	+3	+8	June.
80.	<i>Spiraea Ulmaria</i>	+4	+7	June.
81.	<i>Carduus arvensis</i> [<i>Cirsium arvense</i>]	+4	+11	June.
82.	<i>Achillea Millefolium</i>	-11	+8	June.
83.	<i>Galium verum</i>	-6	+12	June.
84.	<i>Ononis arvensis</i>	-9	+10	June.
85.	<i>Daucus Carota</i>	-1	+1	July.
86.	<i>Convolvulus sepium</i> [<i>Folculus sepium</i>]	-14	+3	July.
87.	<i>Carduus lanceolatus</i> [<i>Cirsium lanceolatum</i>]	+7	+4	July.
88.	<i>Epilobium hirsutum</i>	+8	+4	July.
89.	<i>Calamintha Clinopodium</i> [<i>Clinopodium vulgare</i>]	0	-3	July.
90.	<i>Artemisia vulgaris</i>	+4	-7	July.

FOLIATION.

	1922.	1923.	Difference.
Elm, showing green appearance,	May 7	May 1	-7
Elm, full leaf	May 15	June 9	+15
Chestnut, quarter leaf	May 8	April 22	-26
Hawthorn, half leaf	May 18	April 18	-30
Lime, full leaf	May 25	May 9	-16
Plane, leaf	June 1	June 14	+13

+ means 1923 is later, and - means earlier.

My friend, Mr Bellamy, drew up this paper for "The Flora of Oxfordshire," but the exigencies of space prevented its inclusion. Its interest, however, is more than local, and it is inserted here as a very valuable contribution to the subject to which Mr Bellamy has given unwearied pains, and it would be a real loss if it were not published. The editor has merely added as synonyms the names as they appear in "The Plant List."

A VISIT TO THE CANARIES.

By G. CLARIDGE DRUCE.

In March 1927 I started on a long contemplated visit to the Canaries. The fear of the horrors of the "Bay" had hitherto led to its postponement. However, as in later years one had become in some way a better sea man, and as I wanted to pave the way for a still longer voyage to Buenos Ayres, we took a passage on the Nelson Line. On reaching Tilbury we found a very comfortable vessel in the "Highland Piper," but, as one's luck is, also a gale blowing up, which, when we reached the North Foreland, had intensified to hurricane violence. However, the good boat bore it splendidly, and we were able to sit down to dinner, without fiddles. What a comfort it is to be free from music at meals! Nothing suffered but a bottle of Moet, and even that was not entirely lost. There was great difficulty and real danger (not in any way due to the Moet) in reaching one's cabin, which was on the outer deck. Thanks, however, to a handy-man, it was duly entered. One may say that so high was the wind which was in our teeth—or where teeth should be—that instead of getting to the Canaries in six days, we were more than seven, despite the storm dropping after the second day.

In 1908 J. Pitard and L. Proust published "Les Iles Canaries Flore de L'Archipel," a volume of 502 pages, with some good illustrations of plants growing *in situ*. It begins with the botanical history of the islands and their early explorers, followed with particulars relating to the geography and topography. The group of islands is situated between 29.25° north and 27.38° south latitude, and between 15.40° and 20.30° longitude, the African Coast being within 105 kilometres. In this Archipelago there are 3 groups. (1) the Central, comprehending Teneriffe and Grand Canary; (2) the Western, with Palma, Gomera, and Ferro; and (3) the Eastern, with Fuerteventura, Lobos, Lanzarote,

Graciosa, etc. Of these the largest is Teneriffe, 83×51 kilometres, followed by Grand Canary, 50×46 ; Lanzarote, 59×18 ; and Palma, 46×22 . In superficial area Teneriffe is 1946 kilometres, Fuerteventura 1722, and Grand Canary 1376. They are very sunny islands, with a small rainfall. Teneriffe has, on an average, only 66 days on which rain falls. They are volcanic in origin and the soils are chiefly acid, but there is porphyry and basalt, which give a basic element. About 1350 species of plants have been recorded as native or "spontaneous." Of these 350 are ubiquitous, 534 belong to Mediterranean types, and the very large number of 468 are endemic in the Atlantic group. They are made up of 1098 Dicotyledons, 205 Monocotyledons, 6 Conifers, and 43 Vascular Cryptogams. The largest family is Compositae with 176 species; followed by Leguminosae 128, Gramineae 93, Labiatae 83, Crassulaceae 66. (Tunis with 1947 species has only 15 of these). The predominant species in the Canaries belong to the Labiatae, Crassulaceae, Euphorbiaceae, and Solanaceae; in Marocco the order is Caryophyllaceae, Scrophulariaceae, Ranunculaceae, Rubiaceae, and in Tunis Leguminosae, Gramineae, Cruciferae, and Umbelliferae. Endemism diminishes eastwards. Tunis, with 1947 species, has 28 endemic species, while Algeria, with 3800 species, has only one.

The authors detail the characteristic plants of the various zones.

i. Maritime. In this area Mosses and Hepatics are rare, but Lichens are very common. A considerable extent of the area is dry, rocky, hilly ground with no verdure. At the base of the cliffs among debris grow many interesting species, such as *Retama*, *Ferula Linkii*, etc. What in Devon would be wooded coombs are here dry Barrancas with steep, in some instances precipitous, sides, and in these grow many very interesting plants, each Barranca seeming to produce something different from the other.

The dry sand-dunes appear very barren, but there among other plants grow rare *Frankenias* and *Tamarix canariensis*.

What the authors call "Prairies" are of limited extent, but at 700-900 feet about Areucas they are quite flowery with plants of the Mediterranean region predominant. As "satellites" of culture again come with this Mediterranean element—*Delphinium Ajacis*, *Glaucium corniculatum*, *Scandix*, *Centaurea melitensis*, etc., and, as still more linked up with man and his operations, the Chenopods, *Urtica membranacea* and *Stachyoides*, *Marrubium*, *Verbena*, *Hyoscyamus* and *Datura*, while the house-tops and walls are often brilliant with species of *Aichryson* and *Aeonium*, the varieties of which are as puzzling as those of our *Hieracium* and *Taraxacum*.

ii. The Sylvestral Zone is situate high up the Grand Canary. The Laurel Forest at Monte Doramas is 2200 ft. up, at San Mateo 4000 ft., and the Pine Woods about 3300 ft. These are rather difficult to reach, but are very attractive, for here grow species of *Cistus*, *Genista*, *Globularia* and *Adenocarpus*. In Teneriffe the beautiful laurel woods of Las Mercedes are situate at about 2800 ft. There in the woodlands are very many endemic species, and three out of the seven species of orchids.

iii. The Subalpine Zone, from 6000 ft. up.

The Types of Vegetation—Mediterraneo-Canariens. Under this is

(1) Marocco-Canariens with 16 species, including *Salix canariensis*, *Cytisus albidus* and *Retama microcarpa*. 16 other species are also found in Madeira, Cape Verd, and Portugal.

(2) Saharo-Canariens with 20 species, which include *Tricholaena teneriffae*, *Salvia aegyptiaca* and *Lotus arabicus*.

(3) Ibérico-Canariens, which are poorly represented, include *Prunus lusitanica* and *Davallia*.

