THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1920

(WITH BALANCE-SHEET FOR 1919)

BY THE

SECRETARY,

G. CLARIDGE DRUCE, LL.D.,

TREASURER AND EX-PRESIDENT OF THE ASHMOLEAN NATURAL HISTORY SOCIETY OF OXFORDSHIRE, VICE-PRES. GILBERT WHITE FELLOWSHIP, ETC.

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(VOL. VI. PART I.).

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SECRETARY,

G. CLARIDGE DRUCE,

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BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

THE REPORT OF THE SECRETARY & TREASURER

G. CLARIDGE DRUCE, YARDLEY LODGE, OXFORD,

FOR 1920.

BALANCE-SHEET FOR 1919.

Subscriptions received, -	£119	18	0	Balance due from 1918, -	£5	1 3
Sales of Reports and Advertisements, - -	18	3	6	Printing Reports, &c., -	137	12 6
Balance due to Treasurer,	24	6	5	Expenses of Distribution,	2	15 6
				Postages, Carriages, Stationery, &c., - - - - -	16	18 8
	£162	7	11		£162	7 11

Life Members' Fund, £55 7s : invested (at cost), £35 ; in hand, £20 7s.
Audited and found correct, January 26, 1920.—F. TWINING.

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 London County, Westminster and Parr's Bank, Oxford Branch. Payment in advance for two or more years saves much trouble and expense. Ordinary Member's Subscription, 10/-; Exchange Member's Subscription, 12/6; Entrance Fee, 5/-.

A necessary increase of the price of the subscription, caused by the heavy increase in the cost of printing, paper and postage, has had to be made. As it is, the subscription barely covers the cost of production and there is much leeway to overtake. The Supplement on " The Dubious Plants of Britain," which appeared in last *Report*, was costly and ought to have been held over, but as it was in type it was included. This caused a heavy deficit. Strong pressure has been made to bring out interim Reports, but under the present conditions such a course must be postponed.

The increase in the Subscription—much as I disliked and tried to avoid it—has been readily accepted by our members—so inured are we to sacrifice. It was evident that a Report of the magnitude of our own could not be produced at anything like a five-shilling subscription.

We have to thank Mr J. Walter White and Miss Roper for distributing the 7400 specimens sent in, and for editing the Distributor's Report for 1919. We have also to thank Mr White for kindly supplying members with so many of his beautifully prepared and selected specimens.

The year 1920 was by no means a good one for the botanist. The season was not genial nor, despite the rain, was it favourable for Carices or Grasses, which I have rarely seen in a worse condition on the Scottish hills. The members, however, have been industrious, and I have had the advantage of seeing and assisting to name many thousands of plants. I would ask members to help by sending me well-selected specimens, to which should be tied a small label bearing a number identical with that appended to the plant and retained by the member. It becomes increasingly impossible to return specimens. The greatest care should be taken to see that the specimen sent is the same and bears the same number as that retained. The label sent should have the date, the habitat, the county, &c., on it.

Among the discoveries of the year may be mentioned *Plantago Cynops*, which was discovered in 1902 by Mr C. E. Britton in Kent, on ground now brought under the plough, but re-found this year by a little girl, a protégée of our member, Miss Ridley, under whose auspices Mrs Wedgwood and I saw it in November. It grows in a wild-looking situation. Another good find was that of *Sonchus palustris* in Norfolk by our member, Mr A. Graveson. Its rediscovery in that county gives hope that the Fen Ragworts may yet be re-found. Our members, Mr J. F. Rayner and Mrs Godden have found *Illecebrum verticillatum* in S. Hants and Kent respectively, a notable extension of its range. In company with Prebendary Burdon and Colonel Johnston I was lucky enough to dredge up *Nitella nidifica* in the Loch of Stenness, Orkney, last August. Its only previous record in our islands was an over-ripe specimen found by the Rev. E. S. Marshall in the lagoon north of Wexford Harbour, but it was too poor to figure. In the far distant

Orkneys, it was in good condition and was accompanied by *Chara canescens*, only previously known from Wexford and the south of England. Both these were new to Scotland. In the Shetlands, Prebendary Burdon and myself were successful in gathering *Potamogeton rutilus* (only known previously from Anglesey) and *P. panormitanus*, both new to Shetland. On Cairngorm at over 3000 feet, Mrs Wedgwood and I gathered *Taraxacum croceum*, not hitherto recorded for Britain. It was gathered by me in 1919, and confirmed this year. Among other new Dandelions *Taraxacum naevosum*, which belongs to the Spectabilia, was found in Berkshire. It is a remarkably handsome species. In the canal near Lichfield, Staffordshire, Sir Roger Curtis and I gathered *Potamogeton Lintoni* in its second British locality. As will be seen, a Marsh Orchid has been named *O. purpurella* by our members, the Rev. T. and Mr Stephenson. It may be the *cruenta* of Mueller. A very unexpected record is that of *Lathyrus niger* from a Warwickshire wood. It was seen there in 1913, but our repeated search for it this year proved fruitless.

A specially interesting feature of the year has been the completion of some cultural experiments on the Shepherd's Purse by Dr Almquist, whose laborious research on the subject has already appeared in the *Act. Hort. Berg.*, 1907. The present paper is supplementary to that, and it is pleasing to see that we have in Britain several additional forms.

We offer our sincere congratulations to our members, Mr James Groves and the Rev. Canon Bullock-Webster, on the appearance of the British Charophyta, issued by the Ray Society. This will have permanent value and is a work of which they may be justly proud. It is hoped we may soon see the second and concluding volume. We are also pleased to see the useful volume on the *Flora of Chepstow* by our old member, Dr W. A. Shoolbred. Mr A. R. Horwood has also published a practical volume, " The Outdoor Botanist." The third volume (but second published) of the *Cambridge Flora* has also appeared. This volume, following Engler's system, describes the plants from *Montia* to *Fumaria*, the latter genus being ably written by Mr Pugsley.

Our congratulations are also offered to Dr Craib on his appoint-

ment to the Chair of Botany at Aberdeen University, and to Prof. Balfour on receiving the K.B.E.

1920 has taken a sad toll. We have to deplore the loss of our old Secretary and Honorary Member, the kind-hearted J. Gilbert Baker; that skilful septuagenarian plant limner, A. Montgomery Bell; our *Rubus* specialist, the Rev. W. Moyle Rogers, full of years, who may be said to have remodelled our Bramble arrangement, and who diagnosed many new species and varieties, but only after meticulous care and always with a mind free enough from self-consciousness to reconsider his view under criticism, and to modify his opinions when he—and it was by no means a superhuman task—was convinced they could be improved. Mr H. Messel died prematurely in the summer. He was a botanist who, one had hoped, might have done much for our science. Dr H. J. Clarke, the accurate painter of flowers, passed suddenly from us at his Buckinghamshire home. We also deeply regret the loss of that brilliant writer and adventurous traveller, Reginald Farrer, who died from diphtheria under alien skies in far distant Burma, when his life had hardly begun.

We have secured for our next Distribution, the services of Miss E. N. Miles Thomas, D.Sc., Keeper of the Department of Botany at Cardiff, Miss Vachell and Mr A. E. Wade. Parcels should be sent before December 1, to the Department of Botany, 35 Park Place, Cardiff.

We are under great obligations to the Rev. F. Bennett, Mr C. E. Britton, Mr and Mrs Corstorphine, Mr D. Lumb, and Mr W. H. Pearsall for literary assistance, and to Mr T. Gambier Parry, who has also kindly supplied the Dioscoridean photograph of the Shepherd's Purse.

Could a few more of our active members not take up the study of some of the critical genera? We have already Mr Pearsall working at the Pondweeds and Batrachian Ranunculi; Mr Pugsley, on *Fumaria*, &c.; Mrs Gregory, on the Violets; Dr Drabble, on the Pansies; Mr Bucknall, Dr Drabble and Mr Lumb, on the Eyebrights; F. N. Williams, on *Sagina*; Lieut.-Col. Wolley-Dod, on Roses; Mr J. Wheldon, on *Centaurium*; Mr A. B. Jackson, on *Barbarea;* Mr Turrill, on *Glechoma;* Rev. H. J. Riddelsdell, on Brambles; Drs Salisbury and Moss, on *Salicornia*; Mr C. E. Salmon, on *Limonium*;

Mr C. E. Britton, on *Centaurea*; Mr Groves and Canon Bullock-Webster, on Charas. There are, however, such genera as *Thalictrum*, *Myosotis*, *Mentha*, *Thymus*, *Orobanche*, *Juncus*, *Spergularia*, and *Erophila* which are inadequately worked out. A large number of our varieties require verification. A fresh study of the Hieracia is sadly needed by one who has not only the power to differentiate but the ability to group. I am always glad to see Orchids and Hawthorns, and can obtain continental assistance for Cow-wheats, Shepherd's Purse, Goosefoots, and Cruciferae.

Our new members include:—The Hon. Mrs Adeane, J. H. Adams, Miss Gertrude Bacon, the Hon. Agatha Beaumont, Viscount Bryce, Mrs Cadbury, Lieut. J. A. Codrington, Miss Claridge, Reginald Cory, Miss Cottes, Mrs Debenham, Mrs Dent, W. S. M. D'Urban, Mrs Patrick Ewing, J. Farrer, J. R. Foggitt, A. W. Graveson, B.A., Mrs Godden, C. H. Grinling, M.A., W. E. Groves, Sir H. C. Hawley, Bart., Rev. G. H. Harris, M.A., Miss Hillard, Robt. Hellon, W. H. Jones, Prof. F. W. Keeble, C.B.E., F.R.S., Rev. J. de C. Laffan, Miss Landon, B.Sc., Lord Leverhulme, J. R. Matthews, M.A., F.L.S., W. Miller, Rev. Alan C. Morris, M.A., George Morgan, Miss Noel, Lady Osler, H. Page, Donald Patton, M.A., B.Sc., Major E. Savile Peck, M.A., Prof. R. W. Phillips, D.Sc., Miss Pomeroy, Prof. J. H. Priestly, B.Sc., Alex. F. Roberts, Mrs Russurim, T. Edmondston Saxby, R.W.O., F.R.P.S., W. F. E. Seeley, A. W. Stelfox, Prof. J. Small, M.A., W. R. Sherrin, G. E. Stechert, Miss Muriel Shepherd, J. H. Stephens, E. W. Swainton, Mrs Thompson, C. H. Toke, T. J. Wall, W. Watson, Mrs Wedgwood, J. G. Wilkinson, Miss Ethel M. Williams.

PLANT NOTES, ETC., FOR 1920.

(Mostly New Plants to the British Isles).

9. ANEMONE NEMOROSA L. A form with narrower, more strap-shaped sepals at Weston Birt, Gloster, shown me by Lady Holford in 1920.

47. RANUNCULUS FICARIA L. Some further Notes and Observations, 1917-19. A paper read by A. A. Dallman before the Liverpool Botanical Society in September 1919. Notes on the Phenology and Variation. It was stated that small leaves were observed in Curzon Park, Dingle, Chester, on December 3, 1917. The indication of a monocotyledonous affinity is mentioned as being also evidenced in *Anemone nemorosa* L.

80. PAPAVER RHOEAS L. Mr E. B. BISHOP sent a plant from his garden at Godalming where *Rhoeas*, *dubium* and *orientale* grow together. He thought it was a hybrid of *Rhoeas* with *orientale*. Dr ALBERT THELLUNG names it *P. Rhoeas* L., var. *strigosum* Boenng. The leaf-outline, the appressed stem-hairs and the very slightly longer capsule suggest to me a possible *P. Rhoeas* × *dubium*. The petals, however, are strongly blotched with black at the base. G. C. DRUCE.

98 (2). BIKUKULLA EXIMIA (DC.) Druce. *Diclytra eximia* DC. *Dicentra eximia* Torrey. Alien, North America. Dartley Water Works, near Glasgow, R. GRIERSON. Doubtless planted.

126. RADICULA ISLANDICA Druce, var. MICROCARPA Britton in Rep. B.E.C. 806, 1919. West Barnes, Merton, Surrey. [Ref. No. 2162.] Differs from the type in its shorter and stouter pods, each with a more prominent style. C. E. BRITTON.

140. ARABIS PETRAEA Lam., var. GLABRA Edmondston Fl. Shetl.

25, 1845. See *Rep. B.E.C.* 495, 1910. This plant is scattered over the serpentine at Balta Sound, Unst, and perennates in a curious way. It sends down a stoutish root from its dense rosette of glabrous, rigid leaves, and this penetrates the soil laterally, sending up at intervals, sometimes at the distance of 6 inches, a small branch which ascends to form on the surface soil a rosette. At another 6 inches the process is repeated so that in one instance I was unable to unearth the plant which spread more than two feet. The flowers are often suffused with lilac or purplish-lilac. The stems are not entirely leafless except in young specimens. G. C. DRUCE.

142. CARDAMINE PRATENSIS L., var. UNIFLORA Sternb. & Hoppe. Braemar, S. Aberdeen, 1844, H. C. WATSON, and recently described from Rudgwick, Sussex, by W. B. TURRILL in *Kew Bulletin* 6, 1920. It is a lusus rather than a true variety.

193 (2). SISYMBRIUM PULCHELLIMUM comb. nov. *Descurainea pulchellima* Muschler in Engl. Bot. Jahr. xlix., 2, 200, 1913. Alien, Bolivia, Argentina. This is the plant, queried as *Sisymbrium myriophyllum* Willd. in the *Adventive Flora of Tweedside* 9, gathered by Miss I. M. Hayward in Selkirkshire in 1913 and 1916.

193 (3). S. BURCHELLII DC. Under this, as a variety, may be placed *S. Turczaninowii* of Sonder (see *Adv. Fl. Tweedside* 7). It is a native of South Africa. G. C. DRUCE.

219. BRASSICA DISSECTA Lag., var. SETOSA (Degen.). Port Talbot Docks, Glamorgan, 1910, H. J. RIDDELSDELL, teste THELLUNG, who puts it under *Sinapis alba*, sub-sp. *dissecta* (Lag.) Bonnier, var. *setosa* Degen.

284 (2). RESEDA INODORA Reichb. Alien, Hungary and Eastern Europe. Possil, Lanark, R. GRIERSON. See *Rep. B.E.C.* 720, 1919.

Gen. 79 (2). ASTROCARPUS Neck. Elem. ii., 243, 1790.

286 (10). A. SESAMOIDES DC., ex Duby Bot. Gall. i., 67. Alien, Spain, France. St Philip's, Bristol, CECIL & NOEL SANDWITH.

288. HELIANTHEMUM CHAMAECISTUS Mill., var. PARVIFLORUM

Druce in Ann. Scot. Nat. Hist. 98, 1911, and Rep. B.E.C. 10, 1911. This was gathered at Elibank, Peebles, and Wychwood, Oxford. Prof. I. B. Balfour gave me a root which came from a plant gathered in Caenlochan, Forfar, in 1918. It retains its characters in cultivation. G. C. DRUCE.

352. SILENE LAETA A. Br. in Flora 373, 1843. Alien, Leith Docks, September 19, 1920, coll. et det. JAMES FRASER. A native of France, Spain, Portugal, Italy, Corsica, Sardinia, Tunis, Algeria, Marocco. Williams omits it from the genus *Silene*. Nyman places it in *Eudianthe*, which Bentham and Hooker merge into *Lychnis*, under which it was first described by Aiton in Hort. Kew. ii., 218, 1789, as *Lychnis laeta*. Afterwards Brotéro (Fl. Lusit. ii., 221, 1804) called it *Lychnis palustris*, George Don (Gen. Hist. i., 116, 1831) *Argostemma laeta*, and Fenzl, in Engler's Gen. Suppl. ii., 1842, *Eudianthe laeta*. The *Kew Index* and Rouy & Foucaud *Fl. Fr.* put it in *Silene*, under which it appears in the *Plant List*. It is probably one of the Esparto introductions from the Algerian coast, since *Bellis annua*, *Hypochoeris aetnensis*, *Aira provincialis*, *Aira Cupaniana* and *Agrostis pallida* were also detected by Mr Fraser in the same locality.

454. MALVA PUSILLA With. and 456. M. PARVIFLORA L. Mr J. E. Little tells me that in discriminating these two allied species he finds that they differ in habit and that the best herbarium character is that in *pusilla* the bracts of the epicalyx are broader and exceed the flowering calyx, while in *parviflora* they are narrow and fall short of it. The flowers in the latter are nearly sessile, and the main stem is erect and very stout.

457 (2). M. HISPANICA L. Alien, Spain, Portugal. In cultivated ground, once manured with shoddy waste, Pyrford, Surrey, October 1920, G. C. DRUCE & Lady DAVY.

464. TILIA EUROPAEA L., lusus CANDIDA (Augustine Henry in Gard. Chron. ii., 180, 1920), as *T. vulgaris*, var. *candida*. A single branch, 6½ inches in girth, grows on an old tree at The Down, Athlone, having all or nearly all the leaves white.

474. × GERANIUM HYBRIDUM. Under this name there is a note by " S. A." in *Gard. Chron.* ii., 241, 1920, which describes a hybrid of *G. sanguineum* × var. *lancastriense*. It was found on Walney Island. It is said to have the dwarfness of *lancastriense* but the colour is nearly that of *sanguineum*. Some years ago Reginald Farrer and I saw a hybrid of this origin growing with both the putative parents. It differs from *prostratum* in that the petals have the delicate lines which are present in *lancastriense* although the ground colour is different. Farrer cultivated it at Ingleborough. G. C. DRUCE.

481. G. PYRENAICUM Burm. f., forma PALLIDA. In a sandy lane near Eridge, Sussex, a patch of plants extending over several yards, E. G. TALBOT. Differs from the type in its pale, flesh-coloured petals. G. C. DRUCE.

497. ERODIUM CICUTARIUM Ait. E. G. Baker and C. E. Salmon contribute a valuable paper on the maritime forms to the *Journal of Botany* 121, 1920, in which are described *E. glutinosum* Dumort., *E. neglectum* Baker & Salm., *E. Lebelii* Jord. and *E. Ballii* Jord., the last presumably from Ireland but requires refinding. The *glandulosum* Bosch., first given for England by A. Bennett, seems to be mainly the *glutinosum* Dum. and the *neglectum* now described, which may displace it.