The most interesting of all are, of course, the Endemic species, numbering 335 with 30 varieties, which are limited to these islands, Madeira, The Azores, and Cape Verd. There are 134 species belonging to 41 endemic genera. To this rich and interesting flora the authors added very many species. Our old member, the Rev. R. P. Murray, who wintered there for several seasons, made rich collections which are now in the Natural History Museum at Cromwell Road. He contemplated, but never produced, a Flora of the Islands. The number of species in the restricted Canaries is 1352, of which 350 are Ubiquitous, 534 Mediterranean, and 168 Endemic.

The first appearance of Las Palmas as one comes into the harbour at night is very cheerful, as there is a long coast line illuminated with many electric lights in a curving line of beauty. The Metropole is a pleasant place to stay in—good rooms, clean, excellent food, a nice garden and lounge overlooking the sea, as well as a large indoor lounge. The music was good. The vegetation just outside was sadly disappointing, as the adjacent sand-dunes were dirty and bare. Few plants of interest greeted us on our first walk and drive, and such as showed themselves were mostly adventives and ruderals, such as *Chenopodium murale*. On the more lofty eminences two or three species of *Euphorbia* grew, some dismal Caryophyllaceae and the weird *Mesembryanthemum nodiflorum*. The hotel is about midway between the Port and Las Palmas, the latter a pleasant town with public gardens and a fine cathedral, from the tower of which a grand view is obtained of the coast line and the narrow strip of very rich land between the sea and the cliffs. Here grow millions of bananas, a culture introduced or encouraged by Sir Alfred Jones, and now a most remunerative industry. The island seems every prosperous, the people are well dressed, and there are no beggars. Constant fleets of "wahwabs" and trams was always full of travellers as they plied from port to town—about 4 kilometres. As there was no temptation in the way of plants on the route one always chose one or the other of these vehicles. From the town we explored one of the great Barrancas which lead inland. It had very steep cliffs and a sheltered tract of cultivated ground in the middle, where the banana flourished as well as the mesquit, orange, lemon, vine, almond, peach, apricot, pear, quince, locust, olive, fig, date palm, sugar cane, and vegetables galore. The prickly pear, *Opuntia Ficus-indica*, introduced as a food for the cochineal insect, had run rampant on the cliffs, and there was also *O. Tuna*, which had been brought in for the

sake of its spines, which are used to fasten clothes over the other one in order to protect the cochineal insect from the sun. In their upper parts the Barrancas still afford some of the indigenous vegetation, such as *Salvia canariensis*, with elegant foliage, often silvery white underneath, and conspicuous flowers or perhaps more bracts than flowers of pinkish purple, an unrecorded variety of *Fumaria muralis* (Lowe's Pugsl.), *Portulaca*, a dwarfed form of *Helianthemum canariense*, *Poly-carpon*, *Rhamnus crenulata*, *Retama Rhodorrhizoides*, *Ononis reclinata*, *Melilotus indica*, *Psoralea bituminosa* var. *palestina*, *Carduus clavalatus* (one of the many endemics), *Galactites*, *Centaurea melitensis*, *Helminthia Echioides*, *Zollikoferia spinosa* (abundant), *Verbena supina* and *Euphorbia balsamifera*. On the dry hilly ground *Plocamium pendula*, a bushy plant, as unlike any of our Rubiaceae as it is possible to conceive, grew in great quantity. It was only excelled in numbers indeed by the masses of *Euphorbia balsamifera* and *Zollikoferia*, the latter occasionally infected with the parasitic *Cuscuta*. Orchids are few and rare, but the *Agave* is very common and makes a conspicuous feature in the vegetation, and here and there are the bright flowering spikes of *Aloe vera*, both too succulent for collecting. Here I obtained a solitary plant of *Carex vulpina*, which we afterwards found in better condition at San Felipe. It is a plant which for the Canaries only rested upon Déspreaux's unlocalised record. *Picris Echioides* grew in the Barranca as did *Campanula Erinus*. The Banana groves and the well-tilled arable soil about Las Palmas yield a few species including *Bromus Unioloides* (new to the island), *Chenopodium murale*, *Glaucium corniculatum*, *Sisymbrium Irio*, *Brassica incana*, *Portulaca oleracea*, *Melilotus indica*, *Asteriscus aquaticus*, *Bidens pilosa* var. *discoidea* Pitard, *Calendula arvensis*, *Sonchus oleraceus* var. *ciliatus* (Lam.), which I believe is a good species, *Urospermum Picroides*, *Anagallis foemina*, and *Borago officinalis*.

In company with two of our members, the Misses MacDougall, we made a very interesting excursion by motor along the coast to Telde, under a fine range of cliffs which have some most interesting plants, including an endemic and handsome Umbellifer and a fairy-like *Limonium—pectinatum*, with foamy bluish-pink flowers. Telde, four hundred feet up, is a charming place situate in an area in which Tomato vegetation is dominant and the almond trees are very fine. There we saw the magnificent and cactus-looking *Euphorbia canariensis*. The striking *Salvia canariensis*, both as the type and the variety *villosa* Pitard, which has both sides of the leaves coloured white, was in plenty. Here, too, was the almost tree-like *Rumex Lunaria*, *R. vesicarius*, *Andropogon hirtus* and many others occurred. The well engineered road is constructed along the coast in bold sweeps, affording delightful views, often of a half-eastern kind, the white flat-roofed houses and the palms lending their help in producing the effect. The white garden walls, over which hang the Ivy-leaved and other Geraniums, that most beautiful climber *Bignonia venusta*, and the trumpet shaped, rich purple-blue blossoms of *Thunbergia* make a brilliant display. The oranges of Telde are amongst the best in the

world. I took 12 dessertspoonfuls of juice out of a single orange. Our destination was San Bartolemeo, and to reach it the road took us over a pleasing country with much and peculiar vegetation. Here grew *Phagnalon purpurascens*, *Tamarix gallica* var. *canariensis*, *Hedypnois cretica*, *Echium Decaisnei* (altitude 3000 ft.) and *Filago gallica*. At San Bartolemeo a short walk took us up a ravine where, on a precipitous wall of rock, grew the Canary *Sonchus*. Here also occurred *Cerastium viscosum* as a robust roundish-leaved plant, *Lavandula multifida* and *Veronica Anagallis* (a second locality). Right ahead on the mountain slope grew *Pinus canariensis*, while close by were *Poterium verrucosum* (a new plant for the Canaries), *Phagnalon purpurascens*, *Inula viscosa*, *Senecio Webbii*, *Rumex vesicarius*, *Scirpus Holoschoenus* var. *romanus* (L.) (new to the island), that lovely grass, *Lamarkia aurea*, *Adiantum Capillus-Veneris* and *Carduus pycnocephalus*. On the high rocks above grew *Juniperus Cedrus*, now nearly extirpated.

About Santa Lucia, a pretty village at about 2200 ft. altitude, situate amid trees and with pleasant walks, grow *Fumaria parviflora*, *Reseda scoparia*, *Malva nicaeensis*, *Oxalis corniculata*, *Asteriscus aquaticus*, *A. stenophyllus*, *Absinthium canariense*, *Rhagadiolus stellatus*, *Anchusa italica*, *Echium onosmifolium*, *Convolvulus Siculus*, *Linaria scoparia* and *Andropogon hirtus*.

From Las Palmas a pleasant drive takes one up to Monte (1300 ft.) by Tafira (1000 ft.) where there are large Eucalyptus trees, and Santa Brigida, a good wine producing area. At the latter place there is an hotel under the same proprietorship as the Metropole, which has a wonderful garden and pergolas bright with many coloured creepers.