519. RHAMNUS CATHARTICUS L. Near Thetford, W. Norfolk with dicœcious flowers, Misses COBBE.

537. ULEX EUROPAEUS L. La Moye, Jersey, April 1920. This year, in Jersey, the Gorse was exceptionally full of flower and it afforded a wonderful sight. As depicted in the *E.B.* plate, t. 742, the standard is distinctly notched, and this form is by far the commoner plant. Growing on La Moye Common there were, however, a few bushes in which the flowers had entire standards, a form hitherto unobserved by me. G. C. DRUCE.

537. U. EUROPAEUS L. × GALLII Planch., nov. hybr. Parkhurst Forest, Isle of Wight, May 1920. In company with Sir James and Lady Douie I noticed on the border of some of the rides in this

interesting piece of woodland a Gorse in flower which had the small spines of *Gallii* but the more shaggy and paler calyx of *europaeus*. Its habit was that of a tall, slender plant. I could see none of last year's fruits. It recalled a somewhat similar plant, also flowering in May, which I saw at Millook, Cornwall, some years ago, which is also, I believe, a hybrid of the above species. The vegetative parts resemble *Gallii*. The primary spines were almost straight and were only 20 mm. long, those of *europaeus*, in the vicinity, being 40 mm. long, and the whole plant was much more ferocious. The flowers are a little smaller and paler than those of *europaeus*, but the wings are not longer than the keel, the standard is deeply notched, and the calyx more hairy with longer hairs than in *Gallii*. Rouy & Foucaud (*Fl. Fr.* ix., 241) describe a var. *humilior* of *europaeus* but the Parkhurst plant is tall and seems to possess intermediate characters. I suggest the above as a probable parentage. G. C. DRUCE.

549 (2). TRIGONELLA STRIATA L. f. Suppl., 52. Alien, Serbia, etc. Leith, Midlothian, 1920, J. FRASER.

586. MEDICAGO LUPULINA L., var. UNGUICULATA Reichb. Guestling, Sussex, H. REDGROVE and Rev. A. G. GREGOR. An analagous condition to the same named vars. of *Melilotus officinalis* and *alba*, in which the corolla becomes leafy. Is a mite the cause?

595. MELILOTUS ALBA Desr. Under the name of Sweet Clover the United States Dept. of Agriculture, Bulletin n. 844, 1920, publishes a paper by Mr H. S. Coe & Prof. J. N. Martin on "Pollination Studies of Seed Production and the Structure and Chemical Nature of the Seed-coat and its Relation to Impermeable Seeds of Sweet Clover." This paper is a valuable contribution to our knowledge of the fertilisation of *M. alba*. There are good diagrams and careful experiments have been made which show that although *M. alba* can produce seed by self-fertilisation yet it is so rarely done that only less than one per cent. of them set seeds without being pollinated by insects. A list of insect visitors is given. In order to produce a good crop of seed a considerable quantity of water must be present in the soil, the yield being diminished by nearly 50 per cent. in dry conditions. With regard to the impermeability of the

seed-coat it was found that soaking them for 15 minutes in concentrated sulphuric acid (s.g. 1.84) renders the coats permeable. This probably explains the ready germination of so many of the seeds of wool aliens after treatment with sulphuric acid. An extensive bibliography of works cited is appended. The wonderful output of practical as well as scientific papers from the Department fills a Britisher with envy. The Inventory of Seeds and Plants imported (July 12, 1920), extending to 96 pages, includes and figures a Venezuelan vegetable, *Arracaria xanthorrhiza* Bancr., an Umbelliferous species growing only at 4000 ft. and upwards on the Andes. The root, which I tasted at Caracas, is like a parsnip. A Javanese shrub, *Pavetta Zimmermanniana*, is mentioned which has its leaves inhabited by bacterial colonies which induce knots analagous to those formed by *Bacillus radicocola* in the roots of leguminous plants.

700. VICIA LATHYROIDES L., forma ROBUSTA. Sandhills, Southport, S.W. Lancashire, 1891, C. BAILEY; Hommet Bonnet, Guernsey, May 1920, Mrs WEDGWOOD. Differs from the common plant in its larger size—3 dcm.; in its larger leaflets—17 mm.; and larger pods, up to 30 mm. long.

714. LATHYRUS PRATENSIS L., forma SPECIOSA mihi. The common form of the Tingwall area and elsewhere on the Mainland of Shetland and also near Balta and Burrafirth, Unst, July-August 1920. This differs from the usual British plant in the much larger flowers, measuring 16-20 mm. against 12-16 mm. in the English plant, and not only are they longer but they are larger and on an average there is a greater number of flowers in the inflorescence, *i.e.*, 8-10 as against 6-9. The plant, on the contrary, is of lower growth. This larger corolla is not limited in Shetland to *Lathyrus*, but also obtains in *Trifolium pratense*, *T. repens*, *Vicia Cracca* and *Lychnis dioica* as well as sometimes in the ligulate flowers of *Achillea Ptarmica*. This may arise from the larger number of hours the sun is above the horizon during its flowering period, since these plants appear indifferent to edaphic or soil factors. G. C. DRUCE.

730. L. NIGER Bernh. This is one of our rarest species. It was first recorded in Britain from the Den of Airlie, Forfarshire, in

the *Flora Scotica* (part 2) 267, 1821, by Sir William Hooker in these terms :—" Mr [Thomas] Drummond has had the good fortune to discover it, truly wild, at Airlie, ten miles west of Forfar." It is not included in part 1, which of course is of an earlier date and in which the plants are arranged according to the Linnean system. Drummond's specimen from this locality is in *Herb. Edin.*, and there is another, dated 1827, from Walker-Arnott. It was recorded from Killiecrankie, Perth, by W. Gorrie, about 1839. I collected it in 1878 when it was on its last legs, so I took no root. White saw it there in 1892. A third locality is given by Syme (*E. B.* iii., 112), Craiganain, a rock within 2 miles of Moy House, Inverness-shire. This is mentioned in Anderson's *Guide to the Highlands and Islands of Scotland* 400, 1834, where it adds that several attempts to find it have failed and, I think in a subsequent edition, it suggests the probable explanation that it had been mistaken for the common *L. montanus*. I am not aware of any specimens from this locality, and Prof. Sir I. B. Balfour tells me there are none in the Edinburgh herbarium. A fourth locality is that of Roddam Dene, Northumberland, where it was said to have been gathered by Mr Tate in 1852 (Johnston's *Nat. Hist. Eastern Borders* 571, 1873, where it is stated to be a garden escape). As a naturalised plant it was found by the Rev. E. S. Marshall in Sussex, where it was doubtless planted. The indigenity of the plant in any of these localities is open to question. Don, that lynx-eyed and indefatigable worker at the Forfar flora, does not mention it, although he knew the Den of Airlie well. That picturesque den is adjacent to Airlie Castle, and it is more than probable that the *Lathyrus* was planted there. The place now seems to know it no more. I have searched it two or three times in vain. In Killiecrankie it was limited to a small area not far from cottages, and one of the cottagers supplied specimens at 1s a piece. It is now eradicated. The record for Moy has never been confirmed unless indeed a cryptic note may refer to this locality :—" *Orobus niger*. Nr. Lake Nevis, June 13, 1836," which is attached to a specimen in the Edinburgh Herbarium, possibly in the hand of W. C. Trevelyan. This, however, may be a distinct and additional locality, which awaits verification. The geographical distribution in Europe favours its being a native of

Britain. Rouy & Fouc. (*Fl. Fr.* v., 272) say "presque toute l'Europe (excl. rég. boréales)." In France it grows in " bois montagneux surtout calcaires, mais peu commun, dans presque toute la France." This suggests that the hilly woods of Hereford, Gloster and Somerset may be likely places. I now come to a more recent record. This summer, Mr Bolton King sent me a specimen which was gathered, he says, in the summer of 1913 by Mr W. F. E. Seeley in a hilly wood near Southam, in Warwickshire, where he saw it in some quantity. The specimen was correctly named. In company with the finder, Mr Bolton King and Mr Groves we made a careful search, but it was unsuccessful. In the seven years' interval the wood, which consists of aboriginal vegetation, had much grown up and our failure to re-discover it may have been due to this cause. A second visit to the area mentioned by the finder was equally unsuccessful. That it was found here, and probably as a native plant, is practically certain. The specimen was labelled by Mr Seeley at the time. Its re-discovery in this place would give it a higher claim for citizenship than any of the preceding records.

745 (4). SPIRAEA CANESCENS Don. Naturalised in a wood below Causand Beacon, Devon, 1919. H. E. Fox in *Rep. B.E.C.* 814, 1919.

901. POTENTILLA REPTANS L., flore pleno. Near Calne, Wilts, Mrs COLVILLE and Lady DAVY. The inflorescence is showy from the many rows of petals.

925. ROSA STYLOSA Desv., var. PTYCHOPHYLLA Boulenger in Journal of Botany 16, 1920. Studland, Dorset, G. A. BOULENGER.

927. R. DUMALIS Bechst., var. OBLONGA. *R. canina*, var. *oblonga* Boulenger, *l.c.* Studland, Dorset.

931. R. CALOPHYLLA Christ. Hedge Harp fields, between Tenbury and Greete, Salop, 1892, C. BAILEY, as *R. frondosa* Baker.

936. R. MICRANTHA Sm., var. LUSSERI Lag. & Puget. Between Studland and Corfe Castle, G. A. BOULENGER, in Journal of Botany 21, 1920.

941 *g*. R. BRITANNICA Déségl. Dr G. A. BOULENGER, in Journal of Botany 185, 1920, suggests that this name should be applied to a Rose which has been variously named *foetida* Bast., non Herrm., *Jundzilliana* Baker, non Besser, &c. He gives a description based on living material from Oxted and Limpsfield, Surrey. Wolley-Dod has already adopted the name which also appears in my *List* as var. g. of the aggregate *mollissima* Willd.

969 (5). CRATAEGUS CRENULATUS Roxb. Fl. Ind. ii., 509. Alien, India. Abbot's Wood, near Polegate, Sussex. ? Bird-sown or planted. Coll. T. A. DYMES and E. BEDFORD. It is the *Pyracantha crenulata* M. Roem. One bush grew in a sandy field, another in the wood itself.

1007. COTYLEDON UMBILICUS-VENERIS L. At St Brelade's, Jersey, some immature, strongly bracteate plants simulated *C. lutea*. This may be the origin of the erroneous record of *C. lutea* for Somersetshire. G. C. DRUCE.

1026 (2). SEMPERVIVUM ARBOREUM L. (DC. Pl. grasses ii , t. 125). Alien, S. Europe—Portugal, Spain, &c. Naturalised at Gibraltar, &c. On the cliffs of a quarry near St Catherine's, Jersey, quite naturalised. It grows high up on the sheer quarry walls, above 70 feet altitude. There is no house above the cliff, nor is it easy to suggest how the plant became introduced. At a distance it suggested a clump of some yellow Crucifer. My companion, T. Churchill, a boy of 12, succeeded in reaching it and threw some pieces down, which enabled me to recognise it as an old Gibraltar friend. G. C. DRUCE.

1133. OENANTHE FLUVIATILIS Colem. This plant has been much misunderstood by continental botanists owing to its extreme scarcity in Europe. Dr Albert Thellung is now monographing the Umbelliferae and in answer to his request I sent him ripe fruits and a statement of my experience of its distinctness as evinced by the seedlings, the submerged leaves, &c. He replies that an examination of the fruits shows that they differ from those of *aquatica* and *conoidea* "par le développement de côtes secondaires (sur les vallicules) aussi grandes que les côtes primaires. C'est là une raison de plus pour séparer spécifiquement l'*OE. fluviatilis*."

1134. Œ. CROCATA L. Juice from the green herb found not to be poisonous to cattle in Wexford. See note by C. B. Moffat in *Irish Nat.* 13, 1920.

1147. ANGELICA SYLVESTRIS L. A polymorphic species, probably including several races. Two main groups of forms may be distinguished according to the character of the terminal leaflets, whether these are distinct at the base, or decurrent upon the petiolules. Fischer in *Cat. horti Petrop.* 1842 divides the species into var. *vulgaris* characterised as "pinnulis non decurrentibus, terminalibus fere petiolulatis," and var. *decurrens* diagnosed as "pinnulis, saltem summis, decurrentibus, terminalibus saepe sessilibus." For the first of these, Fischer quotes *English Botany* t. 1128. The second variety has received several names. It is the *A. sylvestris*, var. *elatior* Wahlenb., and, as a species, *A. montana* Schleich. Fischer also referred to it as *A. sylvestris*, var. *litoralis* Hartm. and *Imperatoria flavescens* Bess. When the decurrent feature of the upper leaflets is well-marked it is strikingly different from the more familiar form of *Angelica*, but intermediates connect the two varieties.

Var. VULGARIS Fischer. Isle of Wight (*Herb S. Lond. Bot. Ins.*); W. Kent: Downe (*Herb. S. Lond. Bot. Ins.*); Surrey: copse near Claygate (C.E.B.); Gatton Park (W. H. Beeby, *Herb. Brit. Mus.*); Berks: Sunninghill (*Herb. Banks*) and near Childswell Farm (*Herb. Druce*); Herts: Welwyn (*Herb. Druce*); Northants: Plumpton Wood (*Herb. Druce*); Oxon: Sibstone (*Herb. Druce*); N. Staffs: between Trentham and Clayton (*Herb. Brit. Mus.*); Lake Lancs: near Mansriggs (*Herb. Brit. Mus.*); Jersey: St Peter's Valley (*Herb. Druce*).

Var. DECURRENS Fischer. Cornwall: near Sandplace (*Herb. S. Lond. Bot. Ins.*); W. Kent: Keston (*Herb. Brit. Mus.*) and Shortlands; Surrey: the common form by the R. Thames above London—Mortlake, Kew, etc. (C.E.B.), R. Wey below Guildford (*Herb. Brit. Mus.*); Middlesex: Stanmore (*Herb. Druce*); Northants: Nobottle (*Herb. Druce*); Suffolk: Oakley Park (*Herb. Brit. Mus.*); York: Thrybergh (*Herb. S. Lond. Bot. Ins.*). Scotland.—Fife: N. Queensferry (*Herb. Brit. Mus.*); Forfar: Caenlochan (*Herb. Druce*);

Shetlands (*Herb. Brit. Mus.*). Ireland.—Donegal (*Herb. Brit. Mus.*). C. E. BRITTON.

1220 (2). KENTRANTHUS MACROSIPHON Boiss. Diagn. ser. 1, iii., 57. Alien, Southern Spain. St Ouen's Bay, Jersey, 1901, J. Piquet as *Valeriana pyrenaica*, collected by Mr DONCASTER, ex *Hb. Piquet*.

1224. VALERIANELLA DENTATA Poll. Handcross, Sussex. A curious fascicled form which Mr Swanston thinks is caused by the Hemiptera, *Trioza centranthi* Vallot. The specimens were communicated by Mrs Graham.

1248 (2). BELLIS ANNUA L. Alien, S. Europe. In abundance at Leith Docks, Midlothian, J. FRASER & R. GRIERSON.

1268 (2). FILAGO ARVENSIS L. Alien, Central and S. Europe, W. Asia, Siberia, Canaries. Levenhall, Midlothian, 1916, with the var. *lagopus* DC. Prod. vi., 249, which differs from the type in its greater woolliness. J. FRASER.

1274. GNAPHALIUM ULIGINOSUM L., var. PROSTRATUM Huet, ex Nym. Consp. 382. See *Bull. Soc. Bot. Ital.* 60, 1900. Plants coming under this occurred on light sandy soil near Midhurst, W. Sussex, June 1920, G. C. DRUCE.

1294. XANTHIUM STRUMARIUM L. Under the name Cocklebur, A. A. Hansen in Circular 109, July 1920, of the United States Dept. of Agriculture, gives a description and the means used for the eradication of these troublesome pests to the sheep-farmer. He says there are about a dozen native species in the United States most of them resembling *Strumarium*, × *spinosum* standing apart. The seeds contain a valuable fixed oil which can be used as human food. The ever ingenious American has used the Burs " in the manufacture of advertising novelties." " They are burs, they will stick," but will also distribute a growing danger to agriculturists.

1311 (5). BIDENS PROCERA D.Don in Bot. Register t. 684.

Alien, Mexico, Arizona. Hortal. Marston brick-yards, Oxon, October 1915, G. C. DRUCE.

1333 (2). ACHILLEA MICRANTHA Willd. Adventive in France, Germany, etc. Native in Asia austr.-occ. Differt ab *A. tomentosa* foliis planioribus, laciniis multo angustioribus, apice minus cartilaginosis, caule brevius pubescente (nec partim lanoso-villoso), involucro subglabro. Det. by A. THELLUNG from near Derby, 1871, Mr MEDLEY, who had named it *A. tomentosa*.

1393. SENECIO AQUATICUS Hudson, var. (vel forma) ORNATUS mihi. In July last when entering the harbour of Lerwick one was anxiously trying to identify the first plant of Ultima Thule. Patches of a bright yellow in cultivated soil suggested *Chrysanthemum segetum* but a subtle difference in colour made one doubt. After landing a visit was made to investigate the vegetation more closely when it was found that the colouring was due to another Composite, *Senecio aquaticus*, which, as its name suggests, grows with us in wet and in undisturbed grass of meadows and marshes. Here it chose ground of which the original covering had been removed or in which the soil itself had been disturbed by man. This showy plant, much more ornate than its Southern prototype, was common on the derelict fields around a crofter's cottage, on parts of moorland which had been prepared for corn, on waste places by road-sides, in poor garden ground or the bare stony shores of inland lochs. The plants were usually short, about 8 cm., and had a conspicuous, flat-topped, corymbose inflorescence of larger flower-heads with showy ray-florets of a slightly deeper tone of yellow. As Beeby remarked, " it grows as an inverted pyramid with flat-topped inflorescence." Occasionally the plants are clothed with a hoary or arachnoid tomentum. The lower leaves are usually but little cut, indeed often sub-entire, and are usually green beneath. The capitula are up to 43 mm. across. We saw it not only by Clickhimmin Loch and in waste ground about Lerwick, the Mainland, Tingwall, Whiteness Voe, near Walls and Sandwick, but also in Unst at Burrafirth and Balta Sound. The plant had an unmistakable facies of its own and it seems well worth segregation although some may question its claim to varietal grade. G. C. DRUCE.