From Monte one can visit the Great Caldera, the crater of an immense volcano, by a path amid scarlet Geraniums where *Cuscuta* was growing over *Psoralea* and *Pelargonium*, and where the Prickly Pear abounds. Here we found *Sagina apetala* for which no locality is cited in the Flora. On the border of cultivated fields we found *Dracunculus canariense*, a thin edition of *Dracunculus Dracunculus* (L.), *Arisarum Arisarum* (L.), and in the fields *Hyacinthus comosus*, *Gladiolus*, *Malva nicaeensis*, *Vicia benghalensis* in glorious colour, *Bidens pilosa*, *Ammi majus*, *Ranunculus muricatus*, *Lathyrus Aphaca*, often very pale yellow, *Bryonia verrucosa* All., not unlike the British plant, *Chrysanthemum Myconis* of the same glorious yellow as *segetum*, but with foliage less cut and of a firmer texture, *Schizogyne sericea*, *Polycarpon tetraphyllum*, *Tunica prolifera*, *Scorpiurus sulcatus*, *Stipa tortilis*, and a new variety of *Hordeum marinum*. *Zannichellia palustris* occurred in a small tank. Near Monte *Eschscholzia Douglasii* and *Erigeron mucronatum* (both new adventures to the flora) have established themselves and a rocky eminence above Santa Brigida, which commanded a very beautiful and extensive view, gave *Cervicina Lobelioides* (L.).

San Mateo (2670 ft.) with its groves of blossoming Walnuts and Pines has a rich flora, including *Persea indica*, *Parietaria debilis*, *Ophrys bombyliflora*, *Epilobium parviflorum*, which does not seem to have been

recorded for this island, *Antirrhinum majus*, *Notoclaena Maranta*, *Aspidium canariense*, *Davallia* and *Selaginella denticulata*. On the house-roofs here there was plenty of a charming *Sedum*, and on a steep hillside was the splendid *Sonchus congestus* with flowers like, but larger than, *arvensis*, the phyllaries sunk in white cotton wool. At and about Tafira there were most interesting plants. In a ravine we got the special Canary Bell-flower, a tall climbing shrub with drooping bells recalling a *Datura*. It is the endemic *Canarina Campanula* (L.) Druce, locally called Bicacarro. Here, too, was *Orobanche Schultzii*. High up above the curving sweeps the road led from San Mateo to Lagunetta. On the way a ravine showed us for the first time the glorious *Ranunculus cortusifolia* with flowers 2 inches across of the most glossy gold and with very handsome foliage. A damp hill slope was covered with them. Some of the plants were a yard high. At the base of the gorge was a *Myosotis*—like *sylvatica*, and a somewhat perilous descent secured specimens proving it to be *M. macrocalycina*. Some of the roadside banks were gay with spring flowers (they were over blossom at the coast-line) and they reminded me of a headland in Jersey. *Tillaea*, *Agrostis caryophyllea*, *Helianthemum guttatum* and *Trifolium stellatum* were represented, and there was a pretty form of *Cynosurus echinatus* with reddish hairs—*purpurascens* Ten. Much *Echium* occurred and here and there grew colonies of *Iris florentina*—an introduced plant. There were masses of *Hyacinthus comosus* in some of the fields, and the roadsides were bordered with a white-flowered leguminous shrub—*Cytisus proliferus*. *Festuca Myurus* was luxuriant. Here, too, grew that pretty *Fumaria coccinea* Lowe and *F. muralis*, a *Mathiola*, very like *incana*, with narrower and with less hoary leaves, *Tunica prolifera* and *Feronica Anagallis* agg. The endemic *Cineraria*, *Kleinia Kleinia* (L.), was in plentiful flower, but only with white, dull pink or red flowers, never with blue. *Filago spathulata*, *F. gallica*, *Preauxia jacobaeifolia*, *Asperula arvensis*, *Trifolium striatum*, *Lathyrus Ochrus* and *Cardamine hirsuta* (4200 ft.) were obtained, and we also here got an addition to the Island flora, *Chaerophyllum Anthriscus*.

Teror also gave us some good plants. *Briza maxima* var. *maderensis*, *Lamarkia aurea*, *Iris florentina*, *Poa bulbosa* in its only published locality, *Koeleria Phleoides*, *Setaria glauca*, *Fumaria muralis* var. *Loweii* and var. *laeta* Pugsl., *Silene Cucubalus* var. *rubra* (DC.), *Artemisia canariense*, *Senecio Teneriffae*, *Tillaea muscosa*, *Psoralea bituminosa*, *Vicia benghalensis*, *Lathyrus Aphaca*, *Trifolium arvense* var., *T. angustifolium*, *Vinca major* and *Rumex bucephalophorus* made a nice gathering.

There was a great delight in these expeditions from Lagunetta as, at an altitude of over 4400 ft., the air was clear, cool, and invigorating, and the views extensive and charming. From this place the Cross of Tejada (5740 ft.) can be reached in about two hours. The isolated Roque Nublo (6110 ft.) rises abruptly above. The view is magnificent as from here in favourable weather the Peak of Teneriffe is itself the dominating feature rising as it seems to do abruptly from the blue sea.

San Felipe was another expedition of great interest. It takes quite a long day as one passes many interesting places. Our first stop was near Areucas with its modern but fine cathedral—a populous city of about 13,000 people. It is a town of industrial importance. Around it is a great area devoted to the cultivation of the Cochineal industry—an industry which was nearly starved out by the competition of aniline colours but it has now, through the fashionable cult of the lip-stick, once more come into its own since the carmine yielded by the *Coccus Cacti* has a purity and brightness of colour which carries the day.

Around Areucas are many interesting plants. There we found *Ononis mitissima*, *Stachys hirta*, *Phalaris caerulea*, *Ammi majus*, *Webbia canariensis*, *Salvia Horminoides*, *Polygonum heterophyllum* Lindm., *Emex spinosus*, *Rumex pulcher*, *Agrostis verticillata*, *Bromus madritensis*, etc. We stopped at Agaete for lunch which we enjoyed on the shores of a tiny harbour and then proceeded to Guia where there were many most interesting species, including *Centaurea melitensis*. The road led close by the sea or with only a strip of land separating us from it and the overhanging cliffs, which gave a home for many rarities. Here we saw the endemic monotypic genus, *Astydamia canariensis*, an Umbellifer with Crithmum-like leaves which proved a most refractory plant to dry. Its loose umbels recall *Laser*. At San Andraea we got *Juncus acutus* and a fine *Echium*. On barish soil there was much *Ononis Natrrix* with deep orange-coloured blossoms, *Foeniculum piperitum*, *Chrysanthemum frutescens*, *Hyoscyamus albus*, *Micromeria thymoidea*, the endemic *Bosia Yervamora*, which has an analogue in Cyprus, *Euphorbia aphylla*, *E. terracina*, *Salix canariensis*, *Asphodelus fistulosus* and *Piptatherum caerulea*.

The Barranca of San Felipe is very picturesque. The steep side of the well wooded ravine gave us much to collect. A white-blossomed cylindrical shrub about 10 ft. high was growing deep down, but my adventurous helper got a branch and it proved to be *Rhodorhiza florida*—a member of a Convolvulaceous genus. At a distance it recalled white blossomed *Nerium*. The Sonchi here are most interesting. We got the two endemic treasures—*S. canariae* Pitard and *S. neglectus*, the former looking as if the glossy leaves had been varnished. Here we added a plant to the flora of the Islands—*Juncus subnodulosus*. *Apium nodiflorum*, which is rare, and *Carex vulpina*, which has no localised habitat in Gran Canary, were also seen. Among other species were *Ferula Linkii*, *Phagnalon saxatile* var. *intermedium*, *F. purpurascens*, *Odonospermum spinosum*, *Convolvulus siculus*, *Orobanche ramosa*, *Salvia canariensis*, *Stachys hirta*, *Micromeria Linkii*, *Asparagus umbellatus*, *Allium trifoliatum*, *Scilla hoemorrhoidalis*, *Polypogon monspeliense*, *Briza maxima* var. *maderensis*, *Helianthemum guttatum* and *Silene gallica*.

From Las Palmas we sailed to Santa Cruz in Teneriffe having a delightful journey in a clean boat. It is a busy port and the export of bananas, onions and potatoes is very considerable. We had several pleasant walks in the environs, but the plants we gathered were not

numerous, and many were adventive. The pleasantly situated town of Laguna is within easy reach by trams and here the vegetation is richer. The Cathedral offers many points of interest, and a visit was paid to the great Dragon Tree, *Dracaena Draco*, probably the largest existing example in the island. It has often been described. Then we motored to Orotava by way of Tacaronte, a delightful drive which afforded us the opportunity of gathering near Laguna, *Sonchus congestus* and *Senecio Tussilaginis* with white and purplish flowers. Near Tacaronte we found the glorious *Lathyrus tingitanus* and *Daphne Gnidium*.

We stayed at the Hotel Victoria in the Villa Orotava on account of its marvellous garden which once belonged to the Marquesa de la Quinta Rosa. It is laid out in terraces where the Teneriffean *Lotus peliorhynus* (which seems to have become extinct in the wild state) and the giant *Echium* are in most splendid show. Near the top of these terraces is a white marble monument to the memory of one of the family. He was a freemason—its emblems, the square and the compass, are carved on the sides of the monument, and, as such, are like anathema to the religious powers; therefore he was not allowed to be buried in consecrated ground, but never could ground be more consecrated than this with flowers where he now rests. The air was heavy with perfume from lilies, heliotrope, lavender, rosemary, myrtle, roses, violets, and there are shrubs and trees of Acacia, orange, lemon, *Erythraea*, *Wistaria*, *Bignonia*, etc. It was a glorious place and did much to compensate for the commissariat. Among the plants we got at Orotava were *Sagina apetala*, *Oxalis corniculata*, *Melilotus indica*, *Caucalis infesta*, *Lactuca Serriola*, *Nicotiana Tabacum*, *Calceolaria Chelidonioides*, *Salvia Horminoides*, *Parietaria debilis*, *Carex divulsa*, *Cymosurus echinatus* var. *purpurascens* Ten., *Urtica morifolia* and *Ricinus communis*.

Owing to the cloudy weather, for we had come from the sun to the shade, an expedition to the Peak was out of the question. Indeed one day there was snow to within about 1800 feet of the sea and the lower hills were snow-sprinkled, so we confined our attention to the Barrancas where many interesting and endemic plants were gathered.

A special expedition was made to the Mercedes Forest and its waterfall, now, alas, tapped for electric light. In the woodlands, at about 2500 ft., we greeted the striking, but rather sombre-coloured, *Geranium anemonifolia* and here we saw the curious tree, *Gesnoninia arborea*. *Myrica Faya*, *Hypericum glandulosum*, *Adiantum reniformis*, *Woodwardia*, *Erica arborea*, *Cedronella canariensis*, *Urtica morifolia*, *Androsaceum Webbiana*, *Ilex platyphylla*, *Viburnum rugosum*, *Persea indica*, *Laurus canariensis*, *Semele androgyna*, *Peristylus cordatus*, *Selaginella* and *Anagramma leptophylla* made a goodly gathering.

A large number of plants have still to be determined. The following are, where starred, new to Pitard's Flora, or were found in new localities. The sign † signifies adventive.

**Eschscholzia Douglasii* Walpers. Above Monte, Canary, spreading there.

**Fumaria coccinea* Lowe, ex Pugsl. Lagunetta, Canary, a pretty species.

F. muralis Sond., var. *Lowei* Pugsl. Tafira, Teror, Canary; *Orotava, Teneriffe.

*Var. *laeta* Pugsl. San Mateo, Lagunetta, Canary.

**F. parviflora* Lam. Orotava, Teneriffe.

(The Fumarias have been named by Mr Pugsley.)

Rapistrum rugosum All. Las Palmas, Canary.

**Cardamine hirsuta* L. At 4000 ft. Lagunetta, Canary.

**Bursa Druceana* (E. At.). Laguna, Teneriffe.

**B. turoniensis* (E. At.). Lagunetta, San Bartolemeo, Canary.

Silene angustifolia S. & T., *var. *rubra* (DC.) Dr. Teror, Canary.

**Stellaria media* Cyr. Tafira, San Bartolemeo, Canary.

**Cerastium viscosum* L. Tafira, San Bartolemeo, Canary.

Sagina procumbens L. San Mateo, Canary; *Orotava, Teneriffe.

Spergula vulgaris Boenn. *Santa Brigida, Teror, etc., Canary.

Malva nicaeensis All. San Lucia, Santa Brigida, Canary (unlocalised).

Oxalis corniculata L. *San Lucia, Tafira, Canary.

Medicago arabica Huds. Tafira, Canary, a rare plant in the islands.

Melilotus indica All. Guia, Canary.

Trifolium angustifolium L. Teror, Canary.

Vicia benghalensis L. Lagunetta, Canary, only one locality given in the Flora.

**Lathyrus Ochrus* L. Lagunetta, Canary.

**L. tingitanus* L. Near Tacaronte, Teneriffe.

**Poterium verrucosum* Spach. San Bartolemeo, Canary.

Aichryson dichotomum DC. San Felipe, Canary.

A. punctatum W. & B., var. *subvillosum* Borm. Tafira, Canary.

Aeonium caespitosum W. & B. Lagunetta, Canary.

**A. canariense* W. & B. Monte, Canary.

Greenowia aurea W. & B. San Felipe, Canary, one solitary locality given in the Flora.

(The Crassulaceae have been determined by Mr Praeger.)

Lythrum Hyssopifolia L. Tafira, Canary, no locality given in the Flora.

**Epilobium parviflorum* Schreb. San Mateo, Canary.

Callitriche stagnalis Scop. Tafira, Canary, a rare species in the islands.

**Chaerophyllum Anthriscus* (L.) Thell. In some quantity in the streets and about the village of Lagunetta, Canary, at about 4000 ft. New to the group.

Sherardia arvensis L. Teror, Canary.

**Erigeron mucronatus* DC. About Monte, Canary, now naturalised.

**E. bouariensis* L. (or near it). Areucas, Canary.

Sonchus oleraceus L., var. *ciliatus* (Jam.). Las Palmas, Canary; Santa Cruz, Teneriffe.

S. asper Mill., var. *pungens* Bisch. Guinguada, Lagunetta, Canary.

Cervicina Lobelioides (DC.) Dr. Monte, Canary.

Myosotis versicolor Pers. Tafira, Canary.

Cuscuta epithimum DC. On *Pelargonium* and *Galium* at Monte, Canary.

Heliotropium erosum Lehm. Guia, Canary.

Datura Metel L. Las Palmas, Canary; Laguna, Teneriffe.