1394. S. JACOBAEA L. In Nova Scotia this causes the Pictou cattle disease due, it is said, to a poisonous alkaloid or alkaloids. Other species in South Africa have toxic effects. See *Nature* 321, 1920.

1405. S. PALUSTRIS Hook. It was seen at Filby in 1902 by the Rev. G. H. HARRIS.

1422 (2). CIRSIUM POLYANTHEMUM DC. (C. SICULUM DC., nec Spreng.). Alien, Corsica, Italy, Europe austr.-orient., Asia austr.-occ. Var. CRETICUM (Lam.) Fiori et Paoletti. Marston brickyards, August 1920, with a forma *albiflorum*. G. C. DRUCE. Det. A. THELLUNG.

1449. CENTAUREA JACEA L., sub-sp. ANGUSTIFOLIA Gugler, var. SEMIFIMBRIATA Gugler. Wellington College, Berks, 1919, C. E. BRITTON.

1449. C. JACEA L., sub-sp. ANGUSTIFOLIA Gugler × C. NEMORALIS Jord. *C. Moncktonii* Britton, ined. Wellington College, Berks, 1920, H. W. MONCKTON.

1449. C. JACEA L., sub-sp. JUNGENS Gugler, var. FIMBRIATISQUAMA Gugler in Ann. Mus. Nat. Hung. 47, (1907) 1908. Waste heap north of Welwyn Tunnel, Herts, 1913, J. E. LITTLE. Mr C. E. Britton says he accepts this determination. *C. jungens* is intermediate between sub-sp. *Eu-Jacea* and *C. angustifolia*. It is of tall stature, branches of moderate length, upper leaves broadly lanceolate, peduncles with rather few leaves and always clearly inflated beneath the heads. The above variety has almost all the appendages regularly pectinate-fringed, the innermost series, however, always more or less entire, the next uppermost series less regularly laciniated. Similar plants, he says, have been met with elsewhere in England.

1451. C. NIGRA L. C. NEMOPHILA Jord. Wellington College, Berks, 1919, Ref. No. 2153, C. E. BRITTON.

1451. C. OBSCURA Jord., var. SUBNEMORALIS Britton, ined. Twinstead, N. Essex; Thurso, Caithness, G. C. DRUCE.

1456. C. SCABIOSA L., var. SPINULOSA Koch. Fallow field, Effingham, Surrey, September 1920, Ref. No. 2279, C. E. BRITTON. The description of this in Koch's *Synopsis* 412, 1837, is "fimbria terminali foliolorum involucri in spinam longiusculam validiorem mutata. Per totam Germaniam sparsim occurrit." He says other species of *Centaurea* exhibit the same variation.

1472. C. MACROCEPHALA Bunschk., ex Willd. Sp. Pl. iii., 2299. Alien, Armenia, etc. Hortal. On railway cutting, near Neithrop, Oxon, July 1920, with other garden relics, G. C. DRUCE.

Gen. 356 (2). LAGOSERIS M. Bieb. Cent. Pl. Rar. Ross. merid. i., t. 30, 1810, vice *Pterotheca* Cass. in Bull. Soc. Phil. 200, 1816. See *Rep. B.E.C.* 419, 1916, and Thellung *Fl. Adv. Montp.* 573.

1504 (10). L. NEMAUSENSIS (Gouan) Koch, vice *P. sancta* C. Koch. Alien, S. Europe. Charleston, Cornwall, 1920, V. TRESSIDDER.

1512. HIERACIUM AURANTIACUM L. A. A. Hansen writes a paper on The Hawkweeds or Paintbrushes, Circular No. 130, 1920, to the United States Dept. of Agriculture in which he alludes to the Orange Hawkweed of European origin which has now become one of the worst pasture and hay-field weeds of New England, New York, and Pennsylvania, spreading as it does both by its runners and seeds. *H. florentinum*, the King-Devil, and *H. pratense* have also spread rapidly. A Virginian pasture is shown in which the latter is as common as Buttercups. In Buckinghamshire allied species were introduced some twenty years ago and rapidly spread along the railway embankment near Hanslope, but as yet have made no headway into the adjoining fields, our sun being scarcely powerful enough to stimulate them.

1537 (2). H. PULMONARIOIDES Vill. Old wall, Kenmore, M. Perth, H. W. PUGSLEY in *Journal of Botany* 281, 1920.

1578. H. HOLOPHYLLUM W. R. L., var. ANGUSTISQUAMUM Pugsley. *l.c.* 284, 1920. Cheddar, H. W. PUGSLEY.

1641 (2). HYPOCHOERIS AETNENSIS B. & H. Gen. Pl. ii., 520.

Ces. Passer. & Gib. Comp. Fl. Ital. 465. *Serriola aetnensis* L. Alien, Europe mer., Africa bor. Leith Docks, September 1920, JAMES FRASER.

1643. LEONTODON AUTUMNALIS L., var. CORONOPIFOLIUS Lange. Ostenfeld (*Bot. Notiser* 143, 1913) refers to the occurrence of this in Denmark, and as this may occur in Britain the description there given is appended. "Scapi plures, ± arcuati, 15-25 cm. alti, ramosi, ramis longis, squamis haud paucis, angustis, usque ad 5 mm. longis. *Folia supra sparse pilosa subtus glabra*, 8-10 cm. longa, petiolis valde alatis, *nervo principali lato*, ± *purpureo colorato*, *pinnatifida*, *lobis distantibus*, *filiformibus vel linearibus*, *longis*, *lobo apicali lobis caeteris consimili*, perlongo, lineari. Involucrum mediocre vel parvum, viride, *non pilosum*, *floccis albis parce adspersum*; squamae elongatae, anguste oblongo-linearis, subacutae, stria dorsali indistincta, subnigra, marginibus floccosis-ciliatis. Calatium mediocre. Stylo in sicco nigrescens."

1645. TARAXACUM CROCEUM Dahlst. Om Skand. Tarax. former Bot. Notiser 1905 et Nords. Tarax. 15, 1912. Folia sat laete gramineo-viridia, tenuia ± lingulata anguste lanceolata, pauci (3-6) loba, glabra-subglabra v. in nervo mediano parce araneosa, petiolis pallidis sat angustis-latiusculis ± alatis, nervo mediano pallido v. medio praesertim ± roseola, extima (interdum plurima) saepe subintegra parce denticulata, dentibus apicem versus magis evolutis, exteriora et intermedia lobis latis-latissimis ± humilibus sursum saepe in interlobia brevia-sat longa angustata, margine superiore ± convexo-recto, in lob. inferioribus parce dentato, in superioribus integro, rarius in omnibus sparsim subulato-dentatis, apicibus retroversis-patentibus, saepe apice ipso hamatis, lobo terminali sagittato-hastato, lobulis lateralibus, retroversis-patentibus, brevi-sat longo, latiusculo-lato, acuto v. saepe elongato, acutissimo, interiora lobo terminali saepe in utroque latere dente singulo, curvato, angusto instructa et lobulis lateralibus saepe hamatis, intima latiora, lobis crebrioribus, magis dentatis, lobo terminali majore, inferne magis dentato, marginibus magis convexis, minus acuto. Scapi folia aequantes v. iis longiores, colorati, glabri-subglabri, superne leviter araneosi. Involucrum mediocre-

sat magnum, crassiusculum, plerumque sat obscure viride, basi ± ovata. Squamae exteriores ± ovato-lancelatae, acuminatae, patentes-erecto-patentes v. laxe adpressae, paullum-sat conspicue marginatae, supra sat dilute virides, subtus obscure virides-fere atro-virides, apice saepe et interdum etiam secus margines ± purpura-scentes: interiores sat obscure virides ± lineari-lanceolatae, in apicem ± purpureum, angustum attenuatae. Calathium 35-50 mm. latum, sat plenum v. leviter radians ± croceum. Ligulae marginales latiusculae, extus stria rubro-violacea notatae. Antherae polline carentes v. rarius polliniferae. Stylus ± luteus, stigmatibus ± virescentibus. Achenium fusco-olivaceum v. olivaceo-umbrinum superne et saepe fere ad basin ± crebre et acute spinulosum, caeterum late spinuloso-tuberculatum v. tuberculatum, 3, 5-4, 5 mm. longum 1 mm. latum v. paullo latius, pyramide 0.5-0.7 longo ± conico, rostro 7-9 mm. longo. On the north side of the Cairngorm range as in Corrie Lochain and Corrie Sneachda on damp rocky or grassy places, 3000-3500ft. alt. First found in August 1919, G. C. DRUCE. It occurs in Scandinavia, Iceland, Greenland, and in the Faroes, where it grew outside enclosed fields, on hedges, and in rock-clefts some way up the hills. It belongs to the Spectabilia.

1645 (2). T. NAEVOSUM Dahlstedt in Warming's Bot. of Faroes 840. Folia dense et late lobata-pinnatifido-lobata, lobis latis-angustis deltoideis, utrinque vel praecipue in margine superiora ± dentata inferne angustius lobata, inter lobos inferne ± irregulariter dentata lobi terminali satis brevi, lato ovato-triangulari-hastato, supra purpureo-vel atropurpureo-maculata (vel in umbrosis fere emaculata) et in pagina superiore vulgo pilis crassis articulatis sparsis-densiusculis obtecta, petiolis ± intense purpureis nervoque mediano inferne v. pro max. parte purpureo. Involucrum ± obscure oleraceum, magnum satis longum, squamis exterioribus longis lanceolatis breve acuminatis, supra medium inv. attingentibus, anguste v. inconspicue marginatis, apice ± purpureis v. fusco-purpureis et in pag. interiore superne ± fuscoviolaceis, laxe adpressis v. erecto-patentibus, apicibus vulgo ± recurvato-patentibus, interioribus sub apice ± purpureo leviter callosis. Calathium obscure luteum, multiflorum, radians. Ligulae longae, marginales latiusculae, extus stria lata rubro-purpurea vittatae dentibus in lig. ± rubris. An-

therae polline ± repletae. Stylus et stigma livescentes. Achenium fusco-stramineum apice muricato-spinulosum, caeterum fere laeve v. minute tuberculatum, c. 4 mm. long., 1 mm. latum, pyramide c. 0.9 mm. longo, rostro 8-9 mm. longo et pappo albo. *T. naevosum* differs from *T. spectabile*, var. *maculiferum*, by longer, more patent outer phyllaries, shorter achenes, shorter beak but longer and more developed rostrum. This handsome plant, which evidently belonged to the Spectabilia, was abundant in a cornfield near Marcham, Berks, in September 1920. Dahlstedt identifies it as his *naevosum*, first found in a ravine near Kvanhauge in the Faroes by Hartz and Ostenfeld in 1897, and it is rather common in the alpine and sub-alpine parts of the Scandinavian mountains. Herr Dahlstedt writes (1921) that he believes it is an ancient pre-glacial form, that before the last Ice-age had its distribution in N.W. Europe, and during the same period inhabited the N.W. coasts of Norway probably at that time free from ice. At present it inhabits the central and northern parts of the Scandinavian peninsula, and is also found in the Faroes and Iceland. The English form differs slightly from most Swedish specimens by its broader and more recurved lobes and by the slightly darker colour of the flower. Specimens are distributed this year.

1645. T. FULVUM Raunkier Dansk. Excurs. Flora 1906. This species of the Erythrosperma is very common (says Dahlstedt *in litt.*) in the southern and partly also in the central parts of the Scandinavian peninsula, occurring also in Finland and Denmark. In central Scandinavia its distribution seems chiefly due to cultivation. In Britain I have found it at Oxford [× 20], and in Berkshire, as a medium-sized plant with rather strongly cut leaves.

1645. T. BRACHYGLOSSUM Dahlst. (see *Rep.* 566, 1920) from Wyrardisbury, Bucks; Barnes Common, Surrey, also occurs at Oxford [× 29], and Boar's Hill, Berks. This, Dahlstedt says, is distributed in southern Norway and Sweden, also in Denmark, Northern Germany, in a few localities in Austria, and adventive in the Eastern United States. The leaves are less divided than in ordinary forms of *laevigatum*.

Of the Vulgaria group Herr Dahlstedt has named the following from my gatherings :—

1645. T. EXPALLIDUM Dahlst. Ostsvenska Taraxaca Arch. fur Botanik, Band 9, n. 10. The English form is not quite identical with the Swedish one, but the slight differences are probably only due to the locality. Oxford [× 16]. A strong growing plant with deeply cut leaves, the upper portion triangular.

1645. T. KJELLMANI Dahlst. Einige wildwachsende Taraxaca aus em Bot. Gart. Upsala . . . 1906. Scandinavia, Finland, Denmark. A slight modification of this occurred in considerable quantity in arable fields near Stow Wood, Oxford [× 14].

1645. T. SUBLACINIOSUM Dahlst. inedit. This grew also in arable ground near Beckley, Oxford [× 15] ; it has hitherto only been noticed in two localities in Finland and Sweden, and will shortly be described by Herr Dahlstedt. The leaf-cutting does not reach to the mid-rib, the leaves are large, and the plant robust.

1645. T. ANGUSTISQUAMEUM Dahlst. in Tarax. formerer . . . Finland Acta Soc. pro. fauna et flora Fennica no. 9, 1907. Very common in southern Sweden, Norway, and Finland, also found in eastern Germany. As a slight modification this grew by the roadside at Beckley, Oxon.

1645. T. INTRICATUM Lindb. f. in Finska Tarax. former Meddel. af Soc. pro. fauna et flora Fennica h. 36, 1910. A closely related form, if not a new species, occurs at Oxford [× 28], as a very distinct looking plant, the leaf-cutting being very irregular.

1645. T. CROCEIFLORUM Dahlst. This grew in light, sandy soil of an arable field at Longworth, Berks, in 1920.

1645. T. DILATATUM Lindb. f. As a form this occurs at Oxford [× 10]. It is a tall, coarse-growing plant with a large terminal lobe and shallow leaf-cutting.

1645. T. ALATUM Lindb. f., *l.c.* no. 9, 1907. A plant closely related to this grows in garden ground at Oxford [× 11].

1645. T. FASCIATUM Dahlst. Tarax. Scand. exsicc. fasc, 1, n. 30, 1911. An allied plant occurs at Longworth, Berks, in arable land [× 21]. The two last require further study, and may prove distinct, G. C. DRUCE.

1645. T. LAETICOLOR Dahlstedt Scand. Exsicc. fasc.1, No. 21, 1911. Not typical as the leaves are different; teste DAHLSTEDT.

[Ref. No. R. 7116.] Chertsey, Surrey, May 1917, G. C. DRUCE and Lady DAVY. See *Rep. B.E.C.*, 1918.

1665 (4). LOBELIA NATALENSIS A. DC. in DC. Prod. vii., 369. Alien, South Africa. Hortal. Marston brick-yards, Oxon, September 1920, G. C. DRUCE. Det. W. B. TURRILL, who says the flowers are rather large.

1667 (2). CERVICINA PENDULA (Schrad.). *Wahlenbergia pendula* (Schrad.) Blumenb. in Obs. 38. *W. lobelioides* Link. Alien, Madeira, Canaries. Hortal. A weed in Bevers Nursery grounds, Herts, J. ANSELL, about 1835.

1687. OXYCOCCUS QUADRIPETALUS Gilib. Above Harlech, Merioneth, 1919, Miss M. COBBE. Infected with an *Oidium* which Mr Swanston thinks may be *Podosphaera myrtillina*. It gives a curious hoary appearance to the under surfaces of the leaves.

1742. ANAGALLIS FEMINA Mill. Miss CLARIDGE found at Steeple Aston, Oxon, a form with three leaves in a whorl—an analagous form to the var. *verticillata* A. Diard of *A. arvensis*, and another proof of the close relationship of the two species. If worth distinguishing, it may be called forma *ternata*. G. C. DRUCE.

1743. A. ARVENSIS L. I have come to the conclusion that the opening and closing of the corolla is governed much more by the habit of the plant, consistently maintained to a great extent irrespective of the weather conditions, than by cloudy or bright weather. As an instance of what I noticed on one particular day at eleven o'clock on a very cloudy drizzly morning after a previous day and night of rain, out of 280 blooms 185 were fully open and 95 partially, these latter being newly opened flowers in the first stage with unopened anthers and unpollinated stigmas. After careful watching many plants for two or three weeks I found many flowers were visited by a species of mite which, under a strong lens, appeared to feed on the hairs of the stamens and on any pollen grains on the petals, but in no case did they appear to travel up to the anthers or stigmas. Müller observed no insect visitors, and Lord Avebury mentioned

Halictus morio, a solitary bee, as the only insect yet recorded as a visitor. J. E. ARNETT.

1743. A. ARVENSIS L., with dark purple-coloured flowers. Charlestown, Cornwall, 1920, W. TRESIDDER.

1808 (2). PULMONARIA AFFINIS Jord. With reference to the grade of citizenship of the Lungwort which was discovered in Dartington Wood, S. Devon, in 1919, by C. V. MARQUAND, he informs me "it grew in a wild wood some distance from any house, but as the copse is on a private estate where a number of plants have undoubtedly been introduced it is possible that it was brought there some time ago." See *Rep. B.E.C.* 570, 1919.