- **Antirrhinum majus* L. San Mateo, Canary, probably introduced.
 **Linaria Cymbalaria* Mill. Santa Brigida, Canary, perhaps introduced.
Veronica arvensis L. Large specimen at Monte, Tafira, Canary.
V. Anagallis agg. Very glandular, San Bartolemeo, Canary.
Orobanche nana Noé. San Felipe, Canary.
O. Schultzii Mutel. San Mateo, Canary.
Stachys arvensis L. San Mateo, Canary.
S. hirta L. San Felipe, San Mateo, Canary.
 **Chenopodium album* L. Las Palmas, Canary.
 **Chenopodium Pseudo-Borbasii* Murr. Las Palmas.
 **C. lanceolatifforme* Murr, var. *farinosa* Murr. Las Palmas.
 **Polygonum heterophyllum* Lindm. Areucas, Canary.
Rumex pulcher L. Areucas, Canary, no locality given in the Flora.
R. Lunaria L. San Felipe, Canary.
Scilla hoemorrhoidalis W. & B. San Felipe, Canary.
 **Juncus subnodulosus* Schrank. Near San Felipe, Canary, robust specimens.
J. acutus L. San Andraea, Canary.
Zannichellia palustris L. Monte, Canary.
Scirpus Holoschoenus L., var. *romanus* L. San Bartolemeo, Canary.
Carex vulpina L. San Felipe, Canary, unlocalised in Flora.
C. divulsa Stokes. Guinguada, Canary.
Stipa tortilis Desf. Santa Brigida, Canary.

 VERONICA ANAGALLIS L. AND V. AQUATICA BERNH.

 BY C. E. BRITTON.

The distinctions between these two species were first pointed out to British botanists by Dr Druce in *Rep. B.E.C.* 26-27, 1911, where the chief points of differences were contrasted. Of the many more amplified descriptions available, none appear to be so excellent as the accounts of these two forms given by Buchenau, which are as follows:—

VERONICA ANAGALLIS L.

10 to 50 (rarely 100) cm. Usually glabrous, seldom glandular. Stem ascending or erect, simple or branched, slightly quadrangular. Leaves broadly ovate to ovate-lanceolate, usually acute, almost entire or with distant small serrations, the lowest and those of the lateral branches shortly petioled, upper sessile. Inflorescence many-flowered. Corolla medium, bluish-lilac. Infructescence compact (pedicels slender, spreading at an acute angle, towards the extremity usually curved upwards). Capsule ovoid-orbicular to orbicular, acutely emarginate, equalling the narrowly oblong sepals.

V. AQUATICA Bernh.

10 to 50 (seldom 100) cm. *Mostly glandular, seldom glabrous, solitary, with woolly hairs at base (var. dasyppoda Uechtritz). Stem as in preceding. Leaves all sessile, oblong-ovate to lanceolate, acute, entire or finely serrate. Infructescence finally very lax (pedicels stouter, straight, or towards the extremity somewhat ascending, almost divaricate). Capsule orbicular-elliptical, usually exceeding the ovoid-oblong sepals. Corolla small, pale reddish.*

Buchenau, Fl. N.W.-Deutsch. Tiefeb. Krit. Nachtr., 57, 1904.

In the close study of these two species published by Ernst Kroesche in *Allgem. Bot. Zeitschr.*, 1912, that author distinguished three sub-species of *V. Anagallis* and a number of "formen" belonging to this and to *V. aquatica*. It is evident that these "formen" are of very unequal value, comprising mere states, well-marked varieties, a possible hybrid, and one plant that should stand as an allied but independent species. Forma and variety appear to be used as interchangeable terms.

A summary of the sub-species and "formen" is here given.

V. ANAGALLIS L.

Sub-sp. I., GENUINA Kroesche.

Mature capsules borne on pedicels directed obliquely upwards and sharply curved; fruiting raceme compact, capsule obtuse. The typical form is said to be distinguished by the leaves of the middle part of stem being elliptical-obovate or ovate, obtuse or shortly acute; capsule emarginate, ovoid-orbicular, usually 3-3.5 mm. broad and long, as long or shorter than the sepals, corolla (when pressed flat) 5.5-7 mm. in diameter. Inflorescence glabrous, sepals acute or sub-acute. The colour of corolla ranges through pale lilac, blue, pink, to white. The names of f. *procerifolia* and f. *angustifolia* denote more slender plants.

Forma *longicarpa* differs from the two preceding by the elliptical capsule, not or scarcely emarginate, 3 × 4 mm., often longer than the sepals.

Forma *grandiflora* is also a slender plant, with the corolla 7-9 mm. in diameter. The stem leaves and the sepals are also more drawn-out than in the foregoing.

Forma *undulata* (Wallr.). Leaf-margin undulated, serrate.

Forma *ulvacea* Haussm. Submerged; leaves large, compact, yellowish-green, stems numerous, weak, floating; seldom flowering.

Forma *anagallidiformis* Bor. Inflorescence more or less glandular.

Forma *elata*. Whole plant hairy above.

Sub-sp. II., DIVARICATA Kroesche.

Mature capsules borne on pedicels more or less widely spreading, oblique or divaricate, not, or scarcely, curved; infructescence more or less lax. Capsule often sub-acute. Leaves at middle of stem oblong or linear-lanceolate, acute or cuneate-acute.

Forma *typica* has the calyx-segments lanceolate, 1-1.5 mm. broad, acute; the corolla, when pressed flat, 5.5-7 mm. in diameter, pinkish,

with deeper coloured veins; the capsule 3-4 mm. in length and breadth, broadly ovoid or orbicular, sub-acute, not, or only slightly, emarginate. Plant generally robust.

Forma *contigua* differs in the shorter and broader rhomboid-lanceolate sepals. As another form under this sub-species, is placed *V. anagaloides* Gussone, but surely incorrectly, as this appears to be quite a good species.

Sub-sp. III., *AMBIGUA* Kroesche.

Here the pedicels of the ripened capsules are more or less oblique, scarcely, or only slightly, curved, and fruiting raceme somewhat lax. Middle stem-leaves elliptical to oblong-lanceolate, acute. Capsule obtuse or sub-acute.

This includes two forms—(1) *decipiens*, with capsule about 3-3.5 mm. in length and breadth, ovoid-orbicular, sub-acute, never more than slightly emarginate. Calyx segments usually rhomboid-lanceolate, acute. Corolla pale pink, with deeper-coloured veins. Pedicels and base of calyx glandular. (2) *parvicapsulata* has the 2-3 mm. orbicular capsule not emarginate, and the corolla is pale blue with darker veins. The inflorescence is either glabrous or with scattered glandular hairs on the upper pedicels.

V. *AQUATICA* Bernh.

The forma *typica* is marked by the orbicular-elliptical capsule and whitish, reddish, or lilac corolla. Included with this are var. *dasyypoda* Uechtritz with numerous crisp hairs at base of stem; var. *glandulifera* Celak., with inflorescence more or less glandular; and var. *laevipes* Beck, wholly glabrous. In forma *laticarpa*, the capsule is about 3-4 mm. broad and 3-3.5 mm. long, broadly ovoid, usually as long as the sepals. Corolla (when flattened) 5-6 mm. in diameter, pinkish, with darker veins, at times, however, also bluish.

As subordinate forms are placed *sterilis*, with very small capsules and aborted seeds; *acuminata*, with long-drawn-out sepals, and *pilosa*, with spreading hairs on the lower part of stem.

Most British forms of Water Speedwell must be placed to *V. Anagallis*, I think. *V. aquatica* appears to be less common. The great bulk of the first-named would, by reason of the ascending little-curved pedicels, be included in the sub-sp. *ambigua*. Less common are the plants with more or less widely spreading pedicels, which are to be placed with sub-sp. *divaricata*. These are liable to be mistaken for *V. aquatica*, but the slender pedicels and smaller bracts, etc., should prevent this. Well-marked examples of sub-sp. *genuina* appear to be seldom met with.

V. aquatica Bernh., var. *laticarpa* appears to be a well-marked form.

In the determination of all forms, it is of the first importance that the specimens should be well-grown and bearing fully mature capsules, preferably with some of these dehisced, as certain characters are based upon the capsules in this condition.

BOTANISING IN MAJORCA.

By C. D. CHASE, M.C., M.A.

So many English tourists now visit Majorca every spring that a short account of the botany of the island may be of interest. For a serious study of the vegetation of the Balearic Islands the monumental work, in three volumes, of Professor Herman Knoche is indispensable. The following notes of a fortnight's visit to Majorca in April 1928 with a Leplay House party owe much to that work. Though some plants have ceased to flower in April and many others are not yet out, that month is probably best for a botanist's visit to Majorca.

The island is some 60 miles long by 50 broad, with a range of mountains which attain nearly 5000 feet running along its north-west side. The rest is a fruitful plain devoted to the culture of almonds, oranges, figs, carob beans, vines, corn and broad beans. The olive also flourishes, especially on the lower slopes of the Sierra. Not without reason has the island been called the orchard of the Mediterranean. The climate is delightful, and though the mountains are often covered with snow in the winter yet fires are scarcely needed for warmth in Palma and the other towns of the plain. Indeed there was no provision for heating in the many excellent up-to-date schools which we visited.

So fertile is the soil that the garigue or waste scrub-land is not extensive, being found chiefly at the south-west corner and in strips around the coast. The flora of this garigue approximates very closely to that of the south of France. The following were seen in our first walk to Porto Pi and Cas Catala to the west of Palma:—*Pistacia Lentiscus*, *Cistus monspeliensis*, *C. albidus*, *Rosemary*, *Olea silvestris*, *Lavandula dentata* (this Spanish and North African species replaces *L. Stoechas* which is so common in the south of France that a village, Lavandon, has been named after it); *Smilax aspera*, *Daphne Gnidium* (not in flower in April), *Ruta chalepensis*, *Globularia Alypum*, *Rubia peregrina*, *Gladialus Illyricus* (much like *G. segetum*); *Helianthemum laevipes*, *Phillyrea angustifolia*, *Helichrysum Stoechas*, *Asparagus albus*, *A. stipularis* (these two are not in France; the latter when old loses its leaves and is a mass of thorns); *Ophrys speculum* (the commonest member of Orchidaceae); *Orchis coriophora*, *Cneorum tricoccum*, *Osiris alba*, and the grasses, *Andropogon hirtum*, *Lagurus ovatus* and *Stipa juncea*.

On April 12 several hours were spent on the sandy shore which runs from Arenal to the eastern outskirts of Palma. A strip of garigue between the shore and the cultivated land yielded most of the plants enumerated above, with the addition of *Juniperus phoenicea* and *Anthyllis Cytisoides*. The vegetation of the shore itself consisted of *Lotus creticus* in great abundance, with *Medicago marina*, *M. littoralis*, *Passerina velutina* (endemic in the Balearics and closely resembling *P. Tartonreira*); *Crepis bulbosa*, *Anthemis maritima*, *Cakile maritima* and Sea Holly. The shore was covered with masses of egg-shaped bundles of

fibre; these come from the roots of *Poseidonía oceanica*, their shape being due to the action of the waves.

Most of the next day was spent in a car on a visit to Arta and the wonderful stalactite caves, perhaps the finest in Europe. A few interesting plants were seen during a halt made near Arta. The hillsides around that place are covered with *Chamaerops humilis*, the only native European palm. From the fibre of its leaves baskets and other articles are made in the villages. Half an hour spent in some fields of beans and bearded wheat produced a large number of weeds of cultivation to add to my list. Many of these, poppies, fumitories, etc., were old British friends; the rest were chiefly such as would be met with in similar fields in the south of France, e.g., *Trifolium stellatum*, *Anchusa italica*, *Linaria triphylla*, *Allium roseum*, *Reseda alba*, *Muscari comosum*, *Nigella damascena*, *Lathyrus Clymenum*, *Vicia gracilis*, *Euphorbia serrata*, *Specularia hybrida*, *Asperula arvensis*, *Convolvulus Althaeoides*, *Chrysanthemum coronarium*, *Scorpiurus subvillosus*, *Campanula Erinus*, *Bartsia Trixago*, *Sideritis romana*, *Rapistrum rugosum*, *Valerianella discoidea*, *Centranthus Calcitrapa*.

Our next expedition was to Randa, an isolated monastery—crowning a hill in the centre of the island. On its slopes many interesting plants were seen:—*Genista lucida*, a prickly species endemic in the Balearic Isles; *Ephedra fragilis*, a species unknown in France (nearly related to *Equisetum*); *Hedysarum capitatum*, *Paronychia nivea*, *Allium subhirsutum*, *Bifora dicocca*, *Rhagadiolus stellatus*.

By this time we had made up our minds that *Asphodelus microcarpus* must be the national flower of Majorca. We saw it everywhere, along every roadside, in the garigue, all the way up to the highest peaks of the Sierra, where its flowering time is a full month later than in the plain.

On April 17 we took a short trip to Genova, north-west of Palma to see the endemic *Hypericum balearicum*, and found it there in some abundance. According to Knoche, this is one of the three best marked Balearic endemics, being a very distinct species with no close affinities.

The 18th was spent in a very beautiful motor ride over mountain passes to Soller, Deya and Valdemosa; school inspection and conversation with village dignitaries did not leave much time for botanising that day. A halt at La Estaca, overlooking the sea between Deya and Valdemosa produced among other plants—*Brignolia pastinacaeifolia*, *Tragopogon australis*, the parasite *Cytinus hypocistus*, *Lotus edulis* and *L. Ornithopodioides*. At the Port of Soller, a delightful cove reminding one of Iulworth, there was abundance of *Glaucium flavum*.

The next day I took the train to Arenal and had a lonely walk along the coast southwards to the headland, being rewarded by many good plants:—*Salvia clandestina*, with its pale blue flowers which I had seen before at Lavandon in the Midi; *Frankenia pulverulenta*, *Lithospermum apulum*, *Parietaria lusitanica*, *Euphorbia pithyusa*, *Bellium Bellidioides*, *Statice minuta* and *Statice duriuscula*, the two latter hardly in flower.

On April 20 we took a walk from the tram terminus at Son Roca over the wooded hill to Establiments, a rather rough walk but much to be recommended to a botanist. In addition to most of the garigue plants already listed we saw *Atractylis cancellata*, *Bupleurum aristatum*, *Thesium humile*, *Ononis reclinata*, *Ophrys Bertolonii*, *O. tenthredinifera*, *Urospermum Picroides*, *Sedum rubens*, *Limodorum abortivum*, *Serapias lingua* and *S. parviflora*.

The next day a long drive, and several visits to schools, left little time for botanising till we stopped for lunch at the lighthouse of Pollenza, in the north-east corner of the island, nearly 40 miles from Palma. Here for the first time we saw specimens of the curious hedgehog like plants, *Sonchus spinosus* and *Astragalus poterium*.