1846. SOLANUM NIGRUM L., var. nov. SINUATUM. In *English Botany* iv., 97, Syme describes the leaves of *nigrum* as "dentate or repand, lamina 1-4 inches long, rather abruptly narrowed into the base and continued downwards into the winged petiole, the outline varying from ovate to rhomboidal, but generally intermediate between these, margins entire, repand, or with a few large deltoid teeth." On rubbish heaps, wool-refuse and tilts, in various parts of Britain, there is a distinct plant with the leaf-outline of *miniatum* but with black berries which deserves at least varietal distinction. It is a smaller and cleaner looking plant with leaves having smaller laminae, $\frac{3}{4}$-$1\frac{1}{2}$ inches long and $\frac{1}{2}$ to $1\frac{1}{4}$ inches broad, the margins sinuate-dentate; calyx-lobes longer than type. Specimens were sent to the Club by J. CRYER in 1917 from Bradford. Waste ground, Abingdon, Berks, G. C. DRUCE, 1915; Thetford, Norfolk, 1920, Miss COBBE. The Rev. E. S. MARSHALL says in 1917 he had a plant from Witley, Surrey, which comes near it. It is quite probable that it may be a micro-species, the geographical source of which is, at present, conjectural. G. C. DRUCE.

1872 (12). ALONSOA MERIDIONALIS (L. f.) O. Kuntze. *Scrophularia meridionalis* L. f., 1781. *A. caulialata* R. & P., 1798. Alien, Andes (equator), Mexico. Near a mill at Bovey Tracey Station, Devon, September 1919, Lady DAVY.

1874 (3). LINARIA RETICULATA Desv. Fl. Atl. ii., 48. Alien,

Portugal, Algeria. Hortal. Aberystwith, Cardigan, 1920, D. A. JONES.

1899. MIMULUS MOSCHATUS Dougl. A suggestion was made at a meeting of the Birmingham Field Naturalists' Club that the loss of fragrance may be due to the atrophy of the scent-producing cells owing to a change in the insect visitors by which fertilisation is effected.

1901 (2). LIMOSELLA CAPENSIS Thunb. Prod. Fl. Cap. 104. Alien, South Africa. Bradford, York, September 1920, J. CRYER. Det. at Kew.

1906 (5). VERONICA TEUCRIUM L. Alien, Europe. On the railway-bank near Neithrop, Oxford, July 1920. Hortal. Grown with other garden plants. Probably the railway cutting was made through a garden. G. C. DRUCE.

1906 (6). V. PROSTRATA L. Alien, Europe. Hortal. Cardigan, G. C. DRUCE.

1908. V. CHAMAEDRYS L., sub-var. ALBA, comb. nov. Miss EDITH WILLIAMS records the Germander Speedwell with snow-white flowers as growing between Beaulieu River and Southampton Water, S. Hants.

1920. V. ACINIFOLIA L. See *Rep. B.E.C.* 730, 1919. This was discovered in a field near Chiddingfield, Surrey, in 1920, by Mrs WILD and Mr E. B. BISHOP. Under their guidance, in company with Lady Davy, I was enabled to see it growing last May. The Veronica grew in a barley field on a somewhat stiff (not sandy) soil, in enormous quantities, giving in the places where the barley was thin a bluish tone of colour from the multitude of flowers. It occurred in small quantity in the adjoining field. Its frequency was a proof that it was of not quite recent introduction, nor could one ascertain with what crop it was brought. In another area of Surrey a large quantity of South European species owe their occurrence to the ground having been manured with shoddy waste, but this grew in a country of less intensive culture and outside the market gardening

area.. Its occurrence here in such quantity places it in a different category from the accidental alien. It was observed among other adventive plants at Slateford, near Edinburgh, by Mr J. Fraser about 1907, on the evidence of which it was included in the *British Plant List*. In 1909 it occurred as a weed in a nursery garden near Ashdown Forest, Sussex. *V. acinifolia* L. has a wide range through Southern Europe and is found in France, rarely in Belgium, and in Alsace and Baden. It also occurs in Madeira and in Asia austro-occ. Rouy says it grows " champs humides, sablonneux ou argileux dans presque toute la France." It is adventive at Conçepion in Chile (see *Beechey Voy.* 39). Rouy (*Fl. Fr.* xi., 50) places it next to *arvensis* from which the almost entire and rather fleshy leaves at once distinguish it: indeed it is not likely to be confounded with any British species. The pedicels equal the oblong bracts and are 3-4 times longer than the calyx, and the style is longer than the deep notch of the obcordate capsule.

1929 (3). V. ORIENTALIS Mill. Gard. Dict. 1768. Alien, Russia, Roumania. Hortal. Levenhall, Edinburgh, July 1917, J. FRASER.

2083. AJUGA REPTANS L., var. vel sub-var. ALBIFLORA Zersi in Prosp. Piante Vasc. pr. Brexia 169, 1871. This proves constant in culture. See *Fl. Ital. Exsicc.* 2321. Appleton, etc. (see *Fl. Berks* 413); near the Beaulieu River, S. Hants, Miss E. WILLIAMS.

2088 (2). PLANTAGO CYNOPS L. In 1902 and subsequent years this occurred in a field abandoned from cultivation, on chalk soil, on the higher slopes of a hill between Cobham and Luddesdown, West Kent. One old shrubby plant and several others of various ages were seen. The plants accompanying the *Plantago* were the usual species seen in abandoned arable fields on the chalk, *Silene latifolia*, *Fumaria*, *Papaver*, *Echium vulgare*, *Carduus nutans*, *Reseda Lutea*, *Ajuga Chamoepitys*, &c. Here, also, I saw for the first time, *Adonis*. On taking a specimen of the *Plantago* to the Herbarium of the Natural History Museum, I am sorry to say that my plant did not receive the attention it deserved, and no attempt was made to identify it beyond showing it to an official, now retired, who characterised it as a miserable scrap and said that a better specimen was required

for purpose of determination! To my inexperienced eyes the specimen obviously represented a shrubby plantain, and had attention been given to it its identity could easily have been established, as no other species similar to *P. Cynops* reaches into Western Europe. When, in 1906, I acquired the concluding volume of L'Abbe Coste's illustrated Flora, the identification of the *Plantago* was placed beyond doubt and confirmed by reference to other continental floras. The plant was restricted to land formerly cultivated and certainly did not occur on neighbouring banks, as these were well searched at that time for orchids. In 1905 the field was ploughed and the *Plantago* disappeared from the locality, nor was it seen elsewhere. C. E. BRITTON. *P. Cynops* occurs in Spain, South France, Italy, South Switzerland, Austria. A caulescent fruticose species, growing in uncultivated places was sent me in June by Miss Ridley. It was gathered by a young child whom she had interested in flower-study, on a rough bank above cornfields and below a small wood near Cobham, Kent. The patch stretches for about 4 or 5 yards and there are a few isolated plants near. Mr Green and Mrs Stephens also sent it me from the same place later on in the season. A note on it from Mr H. N. Ridley appeared afterwards in the *Journal of Botany*. In November Mrs Wedgwood accompanied me to see it growing. The place is a flinty and chalky bank, and its associates are *Origanum* and other native species. There was nothing to suggest its origin. Its geographical range is antagonistic to its being native in Kent, but its method of introduction is not easy to suggest. It has no beauty that man should desire it: it is not a native of cornfields, so that it is not likely to have come in with game or chicken-food. Mr Britton's note shows that it is not a quite recent immigrant. There is an old record of *P. Psyllium* from Sand Hills, St Aubin's, Jersey (see Hook. *Stud. Fl.* Appendix). Naylor (*Trans. Bot. Soc. Edin.* 466, 1860) corrected the name to *P. Cynops*. In both Jersey, where it is not now to be found, and Kent it is almost certainly adventive. G. C. DRUCE.

2091. P. MARITIMA L. The power of Linnaeus in grouping and individualising species is well exemplified in the five British Plantains which he includes in the *Species Plantarum*. They are so distinct as to offer no difficulty to the botanist in their identification.

They can be distinguished at a glance, yet each of them offers a wide range of variation, and to many of these variations distinguishing names have been given. One of the most polymorphic of the Linnean species is *P. maritima*, which is briefly diagnosed by Linnaeus (*Sp. Pl.* 114, 1753): Foliis semicylindraceis integerrimis basi lanatis, scapo tereti. Omitting reference to variations mentioned by British botanists of the 17th and 18th centuries, Edmondston (*Flora of Shetland* 17, 1845) was one of the first to draw attention to the matter. In that work he gives "*P. maritima*, sea shores, common; it has leaves erect, narrow lanceolate, smooth, spike cylindrical," which well represents the Linnean plant. He adds a variety *dentata*, tersely described "leaves toothed," previously established as a form by Persoon (*Syn. Pl.* i., 139, 1805), who, although he does not actually use the word *forma*, does, as Williams points out (*Prod.* 360), distinguish varieties from forms by an ingenious device in the use of Greek letters. When the diagnoses of a species run on to letter B in a continuous line it indicates merely a form. Wirtgen precedes Edmondston as the author of the variety. Edmondston then says he "provisionally gives the name *P. setacea* to a plant not uncommon in mountainous districts which has hitherto been confounded with *maritima*, with leaves lying flat on the ground, cylindrical or semi-cylindrical, spikes globular," with a "var. *lanosa*, base of the leaves woolly." Therefore it is not a nomen nudum, as is stated in the *Prodromus*. It will be observed that no mention is made of the leaf-clothing, so that we may assume it is glabrous or semi-glabrous as in *maritima*. Subsequently, Sir W. Hooker (*Brit. Flora* 67, 1842) gives two varieties:—"*major*, leaves almost plane inclining to lanceolate, toothed, glabrous, scape densely hairy, on rocks, Isle of Cumbra," probably var. *dentata*, and "var. *minor*, leaves linear-lanceolate, densely hairy, (clothed with short dense hairs) as well as scape, rocks by the House of Skail, Orkney." Both these varieties Williams (*l.c.*) says, "differ only in size and do not require notice. The latter includes plants growing on poor and exposed soils." But he does notice them under his var. *alpina*=*P. alpina* L., which is more than doubtfully British. Under this is a forma *hirsuta* (identified as *P. hirsuta* of Gilibert), which is localised from Hooker's habitat for his *minor*, with which we may presume it is identical. But Williams complicates the matter by putting under the same

name Edmondston's *lanosa*, which is a different plant, as will be seen by the descriptions already cited. Syme (*Eng. Bot.* vii., 172) has three varieties, one of which, var. *linearis*, having "leaves linear-strapshaped, 3-ribbed, rarely with only 1 prominent nerve; plant glabrous, generally with hairs at the crown of the rootstock and sometimes pubescent on the scapes," covers Edmondston's *setacea* and its variety. His var. *latifolia*, the type of which came from Gravesend and Whitstable, has "leaves strapshaped-oblanceolate, 3-7 ribbed. Plant glabrous, or with a few hairs at the crown of the rootstock" as in the previous variety. His third variety, *hirsuta*, has "leaves linear-strapshaped or semi-cylindrical, 3- or 1-nerved. Plant densely pubescent." This, he says, he has seen only from the Orkneys at Houton Head. He mentions that Walker Arnott (*sic* Hooker) records it from near the House of Skail but does not cite the var. *minor* as a synonym. As a matter of fact, Syme's variety is a linear-strapshaped leaved plant, whereas Hooker's was linear-lanceolate. Syme adds that he cannot differentiate the mountain from the coast plant as the leaves are as much channelled and the rootstock not more woody than in the coast plant. Williams (*Prod.* 360) greatly elaborates the treatment of variations. He gives five varieties and six forms. The first, *communis*, is the type. (2) *Scorzonerifolia=lanceolata* Syme has precedence according to the Actes. (3) *Serpentina* Brand=*P. serpentina* Vill., with two forms, *ciliata* from Ben Laoigh, which is very doubtfully the plant of Villars, and *bidentata*, a toothed form from the Snowdon range. (4) *Alpina=P. alpina* L., which differs, he says, in having the nerves of the leaves unequally distant, *i.e.*, with the lateral nerves nearer the margin than the midrib, also in the rhizome being long and woody instead of short and fleshy. It has three forms—(1) *pilescens*, from Widdy Bank, glabrous or slightly pubescent, 14-16 cm. high; (2) *pumila* Kjellm., a pubescent, dwarf form from N. Scotland, 5 cm. high; and (3) *hirsuta*, a densely hairy plant, 8 cm., found in the Orkneys and Shetlands, which he says must be the *P. hirsuta* Gilibert Fl. Lith. i., 17, 1781, an identification I have been unable to confirm. There is also a var. *recurvata*, based on Cornish plants, said to agree with authentic specimens from France. It was described as a species in the Linnean *Mantissa*. My own *List* contains the vars. *minor* Hook., *pygmaea* Kjellm., which

should be *pumila* (Kjellm.), *hirsuta* Syme, *latifolia* Syme, and *dentata* Wirtg. Allusion has already been made to the polymorphy of *P. maritima*, which it shares with the other British representatives of the genus. In this instance it is increased by the fact that the plant, though essentially littoral, also grows in inland localities. The halophytic forms again have two grades—those of muddy places and those of arenaceous or rupestral habitats. Normally the broad-leaved halophytes are found on the rich mud of tidal rivers and estuaries, *e.g.*, the banks of the Beauly River, Inverness; near Newquay, Cornwall; the Crouch estuary, the foreshore of the tidal Thames, &c. In these plants the leaves are over half an inch wide. The almost glabrous leaves are occasionally toothed (*dentata*). As the mud becomes denser usually the leaves become narrower. On rocky and sandy ground in full exposure the plants become dwarfed, the leaves narrower, and then they often have the tuft of hairs more or less developed at the top of the rootstock. Normally the leaves themselves have only scattered hairs. Therefore we have on the softest mud the vars. *latifolia* and *dentata*, on the stiffer muddy foreshore the type, and on rocky ground the var. *leptophylla*, characterised by its long and narrow leaves, and on the exposed surface of rocky and sandy headlands such plants as *lanosa* Edmondston, the *recurvata* of Williams, the *pumila* of Kjellmann, and plants which have been wrongly assigned to the var. *minor* of Hooker. In inland, and especially mountainous places, we have narrow, long-leaved plants which have been, with some doubt, referred to *serpentina* Vill., and others with a very woody and prominent rootstock and, it is said, with the veins of the leaves unequally distant, which I think have been wrongly referred to the Linnean *alpina*. In the *Report* 171, 1912, therefore, I named the montane plant *P. Hudsoniana*, because Hudson had wrongly based his *P. montana* on a plant gathered by Lloyd on Trigvulcaugh, Carnarvon, but he also (under his *montana*) included a mountain form of *P. lanceolata*, *i.e.*, var. *sphaerostachya*. The true *maritima* form from that place is referred to by Dr Richardson (*Corresp.* 239), who says:—"At the top of the Glyder are Trigvulcaugh rocks, on the north side of which, growing out of the cliffs of the steep rocks, you'll find the *Plantago minor angustifolia*, J.B.: This seems to me a distinct plant from the marine one: the leaves are shorter, narrower,

more rigid; the spikes are shorter. I have kept it in my garden ever since I was in Wales with Mr Llwyd [This makes it clear he is referring to Llwyd's plant] and it never varies. That from Durham and Northumberland is no other than the marine one. I have this also in my garden." In a subsequent letter, dated October 25, 1726, he alludes again to it, but queries if it is Bauhin's plant. He repeats the observations about it which he made to Sherard, and adds that it remains constant in his garden. Buddle wrongly thought that the *lanceolata* plant was the one found by Ray, and this misled Hudson as he afterwards discovered, so that in the second edition of the *Flora Anglica* he puts the plant of Llwyd and Ray under *maritima* as a var. without a Latin trivial, merely calling it the Mountain Plantain. He united under the same species the erroneously named *P. Loeflingii* of the first edition, owing to the figure of Petiver being erroneously cited (for *Loeflingii*) by Linnaeus, the English plant being a slightly toothed form of *maritima*. Babington (*Manual* 272, 1856) says " it is apparently *P. serpentina* Vill. . . . a distinct species," but in 1874 (*Manual* 289) he says " it may be *serpentina* or *alpina*." For these reasons, and because I thought that this mountain-cliff plant was a distinct race or a sub-species, I named it *P. Hudsoniana*. I have found it on the Glydyr, in Llwyd's locality; on Scuir Alastair, Skye; on the Cnochan rock, Ross and Sutherland; on Ben Laoigh, Perth and Argyll. This plant only collaterally comes into our survey of *maritima*. Another plant has now to be considered, the *minor* of Hooker, and for the greater part the *hirsuta* of Syme and Williams. This differs from all the plants mentioned, having the whole of the foliage covered with short dense hairs and, what has escaped the notice of some writers, wider and shorter leaves. This seems restricted to the Orkneys (Hoy and Pomona), to Unst and the Mainland of Shetland, and was one of the objects of my northern visit this summer. I saw it in both groups of islands. Hooker's type was an Orkney plant. Similar ones occurred in Shetland, but on the serpentine at Balta there occurred with it a closely-related plant. This was much larger and had a very conspicuous root-stock, which was covered for some portion of its length with dry leaves of many preceding years. This gave it the appearance of a branch of *Araucaria*, since the crowded leaves were lanceolate, narrowed to a short point, and covered with a silvery pubescence. It

had all the appearance of a very distinct species. The variation is, apparently, not due to soil or exposure, since narrow, hairy-leaved plants grew near as well as narrow-leaved glabrous plants except for the white hairs about the rootstock. Two suggestions occurred to one as this wind-swept barren tract of serpentine was traversed. Was this a distinct species crossed with other forms of *P. maritima*, thus giving rise to the great number of intermediate plants, or could it be that *P. lanceolata* entered into its composition and transmitted its pubescence and its broader leaves to the offspring, which have a more pronounced root-stock, fleshier leaves and other strong evidences of *maritima*? In either case the extraordinary variability of the Plantains here might be accounted for. Provisionally, I distinguish this curious plantain by the name of *P. Edmondstonii* in honour of the boy-botanist who discovered *Arenaria norvegica* on the very place where this plantain grows. Further research may prove it to be a hybrid. The plants had no ripe seeds. Several species, however, rarely seed in these northern latitudes. Into this might be merged the broad-leaved forms of var. *hirsuta* Syme and var. *minor* Hooker. Each of the trivials is rejected on account of the confusion arising from their use, and it is by no means ascertained that the Shetland plant is identical with Gilibert's *hirsuta*. The Orkney plant is less pronounced than the Baltasound specimens, and some may prefer to use the name *minor* for these small plants under *Edmondstonii*. The specimens in our public herbaria give no idea of the latter plant.