Knoche's theory is that the form of these plants is due, not to the wind, but to the dryness and warmth, and that possibly also it is assumed as a protection against animals, goats and pigs, the constant foes of vegetation. Other plants seen were the endemic *Aristolochia Bianorii*, with very small leaves; *Vincetoxicum nigrum*, *Althaea hirsuta* and *Crithmum maritimum*, the last growing as usual nearer than any other plant to the tideless sea.

On leaving Pollenza the cars took us up 2000 feet into the heart of the mountains where we were to spend the last few days of our stay at the Monastery of Lluch, now a school for boys who are being trained as choristers. There is also plenty of accommodation for pilgrims, of whom a large number were present. These pilgrims come from all over Majorca in their carts, whole families together, bringing their own food. There is also a restaurant where we had excellent meals for a moderate payment. We took the opportunity during our short stay of climbing several peaks, the highest being the Puig de Massanella, some 4000 feet. April is a little too early for a botanist in the Sierra. The plants seen included *Micromeria filiformis*, *Cyclamen balearicum*, a white endemic form which has been reported from France and is included in Coste's "Flora," but whose existence in that country Knoche denies; *Sibthorpia balearica*, another endemic variety; *Arabis verna*, *Linaria aequitri-loba*, *Santolina Chamaecyparissus* so common in our gardens at home under the name of Cotton Lavender; *Acer italicum*, high up in the fissures of the limestone; the big grass *Ampelodesmos tenax* and another of the hedgehog plants, *Teucrium Marum*, forma *subspinosum*.

PERSONALIA AND VARIOUS NOTES.

ON June 21, W. Jackson Bean was presented with his portrait painted by Ernest Moore which Major Reginald Loder had generously paid for. This portrait will ultimately be the property of the Royal Botanic Gardens at Kew. Lord Lambourne unveiled the excellent painting, which is reproduced in the *Gard. Chron.* ii., 2, 1927. The "spoken words" at the gathering were significant of the respect and esteem in which Mr Bean is held by fellow horticulturists.

PROF. C. H. OSTENFELD in June last gave the Masters Memorial Lecture on "Some Remarks upon Hybrids between Species in Flowering Plants."

SIR SIDNEY HARMER, under the age clause, is retiring as Director of our Natural History Museum at South Kensington, an office which he filled so excellently. However, it will give him more time for his work as President of the Linnean Society, and our good wishes go out to him in his new sphere of labour.

MR GERALD LODER, President of the Royal English Arboricultural Society, has presented a Silver Challenge Cup to New Zealand with the object of encouraging the preservation and cultivation of the native flora of New Zealand. It may be recalled that the islands possess over 100 species of *Veronica*.

WE are glad to see that the Royal Horticultural Society is progressing so favourably. Its membership increased by over 1400 in 1926. Wisely benefited by £12,000 being expended on it, the long overdue Catalogue of over 12,000 volumes in the Lindley Library is practically complete, while the great Index of Pritzel's "Icones" is well within sight. Lord Lambourne, its veteran President, has presented the oil portrait of himself, which was given him by the fellows and friends, to the Society.

MR J. RAMSBOTTOM has been appointed Deputy Keeper of the Department of Botany in the Natural History Museum in Cromwell Road.

MR CHARLES TATE REGAN, Keeper of the Zoological Department, has been chosen to succeed Sir Sidney Harmer as Director of the Natural History Museum, Cromwell Road.

THE Gilbert White Fellowship. Annual Subscription, 7/6. Life Membership, 4 Guineas. Hon. Secretaries—Miss W. M. Danton, 14 Albert Mansions, Albert Bridge Road, S.W.11; G. J. B. Fox, 45 Stanwick Mansions, W. Kensington, W.14. The two addresses given in 1926 and 1927 by the President, Sir A. Daniel Hall, K.C.B., F.R.S., have

been published in pamphlet form and give a charming account of the author of the Natural History of Selborne. He quotes Gibbon's vitriolic remarks about Oxford and its professors which had, of course, a grain of truth. White was educated at Oriel and obtained a College Living at Moreton Pinkney. Northamptonshire, however, could not claim him for White merely farmed it out and got £30 a year by the transaction—for the church no longer vital then exhibited nothing if not examples of pluralism. Sir Daniel gives a graphic account of the countryside of that time. These addresses are quite out of the stereotyped order, and give many vivid pictures of the times in which White wrote his Natural History. The Programme of the Society for 1928 bears testimony to the energy and ability of its officers. Sir W. Martin Conway is the new President.

THE National Museum of Wales was formerly opened by their Majesties on April 21 at a ceremony characterised by great dignity and splendour. Everything went well and "music arose with its voluptuous sound" from a chorus of 300 voices. The building is set in an area which has no equal in any other city or town in Britain, and it is worthy of its surroundings. It has been exceptionally fortunate in its first keeper. It is extraordinary to find that so much of interest has already been brought within its walls. The Botanical Department, under the care of Mr Hyde, is a great success and to this Mr A. E. Wade and Miss Vachell have greatly aided. The beautiful paintings of wild flowers made by Dr Drinkwater find here a fitting resting place.

THE National Museum of Wales. The Twentieth Report, 1926-7, gives an excellent view of the Museum front on the occasion of the official opening. The illustrations in the Report are most excellent. The attendances at the Museum for 12 months is nearly 200,000, an increase of 46,783 over the preceding year. The donations towards the capital expenditure amount to £278,231.

THE public unveiling of the Memorial Windows at Oxford to Sir Christopher Wren, Elias Ashmole, and Robert Plot, was performed by the Chancellor of the University, Lord Cave, on May 13th. The public orator made a witty speech on Dr Plot. The Tradescent window was presented by the Garden Clubs of Virginia and was unveiled by Lord Fairfax in the previous November. Plot's window has, in the surrounding wreath, two plants, *Viola palustris* and *Geranium dissectum*, which "he was the first to recognise as new to the British Flora," but Morison, writing in 1686, says of the *Viola*, "Detecta fuit a Jacobo Bobart decennio abhinc," and he gives Bobart rather than Plot as the discoverer of the *Geranium*. Johnson had included it in his Kentish Catalogue of 1629. *Viola palustris*, too, was doubtless the *V. rubra striata eboracensis* from Yorkshire, described by Parkinson in 1640 (see *Fl. Oxf.* lxxvii.).

SOCIETY FOR PROMOTION OF NATURE RESERVES. President, Viscount Ullswater, G.C.B. Hon. Secretaries, G. H. Smith, D.Sc., Lord Henley, E. G. B. Waldo. Handbook, 1927.

THE NATIONAL TRUST has also issued a brochure on the subject. A gift of £20 to the Trust carries with it a life membership, while £100 entitles the donor to honorary membership. The Annual Report, 1926-7, occupies 100 pages. It includes a view of Tennyson Down, a munificent gift by Lord Tennyson of 155 acres of the magnificent Freshwater Down, in memory of his father. Many other valuable additions have been made during the year including the leasehold of a portion of Ennesdale of which a beautiful illustration is given. Bolt Head is also well delineated. For the purchase of the latter site £1200 is still needed.

WICKEN FEN. Mr J. Stanley Gardiner publishes an account of this Nature Reserve. He mentions that 737 species of Lepidoptera occur, and this number suggests that at least 4000 species of insects occur as well as 161 Spiders, 13 Earthworms, 9 Harvestmen, and 17 Land Molluscs. Slaters, which have nothing to do with houses, are plentiful, each acre of fen-land having about half a million.