PLANTAGO EDMONDSTONII mihi. Root very long, branching as it nears the soil-surface into many (up to 20) subsidiary stems, each bearing 1-3 scapes. Rootstock above the ground, stout, woody, up to $2\frac{1}{2}$ inches high, bearing crowded, unequally 3-4 nerved leaves, the lamina up to $1\frac{1}{2}$ inches long, lanceolate, rather fleshy, thickly covered with shaggy, white, loosely appressed hairs, especially on the under surface, with a quantity of white tomentum at the leaf-base and on the short petiole. Scape up to 5 inches high, strongly but shortly hairy. Spike $\frac{3}{8}$-1 inch long by $\frac{1}{4}$ inch broad. In several places on the serpentine at Baltasound as at Springfield, Keen of Hamar, &c., Orkney: Helia, Hoy (Johnston), and near Black Craig, but not typical. G. C. DRUCE.

2091. P. MARITIMA L., var. LANOSA (Edmondston Fl. Shetl. as a var. of *setacea*). Balta, Burrafirth, Unst, near Black Craig, Orkney; Scrabster, Holburn Head, Caithness; Betty Hill, Sutherland; Tain, Ross; Giant's Causeway, Antrim. The name precedes *linearis* Syme. G. C. DRUCE.

2091. P. MARITIMA L., var. PUNCTATA L. M. Neuman in Bot. Not. 251, 1905. At Yarmouth, Isle of Wight, this spring, a large number of plants of *maritima* were variegated with blackish-red spots which appeared likely to have been caused by some insect. They are referable to the above variety if the character mentioned is sufficient to merit that grade. Lusus or forma seems to be the more correct definition. The plants had a strange appearance, so regular and striking was the spotting. G. C. DRUCE.

2100 (3). P. ARISTATA Michx. Fl. Bor. Amer. i., 94. Alien, America bor. North Queensferry, Fife, 1919, A. TEMPLEMAN, teste W. B. TURRILL.

Gen. 501 (2). TELEPHIUM L.

2102 (2). T. IMPERATI L. Alien, Europe. Wensleydale, Yorks, 1846, *Hb. Ansell*; coll. T. SIMPSON. There appears to be no other record of this adventive species. It seems to be unwise to assume that this ever grew wild in Yorkshire. Simpson sent several plants to Ansell of dubious indigenity.

2123. × CHENOPODIUM PREISMANNI Murr = C. ALBUM × OPULIFOLIUM. See *Rep. B.E.C.* iii., 173, 1912, where *C. Wheldoni*, a hybrid with *striatum*, is recorded. Bradford, Yorks, 1919, J. CRYER. Named by Murr.

2124. C. ALBUM L., var. PSEUDOSTRIATUM Zschacke, f. SUBSTRIATUM (Murr) as a var. Galashiels, Selkirk, 1919, Miss I. M. HAYWARD.

2124. C. ALBUM L. (VIRIDESCENS St. Am.), var. VIVAX (Sonder). See Murr in *Mag. Bot. Cap.* 9, 1903. Alien. Falmouth, Cornwall, 1917, Miss M. COBBE.

2124 (2). C. PSEUDOPULIFOLIUM J. B. Scholz. This, teste Murr, is a good species, morphologically and geographically. See *Adv. Fl. Tweedside* 190. These specimens, gathered in 1919, corroborate the rather doubtful identification given in that Flora. G. C. DRUCE.

2124 (3). C. TREASURICUM J. B. Scholz, var. COMPLIMENTOSUM Murr, sub-var. PAUPERRIMUM Murr = C. BORBASII Murr (C. OPULIFOLIUM × ALBUM). Valde propinquum etiam *C. Preissianum*. Aldeburgh, Suffolk, 1920, Miss COBBE.

2131 (4). C. BERLANDIERII Moq., nova forma HASTATUM Murr, *in litt.* Billingshurst, W. Sussex, 1917, A. WEBSTER.

2144. ATRIPLEX PATULA L., var. GRACILIS. Plant slender, much branched from the base, forming a bushy growth; leaves thin, lanceolate, entire, or with an obscure tooth; inflorescence in narrow bracteate spikes; calyces slightly mealy, small, nearly entire. Sewage works, Leeds, 1919. [Ref. p. 78.] Sent by J. CRYER. G. C. DRUCE.

[2146. A. CALOTHECA Fr. *A. hastata* L., p.p. Plants so named by Mr Arthur Bennett were found by Mr George Lillie on the Caithness coast between Dunbeath village and the Castle, and also near Latheronwheel Harbour last September, only they are not the *calotheca* of Fries, but similar, I think, to plants gathered by me in the Orkneys, Sutherland, Forfar and Wigton which await a name].

Gen. 523 (2). THYMELAEA (Tourn.) Miller Abr. 1754.

2215 (5). T. PASSERINA (L). Lange in Willk. & Lange Prod. Fl. Hisp. i., 298. *T. arvensis* Lam. Fl. Fr. iii., 218. *Stellera Passerina* L. *Lygaea Passerina* Fas., ex Nyman. Alien. Found by Mr James Fraser at Levenhall, Midlothian, in 1916. It is a native of Central and Eastern Europe.

2229. EUPHORBIA ESULA L. See *Report* 574, 1919. This is allied to *salicifolia* and *virgata*. *Salicifolia* may be distinguished from either of the others by the lunate involucral glands being without horns. The leaves are broadest at or below the middle, with thick short hairs, especially on the under surface. In *Esula*

the leaves are lanceolate, broadest above the middle, or nearly of the same breadth throughout, glabrous, thin and obtuse at the apex. The involucral gland has a horn on each cusp. In *virgata* the leaves are narrower, linear-lanceolate or lanceolate, broadest below the middle, glabrous and rather firm in texture. The involucral gland has a long spreading horn on each cusp.

2229. E. CYPARISSIAS L., forma LATEBRACTEATA Schroeter, teste Thellung. As *E. Pseudo-Cyperissias* from Walton Downs, Surrey, 1920, well-established, [Ref. No. 2285], C. E. BRITTON.

2243. MERCURIALIS ANNUA L. See C. Yampolsky in *American Nat.* 280, 1920, who finds that sex is not a fixed condition and that a plant may change its sex during the progress of its life cycle. *Bot. Abs.* n. 750, vol. 6, 105, 1920.

Gen. 561. EPIPACTIS. Synopsis of British Species. In view of recent work, a synopsis of the British forms of *Epipactis* may be found useful; but we do not care to attempt a "key," which would probably prove faulty at some point. Even the following synopsis should not be absolutely relied upon for purposes of identification, since any abbreviated summary is liable to be so worded as to exclude unusual individuals; but it will be serviceable as a starting-point, and longer descriptions can be used as confirmation. Dried material in this genus is not of much use.

A practically complete account of the British forms will be found in recent volumes of the *Journal of Botany*—1913, 343, Wheldon and Travis; 1918, 1, T. and T. A. Stephenson; 1919, 37, 80; 1920, 33, Col. Godfery; and 1920, 209; 1921, 33, T. and T. A. Stephenson.

1. The reproductive organs are arranged for self-fertilisation. The rostellum is rudimentary, and soon disappears. This is a very definite character, yet not easy to detect without careful scrutiny, and almost impossible when the plant is dried.

E. VIRIDFLORA Reich.

v. *dunensis* T. and T. A. Stephenson. Whole plant yellowish-green but for purple sometimes at the base of the stem, stems solitary or in pairs, flowers green or without much tinge of brown, sometimes a little lilac on the epichile, point of lip recurved. Coastal sand-dunes in the West.

v. *leptochila* Godfery. May be wholly green, flowers tinged green or somewhat brownish in tinge, usually with a whitish lip which is not recurved, leaves lanceolate. Sometimes flowers and leaves delicate, sometimes coarser and with the general appearance of *E. latifolia*. A woodland plant.

v. *vectensis* T. and T. A. Stephenson. Usually shorter than the last, 3 dm. or less, very slender, with rather narrow, greyish-green leaves, flowers with lip-point not recurved and slender petals and sepals. Only known as yet in woodland in the Isle of Wight.

In the two first vars. the ovaries are nearly glabrous, and in the third quite glabrous.

It may also be noted that *E. microphylla* Sw., a continental species with very small, narrow leaves, is also adapted for self-fertilisation. See Darwin, *Fertilisation of Orchids*, 102-3.

2. The reproductive organs arranged for cross-fertilisation. The rostellum is very distinct and prominent.

E. PALUSTRIS Sw.

The lip is much longer than the sepals, and is hinged, so that the distal segment sinks down when an insect alights on it. It is frilled and pure white, with narrow, prominent lip-bosses, the whole spike broad, the leaves narrow-lanceolate. The ovary is roughly hairy. A plant of wet, marshy places and damp sands near the sea, very distinct from the other forms.

E. LATIFOLIA Sw.

Exceedingly variable. When a plant cannot be accurately traced to one of the other species, it may safely be placed here. The size of the whole plant varies much, also the size and shape of the leaves, which may be nearly all at the base of the stem or may clothe it up to the flower-spike. They may grade gradually into bracts or not. The flowers may be anything in colour from green to dark purple, the lip-bosses two or three, rough or smooth, the tip recurved or not. The ovaries vary from almost glabrous to hairy, but never thickly hairy as in the case of *palustris* or *atropurpurea*. The plant grows about the margins of woods and seems to love dusty road-side hedges.

E. PURPURATA Sm.

This plant is usually found with clustered stems, which is a rare feature with *E. latifolia*. Its leaves are much smaller than the

last and finer in texture, grading evenly into bracts. The whole stem and leaves are usually suffused with violet or grey-violet. The lip is greenish-white with lilac lip-bosses and the tip often not recurved, the petals whitish-green, and the sepals darker green. At least these characters belong to all the specimens we have seen. The ovaries are almost glabrous. A woodland plant much rarer than *E. latifolia*, and once seen easily distinguished.

E. ATROPURPUREA Raf. (*E. ovalis* Bab.).

Usually much shorter than the two preceding species, often quite dwarf, flowers deep red or yellowish-green, with very rugose lip-bosses, usually three, but sometimes two, the lowest leaves oval and usually rich purple beneath, the pedicels and ovaries densely hairy. A rare plant growing on exposed limestone ledges.

E. media of Babington, as treated in British floras, is now proved to be a mixture of *E. latifolia* and *E. viridiflora*, and must be dropped entirely. *E. media* of Fries, to which Babington assigned a plant which was really *E. viridiflora*, is a mixture of three species, and must also be discarded altogether. *E. atroviridis* Linton is also quite certainly nothing but a form of *E. latifolia*. Some varieties have been named, as var. *platyphylla* (of *media*) and var. *angustifolia* (of *latifolia*), also a hybrid of *E. latifolia* and *E. atropurpurea*, as *E. Crowtheri*. All these names are assigned by Dr Druce.

Rev. T. STEPHENSON, D.D., and
T. A. STEPHENSON, M.Sc.

As I use the generic name *Helleborine* the foregoing plants would be grouped in my *List* as :—

H. viridiflora (Reichb.), var. *dunensis* (T. and T. A. Stephenson); var. *leptochila* (Godfery); var. *vectensis* (T. and T. A. Stephenson).

H. latifolia Druce, with var. or sub-var. *angustifolia* Druce: hybrid with *H. atropurpurea* = × *H. Crowtheri* Druce.

H. palustris Schrank and var. *ericetorum* (A. and G.).

H. purpurata (Sm.) Druce.

H. atropurpurea (Raf.) Druce.

H. or *E. media* sinks in synonymy and with it the variety *platyphylla*. G. C. DRUCE.

2316. HELLEBORINE LATIFOLIA Druce. Under the generic name *Epipactis*, now wisely given up by Lindman, Schinz & Thellung, etc., the Rev. T. and Mr T. A. Stephenson, M.Sc. (*Journal of Botany* 209, 1920), give the result of their examination of what they consider to be five good British species—*palustris*, *atropupurea*, *viridiflora*, *purpurata* and *latifolia*. To this limitation we cordially agree. *E. media* Fries was a compound species having been already properly defined, so the trivial *media* falls to the ground. The character derived from the plicate-rugose bosses, as I have long observed, varies to such an extent as to be untrustworthy for specific definition. This the authors show by some well-drawn figures. If Colonel Godfery's contention (*Journal of Botany* 80, 1919) is correct, the question arises, as *media* Fries sinks, whether Babington's trivial should not be used to designate *viridiflora*, since that, as Colonel Godfery shows, is the original of Babington's *media*. This, however, creates confusion and is scarcely worth the candle. With regard to Linton's *atroviridis*, I quite agree with the conclusions of the authors against it being considered a species. In the *List* (1908) I put it as a variety, if indeed it deserves that grade, of *latifolia*. A good definition of *viridiflora* is given. It is a self-fertilising species, and therefore has little or no rostellum. In *Journal of Botany* 33, 1920, Colonel Godfery gives (under *Epipactis*) drawings of the flowers and ovaries of *H. viridiflora*, *latifolia*, and *violacea* = *purpurata*, and a description of the var. *leptochila*.

2324. ORCHIS MORIO L., forma CHURCHILLII mihi. In the marshy pastures to the east of St Ouen's Pond, Jersey, on the Poisson d'Avril of this year, I was struck by the appearance of a showy-looking Orchid which at a distance seemed to be *laxiflora* or its hybrid, a date unusually early for *laxiflora* to blossom. My young companion was not deterred by the wet marsh and soon brought me specimens, which showed that they were neither *laxiflora* nor *alata* but a showy form of *morio*. We subsequently found it in considerable quantity and extending into several fields. The plants were fairly uniform in character and were larger and handsomer than the plant of the cowslip pastures of our Midland counties. The differences seem to be those of degree rather of any essential character. I therefore propose to call it *forma* and name it after my fellow-

traveller as an incentive to him to pursue his botanical work. The plants are stout and up to 10 cm. high, the stems thick and succulent; the inflorescence is as much as 3 cm. long; the flowers are quite handsome, the conspicuous labellum being 10-13 mm. broad (Somerset *morio* was 8-10), the middle lobe often markedly truncate (unlike that of *alata*) and then shorter than the lateral lobes. That it is not a mere seasonal freak is evidenced by its being represented in J. Piquet's herbarium as long ago as 1850, while there are specimens gathered more recently by him at La Moye. G. C. DRUCE.

2326 (2). O. PRAETERMISSA, var. PULCHELLA Druce in Gard. Chron. i., 76, 1920. Distinguished from *praetermissa* by the brighter colour (in whichever shade), the smaller labellum which is more angled on the lateral margin, and in its usually smaller size. Common in the north—Shetland, Orkney, Caithness, Sutherland, Ross, Inverness, etc. G. C. DRUCE.

2326 (3). O. PURPURELLA Stephens. in Journal of Botany 164, 1920. *O. cruenta* Rolfe, ? Mueller. The authors have sent a reprint of their paper. They say their plant differs from my variety *pulchella*, inter alia, by having the leaves spotted and the stems more than half solid. From *praetermissa* it differs in the lip being more angled and in the spotted leaves, and from *incarnata* in the lip being broader. The Rev. T. Stephenson (*in litt.*) suggests "that you might consider it to be a hybrid of *pulchella* with *maculata*, and indeed the fainter spotted leaves, the markings and the half-solid stem, do indeed to us seem to render such an origin possible." But Mr Stephenson adds that with absolute definiteness he can say that "such an origin is out of the question. There is no *pulchella* anywhere near. In the fields where it grows there are hundreds of specimens, very true to type, of a far more brilliant colour than any other specimens on the ground, obviously healthy and increasing. We have watched them for years. They hybridise with other forms, *i.e.*, *latifolia* and *ericetorum*." I have sent specimens to Prof. Lindman for comparison with Swedish *cruenta*, and he says they are what he would call *cruenta*. We are indebted to the Messrs Stephenson for their careful work and for the beautiful paintings of the details of the life of the British Orchids. It is trusted that the specific

character claimed for *purpurella* may be maintained. It is a beautiful plant.

2335. OPHRYS APIFERA × FUCIFERA. This is identified as *O. Botteronii* Chodat. It was found by our members, H. WALKER and Major J. W. HARRIS, between Folkestone and Dover. See *Orchid Review* xxvii., 142, 1920.

2336. O. MUSCIFERA Huds. Near Canterbury, ERIC OGDEN. A monstrosity in which there is a union of petals with the column, and the consequent transformation into a pair of additional antlers. See *Orchid Review* 1920.

2405 (3). ALLIUM FISTULOSUM L. Alien, Siberia. On the sandy mud-flats of Hayling Island, S. Hants, 1920, Mrs HILLARD. Named at the British Museum.

2411. SCILLA NON-SCRIPTA L. & H., var. BRACTEATA Druce, forma STUARTIAE. In a wood near Malvern, Worcester, April 1920, Mrs C. URQUHART STUART. This differs from ordinary *bracteata* (which keeps constant in culture), as Mr R. F. Towndrow, who kindly communicated the specimens, says, by the bracts being foliaceous, not coloured. G. C. DRUCE.

2416. LILIUM MARTAGON L. See Prof. R. Chodat in *Bull. Bot. Soc. Genev.* 50, 1919, on La Floraison du *Lilium Martagon*.

2440. JUNCUS GERARDI Lois., forma GRACILIS mihi. The Knab, Lerwick, 1920. Plant tall, slender, with long narrow leaves, 12-14 in.; inflorescence few-flowered, overtopped by the long bract; capsule longer than type. The plant requires further study, as a nearly similar plant was found by Beeby at Quayfirth, North Maven. G. C. DRUCE.

2489. POTAMOGETON ALPINUS × GRAMINEUS = × P. NERICIUS Hagst. In the River Don, at Alford, N. Aberdeen, with both parents. See *Report* 403, 1918, where I suggested some plants were this hybrid. Dr Hagström now names them as above. G. C. DRUCE.

2493. P. GRAMINEUS L., var. LACUSTRIS Fr. Tingwall Loch, Shetland, 1920. G. C. DRUCE.

2495. P. NITENS Web., var. SUBINTERMEDIUS Hagstr. Loch Stenness, Orkney, 1920, G. C. DRUCE, R. J. BURDON, and Col. H. H. JOHNSTON.

2498. P. PERFOLIATUS L., forma OVATIFOLIUS M. & K. Teviot, below Roxburgh, 1912, J. R. MATTHEW; Cherwell, Oxford, 1885, and Abingdon, Berks, G. C. DRUCE.

2502. P. PERFOLIATUS L., var. GRACILIS Ch. & Schl., forma LANCEOLATA Blytt. Mill-lade, near Selkirk, 1912. Named var. *Richardsonii* by Arthur Bennett, but that plant is, as yet, unknown for Britain; teste HAGSTROM. See *Report* 291, 1912.

2508. P. PANORMITANUS Biv. Ditch near the sea in Wolverton Parish, W. Norfolk, 1884, G. C. DRUCE. The earliest determined British specimen. See *Report* 114, 1884.

Var. MINOR Hagstr. Southill Park, Bedford, 1913, J. E. LITTLE, as *pusillus*.

2508. P. PUSILLUS L. × P. TRICHOIDES = P. FRANCONICUS Fischer. Marsh Gibbon, Bucks, 1913; Buckendon, Norfolk; Swainsthorpe, W. Norfolk, 1919; Bressingdon, E. Suffolk, 1883, G. C. DRUCE; White Water, near Warnborough, N. Hants, 1897, Miss C. E. PALMER; Peterborough and Mason's Drain, Northants, 1909, G. C. DRUCE; Marden, W. Kent, as *Berchtoldi*, E. S. MARSHALL (see *Report* 425, 1893); Wytham, Berks, 1918, G. C. DRUCE.

2508. × P. TRINERVIUS Fischer = P. PANORMITANUS × TRICHOIDES. Swainsthorpe, W. Norfolk, DRUCE; Aberarth, Cardigan [Ref. No. 2278], E. S. MARSHALL. Named by Hagström.

2508 (3). × P. STURROCKII Benn. = P. OBTUSIFOLIUS × PANORMITANUS Hagstr. In the canal near Stroud, Gloster, June 1900, G. C. DRUCE; teste HAGSTROM.

2512. P. PECTINATUS L., var. DIFFUSUS Hagstr., forma PINGUIS Tis. Thames, near Eynsham, Oxon and Berks, 1920. This I have previously referred to *interruptus* Kit. To me it seems specifically distinct from *pectinatus*. The lower portion of the plant differs greatly from the upper. G. C. DRUCE.

2513. P. SUECICUS = FILIFORMIS × PECTINATUS, var. INTERMEDIUS Hagström, nov. forma PECTINATIOIDES Hagstr., *in litt.* *P. vaginatus* Bennett, not of Turczaninow. This comes from Tingwall and the Asta Loch, Shetland, the locus classicus for *P. vaginatus*, as named by Bennett, where it was found by W. H. Beeby. See *Ann. Scot. Nat. Hist.* 235, 1907, and *Rep. B.E.C.* 702, 1919. In 1920, with Prebendary Burdon, three visits were paid to these lochs, and a careful search revealed no true *vaginatus*. A curious plant was, however, found stranded on the shores of both lochs and a little *in situ*. It was barren. I have compared it with the *P. vaginatus* of Beeby in *Herb. Hume* and find they are identical. All the gatherings sent to Dr J. Hagström, were named as above. On our present information *P. vaginatus* may be deleted from our *List*. It may be recalled that Dr Hagström in his recent work on Pondweeds queried the correctness of the Shetland identification, since *vaginatus* was not found in Scandinavia, Iceland or Greenland, and does not extend south of the 60th parallel. A still more unlikely locality was that of Anglesey (*Rep. B.E.C.* 313, 1890). *Vaginatus* and *Berchtoldi* therefore disappear from our *List*. G. C. DRUCE.

2527 (3). CYPERUS CONGESTUS Vahl. *Mariscus congestus* C. B. Clarke. Bradford, Yorks, 1918, J. CRYER. See *Report* 528, 1918. Det. A. THELLUNG.

2529. ELEOCHARIS MAMILLATA H. Lindberg fil. It is thought this copy of Lindberg's description of the plant closely allied to *palustris* might induce members to search for it in Britain. It was found in " Fennia, Savonia borealis," and " in fossa limosa prope Jorois, August, 1902." The plant, which has hitherto been recognised in the North as *Scirpus* or *Eleocharis palustris*, consists of two entirely distinct species, viz., *Eleocharis* (*Scirpus*) *eupalustris* and *E. mamillata*. They may be distinguished by the following characters :—*Eleocharis eupalustris* mihi. Stem dark green, firm, with about 20 vascular bundles, with palisade cells all round. Fruit egg-shaped, with four bristles or none, the bristles with short appendages. Base of style elongated, clearly constricted. *Eleocharis mamillata* mihi. Stem bright green, soft, with about 12 vascular bundles, with palisade cells only above the vascular bundles, distinctly furrowed

when dry. Fruit almost round, with 5-6 (8) bristles, the bristles with long appendages. Base of style low, mamillate.

2531 (2). E. TRIANGULARIS Reinsch., n. sp. Germania. Bavaria. In uliginosis prope Erlangen, 260 m.s.m. Iunio et Augusto 1902. This new species differs but little in habit from its nearest ally, *E. acicularis* (L.) R. Br. Very constant distinctive characters, however, are found in the structure of the stem, especially with respect to the number of the vascular bundles and longitudinal air-cavities :—

E. triangularis—Transverse section of stem with three central air-cavities. Vascular bundles three (parietal).

E. acicularis—Transverse section of stem with four central air-cavities. Vascular bundles four (parietal).

The outline of the section varies to some extent in both species. *E. triangularis* is about Erlangen the more frequent form, having an almost equal-sided triangular outline. In *E. acicularis* the outline is rectangular, six-sided, or even almost ellipsoid. This plant should be sought for in Britain.

2551. ERIOPHORUM ALPINUM L. In answer to my enquiry, which has been suggested by a note in the *Gardeners' Chronicle*, Mr W. Stansfield tells me he found it in 1900 in the company of Mr Foggitt, he thinks, between Glen Phee and Little Tom Buidhe, or somewhere in that area. The specimens were enclosed with several rare Grampian plants to a Mr Cockshott, a surgeon of Strangeways, Salford, who has now been dead many years. He it was who identified it. Unless *Scirpus caespitosus*, which, in that area has often conspicuous bristles, is mistaken for it, this statement of Mr Stansfield's, for which I am greatly indebted—may he live long to enjoy his retirement—suggests the advisability of a systematic search for this extinct British species! It is scarcely likely to have escaped the eyes of Mr and Mrs Corstorphine, who know that ground well.

2559. CAREX RIPARIA, var. GRACILIS, in Britain. In July, 1914, Mr E. Thurston, C.I.E., who lately presented his fine herbarium of Cornish plants to Kew (see *K.B.*, 1920, p. 44), collected an interesting

sedge in the Gunwalloe Valley, Cornwall. After careful investigation it has been concluded that the earliest name applicable to this plant is *Carex riparia* Curt., var. *β gracilis* Coss. et Germ. Flore de Paris, 1845, p. 605, where the following description is given: "Tiges presque lisses sur les angles. Feuilles souvent vertes. Epis mâles solitaires ou géminés. Epis femelles laxiflores, longuement pédonculés, souvent pendants. Utricles longuement dépassés par les écailles. Ecailles très longuement cuspidées-aristées.—A. R.—endroits marécageux ombragés.—Corbeil! Mennecy! La cour de France! &c." The variety is kept up by Husnot, *Cypéracées de France*, p. 54 (1905-06), but Roûy et Foucaud *Fl. de France*, vol. 13, p. 486 (1912) make it a synonym of var. *gracilescens* Hartm., ap Anderss., sub-var. *aristata* Rouy et Fouc. *Carex riparia*, var. *gracilescens* Hartm., has been considered by some authors the hybrid *C. riparia* × *vesicaria* (see J. G. Laurell in *Allg. Bot. Zeitschr.* 1900, p. 197). The Cornish plant does not suggest a hybrid nature. Kukenthal (in *Engler Pflanzenr.*, iv., 20, p. 73) apparently considers the var. *gracilescens* Hartm. a mixture, and, not having seen the still earlier description and name of *gracilis* Cosson et Germain, he makes the new combination var. *subgracilescens* for what is apparently the same variety. In the Kew Herbarium a specimen from the Isle of Wight, collected by Dr Bromfield in a wet salt marsh at the mouth of the Wooton creek between Ryde and Cowes, in May 1846, has long peduncles to the female spikes and acuminate glumes longer than the utricles, and must be referred to the var. *gracilis* Coss. et Germ. It is somewhat abnormal in having androgynous spikes. Lastly, a plant referred to in the *Report* for 1915 of the Botanical Society and Exchange Club, p. 379, is the same variety. The following information is there given: "*Carex riparia*, Curt., forma. Tickenham Moor, N. Somerset, v.-c. 6, June 5, 1915. Growing in an open rhine, free from shade."—Miss Ida M. Roper. "Remarkable for its very long lower peduncles and female glumes."—E. S. Marshall. "A curious and interesting form of *riparia*, exactly analogous to *C. vesicaria* L., var. *pendula* Uechtr. Herb. Cf. Asch & Graeb. in *Syn. Mitt. Fl.* 212, 1903. It may be called f. *pendula*."—A. Bennett. A specimen of thus plant has been seen in the private herbarium of Mr Bruce Jackson, A.L.S. W. B. TURRILL in the *Kew Bulletin*, No. 4, 1920.

2619. C. DIANDRA Schrank. Moss of Durkadale, Orkney, August 1920, R. J. BURDON, G. C. DRUCE, and Col. H. H. JOHNSTON. The fruits of this differ from typical *diandra* and are exactly similar, teste D. Lumb, as are the nuts, to Gibson's plant from Seaman's Moss Pits.

[2619. C. DIANDRA × PANICULATA at Lomma Skane, Sweden, differs from the original German hybrid. O. R. Holmberg in *Bot. Not.* 249, 1918. This should be looked for in Britain, where the species grow together.]

2645. ZEA MAYS L. The origin of this plant has been for a long period a theme for discussion, *Euchlaena mexicana* being the most probable. J. Kuwada (*Journ. Coll. Sc. Imp. Univ. Tokio* xxxix., 10) in a valuable research supports the view of Collins that Maize is a hybrid of the above with some species of Andropogoneae. There are ten pairs of chromosomes in the nucleus of *Euchlaena* Maize and species of *Andropogon*; they are longer than those of *Andropogon*, and in Maize the length varies. Each pair consists generally of a longer and shorter chromosome. Kuwada thinks that, as in some races of Maize the chromosomes number not ten but eleven or twelve, it may be conjectured that the great variation exhibited by Maize may be in part due to mutations of which the increased numbers of chromosomes is an indication. One need not wonder at its variation considering its very remote cultivation, which is probably even longer than that of Wheat. There is an unpublished monograph in the Gay MSS. at Kew.

2687 (2). AGROSTIS PALLIDA DC. & Lam. Fl. Fr. Suppl. 251, 1815, non Willd. Alien, Portugal, S. Europe. Leith Docks, Midlothian, 1920, J. FRASER & R. GRIERSON.

2689 (3). A. ERIANTHA Hackel in Viert. Nat. Ges. Zur. xlix., 172. Alien, South Africa. Bradford, York, J. CRYER. Named at Kew.

Gen. 658 (2). DICHELACHNE Endl. Prod. Fl. Ins. Norf. 20, 1833.

2701 (5). D. CRINITA (L. f.) Hook. f. Fl. Nov. Zey. i., 293. Alien, New Zealand, Australia. Netherdale, banks of Gala, Selkirk,

September 1916, I. M. HAYWARD. An addition to the plants in the *Adventive Flora of Tweedside.*

2705 (2). AIRA PROVINCIALIS Jord. Pugill. 112. *Avena provincialis* Nym. Alien, Leith Docks, Midlothian, 1903, JAMES FRASER. In *Ind. Kew* this is merged with *A. capillaris* Host, but Coste and Rouy keep it as a distinct species, the latter author indeed putting it in a separate section from *capillaris*. He says it is exclusively a French species, growing in sandy places along the Mediterranean and occuring at St Florent, &c., in Corsica.

2706 (3). A. CUPANIANA Guss. Fl. Sic. i., 145. Alien, Portugal, Spain, France, Italy, Corsica, Sardinia, Tunis, Algeria, Morocco. Leith Docks, Midlothian, October 1920, JAMES FRASER. Allied to *A. caryophyllea*, with which it is combined in *Ind. Kew.* but kept distinct by Grenier & Godron, Rouy, Coste, and Nyman. It differs mainly in its truncate, mucronate, obtuse, denticulate glumes. Rouy places stress on the top of the peduncle being thickened into a ring, whereas in *caryophyllea* it is merely thickened. This character appears scarcely sufficiently constant in examples I have examined. Coste lays stress on the shorter peduncles of *Cupaniana* and the somewhat smaller spikelet. I have gathered it at Hyères and Ajaccio. G. C. DRUCE.

2714. HOLCUS LANATUS L., forma DIFFUSA mihi. In the Island of Hoy, as well as in other places on Pomona in the Orkneys, the Yorkshire Fog occurred with a panicle much more lax and diffuse than the common British form, July and August 1920, G. C. DRUCE.

2714 (2). H. SETOSUS Trin. in Mem. Ac. Petersb. ser. v., vi., ii., 87, 1840. *H. setiglumis* Boiss. & Reut. *H. annuus* Salzm. Alien, Spain, North Africa. Leith, Midlothian, J. FRASER.

2742. KOELERIA ALBESCENS DC., var. GLABRA DC., forma DOLICHOPHYLLA Domin, *in litt.* Foliis infimis innovationumque elongatis culmos cum paniculis manifeste superantibus excellens, glabriflora.

Forma PUBIGLUMIS Domin, f. nova, *in litt.* Glumis glumellisque pubescenti-hirsutis excellens. St Cyrus, Kincardine, G. C. DRUCE.

2785. FESTUCA RUBRA L., near Cardiff, W. O. HOWARTH, M.Sc., in the *New Phytol.* xviii., 263-286, 1919, with 14 figs. In this carefully prepared paper Mr Howarth describes three forms which he has had under investigation. One is *grandiflora*, from Dr Trow's garden; the second, from Shepstow, is *glaucescens*; and the third, which is glaucous-green with smooth rachides, is from the Barry pebble-ridge. This he names sub-var. *tenuifolia*. Elatior; folia innovationum mollia setacea (0.8 mm. diam.), obscure glauco-viridia vaginae hispidulae; panicula densiuscula (9 cm. long), spiculae magnae (2 mm. longae); glumae fertiles 5-7 mm. longae, brevius-longius aristatae. It grows (i.) in the salt-marsh, . . . associated with typical halophytes; (ii.) on the pebble-ridge with xerophytes; (iii.) on hard exposed rocks in scanty soil, calcareous and well-drained; and (iv.) on the calcareous tufa of the cliff-face. The comparative morphology, anatomy, and histology are given of the three forms, which Mr Howarth says, are quite stable, distinct in both vegetative and floral characters, and in choice of habitat. This might well call for their being raised to varietal rank, and supports my contention that comparative cultivation will greatly increase the number of varieties. In the *Journal of Ecology* vii., 216, 1920, Mr Howarth gives notes on the habitats and ecological characters of the above plants.

2868. EQUISETUM ARVENSE L., var. PSEUDOSILVATICUM Milde. Roadside near Waverley, Surrey, 1920 [Ref. No. 2253], C. E. BRITTON. Rouy (*Fl. Fr.* xiv., 495) says like *nemorosum* but "rameaux plus allongés, longuement rameux et à rameaux secondaires 5-gones." In this specimen the branches are somewhat shorter than in *nemorosum*.

2885 (2). ASPLENIUM ONOPTERIS L. As *A. Adiantum nigrum*, var. *acutum* Poll., Mr R. L. Praeger (*Irish Nat.* 13, 1919) publishes a forma *lineare* (which is type *Onopteris*) and f. *ovatum*. The latter is the plant figured by Moore in *Nature Printed Ferns*, t. xxxvii., B. from a plant collected at Killarney by Dr Allchin, of which I possess an original frond. It is the commoner form in Ireland, occurring, Mr Praeger says, at Lough Hyne, Schull, Co. Cork; Snowhill, Kilkenny, Newtonards, Co. Down. The true *Onopteris* (*acutum* Bory)

I have from Rozel, Jersey. A Berkshire specimen from between Lucky and Wokingham Praeger puts to *Adiantum nigrum*, but it is well on the way to *lineare*.

2927 (3). LYCOPODIUM CHAMAECYPARISSUS A. Braun. See *Report* iv., 222, 1915. In that place I mentioned the existence in Mr C. Bailey's herbarium of a specimen of the above plant, labelled *L. alpinum*, on a sheet with true *alpinum* from Ingleborough Hill, 1816, H. S. As yet no corroboration has come to hand, but recently some evidence bearing upon the record has come into my possession. Major Gambier-Parry has kindly given me a herbarium collected by J. Ansell of Hertford. In it is a sheet labelled *Lycopodium alpinum*, Ingleborough Hill, Yorkshire, 1810, which also has on it a fruiting specimen of *L. Chamaecyparissus*, which adds additional value to the above record. I venture to suggest that the H. S. in *Herb. Bailey* is Henry Shepherd, a curator of the Liverpool Botanic Garden in 1836 and nephew of John Shepherd, the discoverer of *Centaurium latifolium* in 1803. The handwriting is, I believe, identical with that on a label of *Centaurium latifolium* collected in 1839 (John died in 1836), so that both specimens were probably collected by him. I am afraid he sometimes sent specimens from the Botanic Gardens as if they were from native situations, and it may be that both species grew in the garden, but the date 1810 is 26 years before he became curator and 6 years before the specimen in *Herb. Bailey* was gathered. Shepherd's herbarium was formerly preserved, or rather stored, at the Botanical Gardens. Mr J. Wheldon kindly tells me that it has now been removed to the Liverpool Museum. The specimens were much damaged, so that many plants had to be destroyed. It contains now, Mr Wheldon says, no *L. alpinum* from Ingleborough. The duplicated specimens of a different date strengthen the making a special search on Ingleborough very desirable. G. C. DRUCE.