BISHOP'S WOOD (Coed yr Esgob), near Prestatyn, Flint, (see *N.W. Nat.*, September 1927), a delightful bit of primitive scrub on steep limestone cliffs facing the sea behind Prestatyn, is now in the possession of the Prestatyn Council, and is to be preserved as a bird and plant sanctuary. Messrs J. D. Massey and W. G. Travis record *Tilia ulmifolia* Scop. (*cordata*), *Pyrus torminalis*, *P. rupicola*, *Prunus Cerasus*, *Cornus sanguinea*, *Euonymus europaeus*, *Taxus baccata* and *Juniperus communis*, while W. Chester and J. D. Massey add *Rubia peregrina*, and Mr Massey *Lithospermum officinale*.

THE Ashridge Estate, comprising about 400 acres, has been acquired by the Zoological Society of London. It is intended to make it a sanctuary not only for the animal kingdom but also for rare plants. It once was the habitat of *Orchis militaris*.

THE Seven Sisters Cliff, Eastbourne, has been saved for the National Trust at the cost of £18,000.

SCARBOROUGH HERB GARDEN. This very useful experiment is under the care of our member, Mr H. M. Hirst, F.R.H.S. He has freely given his services and the necessary expenditure on the garden is to be met by the sale of surplus plants. Any of our members who are cultivating herbs might obtain seeds or plants by applying by letter to 66 Esplanade Road, Scarborough.

MICROSCOPES. Messrs R. & J. Beck, 68 Mortimer Street, London, have now British made objectives—a $\frac{3}{4}$ in. apochromat which resolves the dots in *Pleurosigma formosum*, dot interspaces 36,000 per inch; $\frac{1}{2}$ in. shows resolutions in dots in *Navicula rhomboides*, dot interspaces 66,000 per inch; $\frac{1}{4}$ in. shows resolutions in dots in *Amphipleura Lindheimanerii*, dot interspaces 90,000 per inch.

THE REV. W. KEBLE MARTIN, Coffinswell Rectory, Newton Abbot, is painting British Plants and would be glad if members would send him fresh specimens.

MR F. J. HANBURY, 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 H. BRITTON, 42 Millfield Road, York, is preparing a Flora of Cumberland, and would be glad of any records or notes.

MR T. A. DYMES, F.L.S., Carthona, West Drayton, Middlesex, wants ripe capsules of British Orchids, especially *Malaxis*, *Corallorhiza*, *Cephalanthera longifolia* and *C. rubra*, the Irish *Spiranthes* (north and south), *Listera cordata*, *Epipogium* and *Ophrys Trolhii*.

THE CITY OF LEICESTER MUSEUM (E. G. Lowe, Ph.D., B.Sc., Director).—At the University College is being formed a collection of living plants arranged according to the Families by Mr O. Bemrose, the Museum, Leicester. He is very anxious to obtain seeds and specimens of British Plants, and it is trusted that our members will assist him.

TRANSPLANT COMMITTEE OF THE BRITISH ECOLOGICAL SOCIETY.—
APPEAL FOR FUNDS. As a result of a suggestion by the Director of the Royal Botanic Gardens, Kew, the British Ecological Society have formed a Committee with the object of undertaking experiments on the effect of differing conditions on the form, structure, and other characters of plants of identical genetic constitution. The Committee consists of Prof. A. G. Tansley, Prof. F. W. Oliver; Dr E. J. Salisbury, the President of the Ecological Society; and Mr W. B. Turrill (Secretary). In the first instance it has been decided to experiment on six species, using only plants derived from seed of known origin and genetic constitution, and growing 25 specimens of each species on each of several different soils of selected types, side by side in the same locality. The initial experiments are to be carried out in the grounds of Mr E. M. Marsden-Jones at Potterne, Wilts, and the necessary cost of obtaining and transporting soils and of making the beds is about £200 apart from running expenses. Part of this sum has already been collected but more is wanted and contributions from members of the Botanical So-

ciety and Exchange Club would be gratefully received. Subscriptions should be sent to Mr W. B. Turrill, Hon. Sec. of the Committee, The Herbarium, Royal Botanic Gardens, Kew, Surrey. Cheques and Postal Orders may be crossed "Transplant Committee Fund (c/o Dr A. W. Hill), Barclay's Bank, Ltd., Kew Green Branch." The Director of the Royal Botanic Garden, Kew, strongly supports the foregoing scheme, which we have the pleasure of commending to our readers. It is mainly by comparative cultures of authentically named plants that their true grades can be ascertained, and if a tenth of the time given during the last ten years to laboratory experiments had been devoted to this work, by this time our knowledge of the British flora would have been made vastly more accurate.

CORRECTIONS AND ADDITIONS, 1925 AND 1926 REPORTS.

Report 1925.

- p. 947. Line 13. For "*Stachys*" read "*Salvia*."
 p. 975. Line 7. For "*linifolium*" read "*longiflorum*."

Report 1926.

- p. 63. Line 30. For "*oleraceam*" read "*oleraceum*."
 Line 44. For "*nanus*" read "*minor*."
 p. 73. Line 7. For "appears" read "is."
 Line 43. Add after *macrophylla* "The specimen is, as I predicted, *Lactuca macrophylla*, not *alpina*."
 p. 92. Line 1. For "*Botrychium*" read "*Matricariae*."
 p. 100. Line 27. For "dog" read "hound."
 p. 107. Line 9. For "MONTANA" read "STAGNINA."
 p. 109. Line 24. et seq. For "Geer" read "Glew."
 p. 110. Line 27. For "Cardiff Dock, Glamorgan," read "Colchester, Essex."
 p. 116. Line 33. For "VALERIANELLA" read "VALERIANA."
 Line 35. For "Dalveston" read "Dulverton."
 p. 119. Line 1. For "NEMOROSA" read "NEMORALIS."
 p. 131. Line 25. For "Monmouth" read "Isle of Wight."
 p. 205. Line 4. For "fiftieth" read "fifteenth."
 p. 210. Line 24. For "MANEGAZZIANUM" read "MANTEGAZZIANUM."
 p. 211. Line 33. For "Dagenham, Essex, R. MELVILLE" read "Splott, Glamorgan, R. L. SMITH."
 p. 255. Line 14. The Godalming specimen is "*Stellaria neglecta*," not "*S. aquatica*."
 p. 266. Line 5. Is this not *Steironema ciliatum*?
 p. 269. Line 14 and 20 (teste Lumb) and 270, line 43, are all *E. Kernerii*.

Report 1923.

- p. 218. Line 4. For "BEADELL" read "BIDDISCOMBE."
 Plate II. opposite p. 212 should be titled *BOTRYCHUM MATRICARIAE* (Schrank) Sprengel.

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Centaurea Scabiosa. C. E. Britton, - - - - -	0	1	0
Centaurea Jacea. C. E. Britton, - - - - -	0	1	0
Notes on Nomenclature. Druce, 1914, - - - - -	0	2	6
Avena strigosa. Marquand, - - - - -	0	1	0
Oxford Botanic Gardens. Druce, - - - - -	0	2	0
Nyman's Conspectus Florae Europaeae, - - - - -	5	5	0
B. E. C. Reports, Complete Set, 1879-1925, - - - - -	10	0	0
F. H. Davey's Flora of Cornwall, - - - - -	0	12	6
C. C. Babington's British Rubi, - - - - -	0	3	6