REVIEWS AND NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1920.

(*Owing to exigencies of space much material has had to be omitted. The issue of Botanical Abstracts (see p. 61) will, however, render these less necessary.*)

ALLEN, PAUL. New Chenopodium Hybrids. Rep. Sp. Nov. 15, 177, 1918. The following are included :—*C. album* × *leptophyllum* = *C. leptophylliforme* and var. *glabrum*; *C. hircinum* × *leptophyllum* = *C. pseudoleptophyllum*; *C. Binsianum*, var. *acutum*; (*C. hircinum* × *striatum*) × *album* = *C. Haywardiae* × *album*. This he calls × *C. basiliense*.

ARBER, AGNES, D.Sc. WATER PLANTS, A STUDY OF AQUATIC ANGIOSPERMS. pp. 436, tt. 172, 1920. Camb. Univ. Press; 31/6.

ARCHANGELI, GIOVANNI. On *Diospyros Kaki*, var. *Lycopersicum* in Bull. Soc. Tosc. Ortic. xliv., 1919.

BABCOCK, ERNEST B. *Crepis*: a Promising Genus for Genetic Investigations. American Naturalist 270, 1920.

BABCOCK, ERNEST B., and COLLINS, JULIUS L. Interspecific Hybrids in *Crepis capillaris* Wallr. and *C. tectorum* L. Univ. of Calif. publications in Agr. Sciences ii., 191, 205, 1920. *Crepis* species are known to possess low chromosome numbers, and the writers have given genetic investigation to these two species, *tectorum* having one more pair of chromosomes than *capillaris* the latter having only three pairs. The two species were crossed, one method being to emasculate the female parent flowers, the other to wash the female plant free of pollen by the use of a fine jet of water. The latter method was used when the *capillaris* plant was shown to be self-sterile. These closely allied species differ in the size of the achenes. Those of *tectorum* range from 3.5 to 4 mm. in length, those of *capillaris* from 2.0 to 2.5 mm. The cotyledons of *capillaris* are approximately 5 mm. wide and 4 to 6 mm. long, those of *tectorum* are narrower, ranging in length around 6 mm., while

they are only about 3 mm. wide. The results of culture experiments are given.

BALFOUR, Prof. I. B. New Species of Rhododendrons. Notes from the Royal Botanical Garden, Edinburgh, lii-lix. Forty new species, chiefly from China, are described; they are the Rubi of the East.

BEVIS, J. F., B.A., B.Sc., and JEFFERY, H. J., A.R.C.Sc., F.L.S. BRITISH PLANTS: THEIR BIOLOGY AND ECOLOGY. pp. vi., 346, tt. 115. Second edition. Methuen & Co., London, 1920; 7/6. The book is divided into three parts. (1) Fundamental ecological considerations—water, temperature, light, air and soil. (2) A general description of British plants examined in the light of these factors and considered as an outcome and expression of them. (3) The physiognomy of the British flora in its most conspicuous associations to explain its origin and development, and to analyse its present distribution. In treating of the Environment and its influence upon vegetation ten chapters are occupied, and the student must be a dull one who fails to obtain a good general idea of the subjects discussed. Eight chapters are devoted to Plant Biology, which is equally well treated. Twelve chapters are occupied in treating of the third of the subjects alluded to above. To account for the great wealth of variation it is stated two theories are possible, the " Special Creation " and the " Evolution," and that only the latter can account for the facts. This seems somewhat bald, and so far as the second " and only possible one " may demand some future modification. The Darwinian theory of the accumulation of minute differences which eventually produce a new species is contrasted with De Vries' Mutation Theory, the latter of which is suggested to be the more probable. " The peach is regarded as a mutation of the almond, the nectarine is undoubtedly a mutation of the peach." In treating of the origin of the British Flora the generally accepted explanation of its coming after the Ice Age from the Continent is given and the scales are held evenly between the different views relating to the presence of the Lusitanian element in our flora. Regarding the rarity or absence of endemic species in Britain it may be stated that while *Oenanthe fluviatilis* occurs in

Germany and Denmark, there are some Rubi and several Hieracia not yet known to occur on the Continent, and a closer study of micro-species will doubtless increase the number of endemic forms. Of eight forms of *Taraxacum* sent by the writer to Dahlstedt not one was identical with any of the three hundred species known from Scandinavia. Another Lusitanian species might be added—that of the recently-discovered *Centaurium scilloides*, var. *portense*. *Simethis bicolor* is not, as stated, found in Devon, but Dorset, to which county it probably came in recent times. If the standard of specific distinction be that of "always breeding true from seed," the number of species would not be lessened. The "bewildering multitude" of Hieracia would probably in most cases stand that test. So, too, would many more colour varieties. It is already known that *Geranium lancastriense* remains fairly constant under changed conditions. The whole matter cannot be easily answered. For instance, the authors say that "in the West of Ireland there grow together two saxifrages—*S. umbrosa* and *S. Geum*. According to Babington they are distinct species. According to Clement Reid they are divergent forms, for he saw growing among them a nearly complete series of intermediate forms." Bentham made a similar remark about the Primrose and Cowslip. Equally erroneous statements have been made about *Geum rivale* and *G. urbanum*. The fact is that the observations were correct but wrong deductions were drawn. *S. Geum* and *umbrosa*, *Primula veris* and *vulgaris*, *Geum rivale* and *urbanum* are pairs of distinct species, but where they grow together they readily hybridise, and their hybrid offspring make a chain of intermediates. Where *G. urbanum* grows away from *rivale* intermediates do not occur. The chapters on Ecology abound with interesting material. One may add that the Lizard Orchid is not confined to Kent. *Sagina Boydii* might well have been omitted. Evidence is lacking for the occurrence of *Saxifraga caespitosa* in Westmorland, nor is there scientific evidence of the occurrence of *Cochlearia groenlandica* on a mountain cliff anywhere in Britain. *Silene acaulis* and *Thalictrum alpinum* might have been cited as examples of alpine plants occurring on the sea coast. But these are minor points, and we can commend the book as being eminently useful. An additional claim for gratitude is the Bibliography and the epitome of the Mendelian Theory in the Appendices.

BLAKE, S. F. Directions for Collecting Flowering Plants and Ferns. U.S.A. Dept. of Agriculture Circ. No. 76, 1920. This excellent pamphlet of 8 pages can be obtained for five cents from the Government Printing Office, Washington, D.C., U.S.A. As practical points which may be mentioned, it suggests that a vasculum should be painted white, not black, and that corrugated straw-boards are excellent for placing amongst the drying paper.

BLATTER, ETHELBERT. FLORA ARABICA. Ranunculaceae to Moringaceae, p. 1-123, 1919. Record of the Botanical Survey of India. The arrangement is according to Bentham & Hooker. The names *Nasturtium* and *Neslia* are used instead of *Radicula* and *Vogelia*. The distribution and vernacular names are added where possible. The North African Desert and the Mediterranean area afford the chief elements of the flora.

BLATTER, E. with P. F. HALLBERG and C. M'CANN. Contributions to a Flora of Baluchistan, in Journ. Ind. Botany, 1919-20.

BOCCONE, PAULO. His Herbarium at Lyon. See R. Pampanini in Nuovo Gior. Bot. Ital. xxvi., 1-20, 1919.

BOSE, Sir JAGADIS CHUNDER. Research on Growth of Plants, in Nature 615, 648, 1920.

BOTANICAL ABSTRACTS. Williams & Wilkins Company, Baltimore, U.S. Camb. Univ. Press, Fetter Lane, London, E.C. Vol. iii., six parts, January-June; vol. iv., pt. 1, July; vol. v., pt. 1 and 2, August and September; vol. vi., pt. 1 and 2, October and November. These Abstracts are becoming more representative but so far as Britain goes are still inadequate. Our own Reports, which have the largest circulation of any purely Botanical publication in Britain, are not even mentioned, although it has been thought necessary to quote from other sources a paper giving the height of *Cirsium palustre*, an erroneous account of *Barbarea rivularis* and *stricta*, and the exciting record of *Galium erectum* from Somerset, for which county it is already recorded.

BOULENGER, G. A. Some Roses from Dorsetshire, in Journal of Botany 16, 1920.

BOWER, Prof. F. O., F.R.S. The Earliest Known Land Flora. Royal Institution Discourse. See Nature 681, 712, 1920. "The morphology of land-living plants is again in the melting-pot." The new facts "link the Bryophytes and the Pteridophytes more closely together than ever before."

BOWER, Prof. F. O., F.R.S. JOSEPH DALTON HOOKER, O.M. pp. 62. London, S. P. C. K., 1919; 2/-. A useful account of the great botanist, but we still lack a volume which gives the collector's and explorer's side of his character, nor have his powers as a keen systematist yet received adequate treatment.

BRITTEN, JAMES. Some Early Cape Botanists and Collectors, in Journ. Linn. Soc. xlv., pp. 29-51, 1820. Paul Hermann (1640-98), Oldenland, John Foxe, F. Kiggelaer, F. P. Oldenburg, Andreas Auge, Francis Masson (1741-1805), C. P. Thunberg (1743-1828), William Roxburgh (1751-1815), are among the earliest botanists mentioned in this valuable contribution towards the history of South African Botany. No mention is however made to one of the earliest collectors, Alexander Brown, circa 1700, who sent a large number of plants to Daniel Dubois which are preserved at Oxford.

BRITTON, N. LORD. A Botanical Expedition to Trinidad, in Journ. New York Bot. Gard. 101, 1920. This gives a most interesting description of his and Mrs Britton's visit in 1920 to that most beautiful island. They brought back a very large gathering of over 2000 field numbers, among which was a new *Hydrocotyle*. I had gathered this in my first visit, but it had remained unnamed. They saw that curious terrestrial Bladderwort *Arcylium* in the Northern Mountain Reserve, growing on wet banks. There, too, a slender, climbing bamboo-grass ascends trees, and there is a yellow-flowered, high-climbing *Senecio*. The flora of that region is very rich. They also visited the fine Mora Forest, where the Balata rubber trees are wonderful objects, as well as others, such as *Dimorphoandra excelsa*, a gregarious species. In their recent visit to Oxford, all too short as it was, they not only named many of my gatherings but pleasant recollections of that rich botanical hunting ground were revived, and we shall await with interest the publication of the results obtained.

BRITTON, N. LORD, and ROSE, J. N. THE CACTACEAE. Descriptions and illustrations of the Cactus Family. Vol. i., pp. 236, 36 col. plates, 301 text figures; vol. ii., pp. 237, 40 col. plates, 305 text figures, September 1920. A very costly work issued by the Carnegie Institute. The figures are excellent.

BRITTON, N. LORD, and MILLSPAUGH, C. F. THE FLORA OF BAHAMA. 8vo., pp. 695, Ackerman, Lorillard Mansion, Bronx Park, New York City; 6 dollars 25 cents. The volume includes, with the cellular Cryptogams, 1952 species, of which 185 are supposed to be endemic. The Bahama includes 29 islands and very many isolated rocks, with a land surface of 4424 square miles.

BROWN, N. E. New and Old Species of *Mesembryanthemum*. Journ. Linn. Soc. xlv., 53-140, tt. 6, 1920. This important paper lacks an index.

BROWNE, Lady ISABEL M. P. A third Contribution to our Knowledge of the Anatomy of the Cone and Fertile Stem of *Equisetum*. Ann. Bot. xxxiv., 237-263, 1920. Phylogenetic Considerations of the Internodal Vascular Strands of *Equisetum*. New Phytologist xix., 11-25, 1920.

CHEESMAN, W. N., F.L.S. A SPRIG OF ACACIA. This brochure treats of the Acacia as an emblem in Masonry and directs attention to its being often represented by the False Acacia, *Robinia Pseud-Acacia*, whereas *Acacia arabica* should be the one depicted.

CLEMENTS, F. F. PLANT INDICATORS: The Relation of Plant Communities to Process and Practice. pp. xvi., 388, tt. 92. Carnegie Institute, Washington, No. 290, 1920; 7 dollars. The species *Mertensia* [*Pneumaria*] *sibirica* is indicative of the condition "deep shade" in Colorado, and every plant is an indicator of conditions, processes or uses. It has been long recognised that certain species in Britain are indicative of certain soils. The weakness of ecologists often lies in their ignoring the *variations* of species. An intensive study of British grasses will almost certainly lead to finding that many of them are good soil-indicators. As we know, *Rumex Acetosella* is of acid soils, and *Polygala calcarea* is of limestone and chalk.

COCKAYNE, L., F.R.S., Director, Dominion Museum, Wellington. N.Z. NEW ZEALAND PLANTS AND THEIR STORY. Ed. 2, 7/6. Although called a second edition, the work has practically been rewritten.

COLLINS, JULIUS L. Inbreeding and Crossbreeding in *Crepis capillaris* Wallr. Univ. Calif. Agr. Publ. ii., 205-16, 1920. Pollen sterility is one of the results of inbreeding and one plant in a third generation culture produced almost no pollen. "Inbreeding in a naturally cross-fertilised wild plant causes conditions in many ways similar to the conditions produced by inbreeding in maize. The maximum reduction appears to be in the third and fourth generations. Crossing inbred strains with non-inbred strains produces vigorous, rapidly growing plants. Increased size of pots and quantity of soil did not affect the relationship of vigour and of growth." We hope the author will go on to experiment with the different varieties of *C. capillaris*. It is quite possible that some may be specifically distinct. Bentham united *tectorum* and *capillaris* and yet modern researches have shown they possess a different number of chromosomes.

COLTMAN-ROGERS, CHARLES. CONIFERS AND THEIR CHARACTERISTICS. John Murray & Son, 1920; 21/-.

CHURCH, Dr A. H. Elementary Notes on Coniferae. Bot. Mem. No. 8, 1920. Form Factors in Coniferae, *l.c.*, No. 9, 1920.

DALE, SAMUEL. A Memoir, by Miller Christie, appears in the Essex Naturalist for 1920; also a paper by P. Thompson on an annoted copy of *Plantae Woodfordiensis*. Warner's own copy with notes is in Wadham College Library, Oxford.

DRABBLE, Dr E. Notes on the Fauna and Flora of N.E. Derbyshire. Naturalist 10, 1919; 11, 1920.

DRUCE, GEORGE CLARIDGE, LL.D. Lizard Orchis and other Rare Plants in Britain. Gard. Chron. ii., 235, 1920. *Plantago Cynops*, etc., in Britain, *l.c.* 259, 265. *Orchis praetermissa*, var. *pulchella* Druce, *l.c.* i., 77, 1920.

DYMES, T. A. THE NATURE STUDY OF PLANTS IN THEORY AND PRACTICE FOR THE HOBBY-BOTANIST. pp. 173, 1920. Introduction by Prof. F. E. Weiss. S. P. C. K.; 6/-. Our member has taken the Common Herb Robert for his text, which in a dozen chapters he develops into a well-arranged sermon, leading on from the explanation of Nature Study of Plants to Physiology, questions of Protection, Vegetative Reproduction, Cross Pollination, Wind-dispersal, the manner in which water and animals carry seeds, and the dependence of animals and plants on each other. The tale of each of these subjects is clearly told in simple language and with apt illustration. This forms the prelude of the life-history of *Geranium Robertianum*, which is graphically described and makes pleasant reading, while at the same time it impresses upon the student the necessity of independent and watchful observation. A chapter is devoted to the relations of the Herb Robert, the Cranesbills and Storksbills. Those interested in Nature teaching will assuredly find a stimulus and help in this pleasant volume.

ELLIS, G. S. M. APPLIED BOTANY. pp. viii., 248, tt. 67. Hodder & Stoughton; 4/6.

FAWCETT, W., B.Sc., and RENDLE, A. B., D.Sc. FLORA OF JAMAICA. Vol. iv., Leguminosae to Callitrichaceae; 8vo, pp. xv., 369, 114 text figures, 1920; 25/-. *Sesbania Sesban*, a new comb. It has already been made. See Vines & Druce, *Moris. Herb.* 6, 1914. The name *Pithecolobium* is now changed to *Pithecellobium*.

FERNALD, M. L. *Nymphozanthus* of Richard in Ann. Mus. Par. xvii., 230 [the date of which is given in the Kew Index as 1811], vice *Nuphar*. Rhodora 183-8, 1919. Affords another reason for retaining *Nymphaea* and *Castalia* for the two genera of the Water Lilies. The varieties of *Ranunculus repens*. Rhodora 169, 1919.

FISCHER, C. Preliminary Note on the Flora of the Anaimalais in Journ. and Proc. Asiat. Soc. of Bengal, xiv., 379, 1918.

GAMBLE, J. S. FLORA OF THE PRESIDENCY OF MADRAS. Part 3, pp. 391-575. Adlard & Son; 10/-.

GEDDES, Prof. THE LIFE AND WORK OF SIR JAGADIS C. BOSE. Longmans & Co.; 16/-.

GODFERY, Col. M. J. The Problem of the British Marsh Orchids, in Journal of Botany, 286, 1920. He states that he found *O. latifolia* growing in quantity without other marsh orchids or *maculata* at Vence, Alpes Maritimes, and at Thorenc with *maculata* and the hybrid. He thinks this *latifolia* is identical with the spotted-leaved marsh orchis of Britain. He has never seen ringed spots except in *latifolia* and its hybrids.

GROVES, JAMES, F.L.S., and BULLOCK-WEBSTER, Canon GEORGE. THE BRITISH CHAROPHYTA. Vol. i., Nitelleae; pp. xiv., 142, tt. 20. Published by The Ray Society, 1920. This is one of the most important British botanical monographs which has appeared for many years. This group, difficult as regards its proper definition and so problematical as regards its position in the vegetable kingdom, has been for many years most carefully studied by these authors, not only under the microscope but in its natural surroundings, and they have spared no pains to bring together the information of each species enumerated in this valuable publication. The history of the group is traced. They were first separated by Vaillant in 1719 under the generic name *Chara*. Linnaeus treated them as belonging to the Algae, while Withering put them in the Monoecia section, Monandria, of Flowering Plants. Richard raised them in 1815 to Ordinal rank; Lindley placed them in the Bryophytes; Strasburger in the Thallotypes, whose origin must be looked for in the Chlorophyceae, while Sachs says they are so different from all other classes of plants that they must be erected into a special group by the side of the Thallophyta and Muscineae. Neither Hooker nor Bentham included them in their works on British plants, but Syme and Babington gave them a place after the Lycopods, and in that sequence they are enumerated in the *British Plant List*. As the authors say, they are a very ancient type of vegetation, some palaeontologists asserting that remains have been obtained from the Devonian and Silurian systems. The authors have already worked at remains in the Purbeck beds. The species are world spread, and occur at low levels up to 14,000 feet in the Cordilleras of Peru. They inhabit fresh water and in

such as is almost free from mineral contents as well as in water in which there is a large percentage of carbonate of lime. *C. fragilis* is one of the hardiest and most ubiquitous, existing in the cold water of alpine lakes and in the hot springs of Iceland in water which is hot enough to boil an egg in four mintues. Over 50 pages are devoted to the structure and development of the Charas, then follows a conspectus of the distinctive characteristics of the oospores and membranes by which the group is separated into the 5 genera—*Nitella*, *Tolypella*, *Nitellopsis* (which has only one species, *obtusa*), *Lamprothamnium* with *papulosum* as its solitary species, and *Chara*. The first two of these are described in the present volume, leaving the two latter and *Chara* for the ensuing volume. Then follows the necessary glossary and "Adjectival Terms." An interesting systematic account gives the history of the British species, the first record being that in Gerard's Herball of 1633, where two plants are mentioned, both, however, probably referable to *vulgaris*. It may be added that we owe two species, one from Cornwall and the other from Donegal, to the industrious exploration of Canon Bullock-Webster. The authors have retained the four specific names used by Linnaeus, but they add "to attempt to fasten a Linnean name to a modern micro-species of bramble, rose, eyebright," or, it might be added, Water Buttercup, "is to verge on the ridiculous." They wisely reject manuscript names as not entitled to any special consideration. A very useful key to the British Nitellae and Charae is given. There are 10 British species of *Nitella* and 4 of *Tolypella*. In order to retain the earliest trivial, *Nitella capillaris* G. & B.-W. replaces *N. capitata*. This was discovered in Sutton Gault by the late Alfred Fryer, who showed it to the writer there. They name a variety of *N. flexilis* as *Fryeri*, he having found it in Cambridgeshire in 1884. Another of our members, Miss Roper, found the variety of *mucronata* named *gracillima*, and our veteran contributor, Mr J. A. Griffith, found the var. *erythrocarpa* of *Tolypella glomerata* in Llyn Coron in 1887. *T. nidifica* rested on the evidence of an unsatisfactory specimen found by the Rev. E. S. Marshall in a lagoon north of Wexford Harbour in 1896, but it was insufficient to be figured for the work. It was a great delight to find it this August in company with the Rev. Preb. R. J. Burdon and Colonel Halcro Johnston in the Loch of Stenness, Orkney, in a situation so remote from its first

habitat. Here it grew in some quantity also in brackish water and to a considerable size, plants over three feet long being observed. They are dreadfully brittle. Fourteen of the beautiful plates are from the pencil of Miss Groves and two of the "Decorations of the Membranes" are by Canon Bullock-Webster. They bear witness that even in the twentieth century fine botanical plates can not only be drawn but produced. Here we have no muddlings up of the drawings of the oospores with the plant, while the details are meticulously correct. We offer the authors the warmest thanks for this eminently satisfactory volume. One point may be alluded to. Charas have in many cases an extremely disagreeable smell, which the authors say some authorities state to be due to sulphuretted hydrogen, and Dr T. F. Allen suggests that this may be protective in character, deterring animals from feeding on them. Bearing on this, one may mention that in the early eighties the Oxford drinking water had an intensely disagreeable smell and taste, which alarmed the population and was attributed to a variety of causes. The smell was, however, to the writer quite definitely that of *Chara*, and an examination of the water supply bore this out. One of the smaller streams had a connection with the reservoir. Normally this was closed against it by a barrier. Occasionally, however, when the supply ran short it was allowed to run on the filter beds. Most injudiciously, the supply was occasionally taken direct from the reservoir. In that year Hog Acre Ditch, the stream mentioned above, was full of *C. vulgaris* and *fragilis*, var. *Hedwigii*. The water had sunk half a foot below the ordinary level, so that masses of *Chara* were exposed to the atmosphere and the odour was intensely disagreeable. At that time I became convinced that a gas was not wholly, if indeed at all, the cause. A foreign chemist stated that the odorous principle was a camphoraceous fat. At the moment, however, I am unable to trace the reference. Of course, such a possible source of pollution was speedily avoided and no similar trouble has since arisen.

HARDY, M. E., D.Sc. THE GEOGRAPHY OF PLANTS. pp. xii., 327, tt. 115. Clarendon Press, 1920; 7/6. Six chapters treat of:— (1) Asia, the greatest of the continents, with its northern shores penetrating far into the polar circle and its southern coast bathed by tropical seas, containing countries of striking contrast, with ex-

tremes of aridity in the great deserts, and the greatest rainfall as in Assam. The main features of Asia, such as the moss and lichen tundras, Siberia, Amurea, Korea, Sakhalin, Yezo, Kamchatka, China, Japan, Manchuria, Malay, India, the Indus Desert, Iran, Mesopotamia (once so fertile from the irrigation of the Tigris and Euphrates), the upland country of Asia Minor (a plateau with an average elevation of 3,000 feet, encircled by mountains), Turkestan, the Kirghiz steppes, Mongolia, Tibet and the Pamirs, are tersely given, and the same plan is adopted in (2) North America, (3) South America, (4) Australia, (5) Africa, and (6) Europe. There is a useful geographical index, and Engler and Prantl's system has been taken for the plant names arranged under each continent. So easily do we forget, and, as if the Clarendon Press had not published the *Index Kewensis*, so we notice *Prunus amygdalus* and *Vaccinium Myrtillus*. In fact, the use of capitals is rather haphazard throughout. We do not know *Populus tremulosa* unless it is a misprint for *tremula*. The Cotton is called or miscalled *Glossypium* in two or three places. Does *Stipa tenacissima* occur in Australia (p. 322 and 181)? It is by no means certain that *Fritillaria Meleagris* is the Fritillary of the Russian Steppes. In fact, the plants are evidently less well treated than the geography. The work should, however, be on one's shelves, for in a small space a mass of valuable geographical information is collected.

Harwood, E. H. The Maritime Pine Forests of Gascony, in Gard. Chron. ii., 214, 1920. An interesting description of the dunes and of the Pines grown on them.

Hedlund, T. *Ribes rubrum* L., in Sweden, Bot. Notiser 103, 1919. The author holds that it is native and that the name *R. rubrum* L. should be retained for it and not, as Janczewski suggested, used in another sense.

Henrard, J. Th. *Galeopsis*, een systematisch-floristische studie, in Nederland Kruidkundig Arch. 158-188, May 1919.

Henry, Augustine, M.A. Forests, Woods and Trees in relation to Hygiene. pp. xii., 314, with 50 illustrations. Constable & Co., 1919; 18/-.

HENRY, AUGUSTIN, and HOOD, MAY G. THE HISTORY OF THE DUNKELD HYBRID LARCH, *Larix europaea* × *leptolepis* = × *L. eurolepis* Henry. In the hybrid only the cells on the central part of each surface of the leaf bear papillae; the rest of the epidermal cells are smooth. The hybrid grows with greater vigour than either of its parents.

HILEY, W. E. THE FUNGAL DISEASES OF THE COMMON LARCH. pp. xi., 204. Clarendon Press, Oxford; 12/6.

HITCHCOCK, A. S., and STANDLEY, P. C. THE FLORA OF THE DISTRICTS OF COLUMBIA AND VICINITY. Vol. 21. Contributions from the U.S. National Museum.

HOLMBERG, OTTO R. *Puccianella-Arten* and *Hybriden*, in Bot. Notiser 1920. It is to be regretted that the writer does not consult recent British works on the subject. It would prevent the use of an untenable name in *P. rupestris*, which should be *Puccianella procumbens* if that generic name be used instead of *Glyceria* or *Atropis*. The author describes :—(1) *P. distans*; (2) a hybrid, *P. elata* (*Atropis distans* and *suecica*); (3) *P. distans* × *maritima* Holmb. Bot. Not. 254, 1916; (4) *P. maritima* × *retroflexa*; (5) *P. pannonica* = *distans* and *rupestris* (*sic*); (6) *P. Foucaudii* Holmb.; (7) *P. salinaria* (Simonk.) Holmb.; (8) *P. distans* × *salinaria* (Personis) Holmb.; (9) *P. limosa* Schur (Holmb.). The point at once arises as to which is the valid name for this offshoot from the genus *Glyceria*. If the rule holds good that when a genus is divided the original name must go to the genus which has the largest number, then plants belonging to *Atropis* and *Puccianella* would retain the name *Glyceria*. The other section had already been separated by Fabricius as *Panicularia*, but that name has been arbitrarily ruled out by the Actes. The last word on the subject has not yet been said. On p. 95 of the *Bot. Notiser* Holmberg raises the question of the name for the grass known to most botanists as *Glyceria aquatica* Wahlb. Fl. Gott. 1820. He holds that it should be *G. maxima* (Hartm. Handb. 1820) Holmb. The trivial *aquatica* is already in use in *Catabrosa aquatica*—the *Aira aquatica* of L. Presl in 1819 (*Fl. Cech.* 25) transferred *Aira aquatica* L. to *Glyceria* [to which it did not belong]. In 1820 Hartman put both *Catabrosa* and *Glyceria aquatica* into *Molinia* [to

which neither belonged], the latter under the name *maxima*, a trivial which Holmberg wishes to revive. Of course, if our reed-grass is a *Molinia* Hartman would be the authority, but as the *Glyceria aquatica* Presl is dead it seems scarcely necessary to alter the present name. *Sagina Linnaei* and its hybrid with *S. procumbens*, in Bot. Notiser 203, 1920. In this paper Holmberg rejects the valid name *S. saginoides*, which retains the original trivial, and holds in opposition to Lindman, Schroeter, and others that *scotica* = *S. Linnaei*. He believes that some of Ostenfeld's gatherings on Ben Lawers are the hybrid. Notes on *Equisetum*, in Bot. Notiser 161, 1920. Includes *E. arvense* × *telmateia*, *E. arvense* × *pratense*, *E. hyemale* × *variegatum*, and *E. scirpioides* × *variegatum*.

HORWOOD, A. R. THE OUTDOOR BOTANIST. A simple manual for the study of British plants in the field. 8vo. pp. 284, 36 plates and figures in the text and six diagrams and maps; 1920; 18/-.

HOWARD, A. L. A MANUAL OF THE TIMBERS OF THE WORLD. pp. xv., 446. Macmillan & Co.; 30/-.

HURST, C. P. East Wiltshire Mosses, Hepatics, and Lichens, from Wilts Archaeological and N. H. Mag. xli., 40. An important list, in which our member's many additions to the flora of the county are given.

HUTCHINSON, J. *Bocconia* and *Macleaya*. A revision of the species, in Kew Bulletin 279, 1920.

JEANPERT, ED. Enumeration de Plantes de Macédoine, in Bull. Mus. Hist. Nat. Par., 1919.

JOHANSSON, K. *Hieracium sylvaticum* forma, in Bot. Notiser 65, 1920.

JOHNSTON, Col. H. H. Additions to the Flora of Orkney, in Trans. Bot. Soc. Edin. 23, 1920. Includes *Cerastium subtetrandrum* and *Galium Mollugo*, var. *Bakeri*, both named by Mr Bennett; *Utricularia major* (flowerless), and *Festuca tenuifolia* Sibth. (!). The Orkney *Zannichellia palustris* is referred to *Z. polycarpa*, var.

tenuissima. Some of the foregoing plants are very critical, and at present I hesitate to pass them.

JONES, W. NEILSON, M.A., F.L.S., and RAYNER, M.C., D.Se. A TEXTBOOK OF PLANT BIOLOGY. pp. vi., 262. Methuen & Co., London, 1920; 7/-. The writers have ably treated in three parts :—(1) The Plant as a Machine; (2) Reproduction; and (3) The Plant in Relation to the Outside World. Terse and clear directions for practical work follow each section which renders the book of great value to home students if such now exist. The chapter on the Assimilation of Nitrogen by Plants is excellent, that on Enzymes, although very concise, is lucid. The chapter on Soil also contains much valuable matter brought together in a practical form. Of the many books on the subject recently published this is one of the best for the average student.

KEEBLE, Prof. F. W., C.B.E., Sc.D., F.R.S. Intensive Cultivation. Presidential Address to the Agricultural Section of the British Association meeting at Cardiff.

KOPS, JAN VAN, EEDEN, F. W., and VUYCK, L. FLORA BATAVA. The parts published include coloured plates of ***Rubus humifusus*** and *R. caesius*, var. *aquaticus*.

LARTER, Miss C. E. Twelfth Report, Botany Committee Devon Association. Includes *Euphrasia foulaensis* Towns., from Moreton Hampstead, but on whose identification? Our Euphrasias in so many instances have been wrongly named that one hesitates about including this very northern plant for Devon.

LE MOORE, SPENCER. A Contribution to the Flora of Australia, in Journ. Linn. Soc. 159, 1920. A useful key to the Australian species of *Tribulus* is given. A large number of new species are described.

LEWIS, F. J., and TUTTLE, GWYNETHE M. Osmotic Properties of some Plant Cells at Low Temperatures, in Ann. Bot. xxxiv., pp. 405-16, 1920. The Linnean Society Journal 143, 1920, contains an interesting account of a visit to Kunadiyaparawita Mountain in Ceylon

by F. Lewis. This curious isolated mountain rises from a high forest to a height of 5186 feet and lies to the west of the still more celebrated Adam's Peak, with which its flora is contrasted.

LESTER-GARLAND, L. V. The Botany of the Maroccan Middle Atlas, in Journal of Botany 97, 1920.

LINTON, E. F., M.A. Re-issue of the FLORA OF BOURNEMOUTH, with an appendix. pp. 287-304, 1920; 5/6.

MARTIN, JOHN N. BOTANY FOR AGRICULTURAL STUDENTS. pp. x., 585. New York: Wiley & Co.; London: Chapman & Hall; 12/6.

M'GILL, J. F. BRITISH GRASSES. M'Gill & Smith, Ayr, 1920. The book contains 65 plates from photographs of specimens of mounted native Grasses. These are very useful in assisting the non-botanical farmer or the book-read student to identify the more common British species, and it can be cordially recommended for the purpose. One knows what stumbling blocks there are in book descriptions to betray the student, so that with these photographs from the actual plants he will be enabled to avoid many of them. Having mastered the more common grasses the others will readily fall into their places. Among the really good photographs *Bromus mollis*, *Dactylis*, *Festuca ovina*, *Nardus*, *Triticum repens* and *Poa trivialis* may be singled out. If another edition, as we hope, is called for, one would suggest the inclusion of the more important synonyms, and a scientific rather than an alphabetical arrangement. We are told that *Poa nemoralis* is an excellent lawn-grass, a fact one hardly realised, although to my sorrow some plants which I brought from Caenlochan and which an expert had named *P. Balfouri* proved to be *nemoralis*, and they seeded most profusely in a dry gravelly loam. *Avena* or, as it should be, *Arrhenatherum elatius*, is said to produce a very good crop of hay, a fact only recently realised by agriculturists. *Festuca rottboellioides* is misspelt, but *Desmazeria loliacea* is a preferable name. *Spartina Townsendi* and *Elymus arenarius* should not be omitted from the next edition, both being useful grasses though not necessarily in an agricultural sense.

MAIDEN, J. H. A CRITICAL REVISION OF THE GENUS EUCALYPTUS. Vol. iv., parts 8 and 9, 1919; pt. 10, 1920; vol. v., parts 1, 2 and 3, 1920. The plates should be compared with the Poplars in the *Cambridge Flora*. W. A. Gullick, Sydney.

MATTHEWS, J. R., M.A., F.L.S. Cheshire Roses, in Journal of Botany 137, 1920. If Dr Boulenger's contention is correct, *R. britannica* Déség. must replace *Jundzilliana* from Moreton.

MATTHEWS, J. R., M.A., F.L.S. Hybridism and Classification in the Genus Rosa, in New Phytologist xix., 153-171, 1920. In this suggestive paper its author correctly asserts that the more intensive study of British plants brings out the recognition of the increasing number of hybrids, and mentions the genus *Viola*, *Epilobium*, *Mentha*, and *Salix*. He might have added *Euphrasia* and *Salicornia*. In the group *arvensis* he gives an example of its variation based on leaf-serration and the nature of the peduncle. (1) Biserrate leaflets (B.), not biserrate (b.); (2) Hispid, glandular or setose peduncles (S.), smooth peduncles (s.). From these the following four theoretical combinations may be expected B.S., B.s., b.S., b.s. *R. arvensis* is B.s., and its smooth peduncled form is *R. erronea*. B.S. corresponds to var. *biserrata*. *R. stylosa* is worked out in a similar way. Out of the eight theoretical combinations five have been found in Britain. With regard to *subcanina*, Mr Matthews asks if it is not a hybrid of *glauca* and *canina*, and if *subcollina* is not a hybrid of *dumetorum* and *coriifolia*. It is noted that in *Eglanteria* only 10 per cent. of pollen was fertile, but we are not told if the Sweet Briar tested was native or cultivated. It seems to me to produce seedlings. An abstract of Almquist's method is given, that author placing stress on glaucousness, greenness, glabrousness, and hairiness of the leaflets, their colour and consistence, their form and the direction of the teeth, while biserration, the development of glands, etc., are regarded as modifications of primary types. Whether we should adopt, as the author strongly supports, a return to the Linnean conception of species as a practical contention is somewhat open to criticism. For instance, *villosa* (*mollis*) and *mollissima* (*tomentosa*) are two physiologically distinct species, each perhaps with a somewhat parallel range of variation. Are these not conveniently kept as separate

species and is there any scientific advantage in merging them? In saying this we by no means adopt the standard of Déséglise. We shall look forward with interest to further contributions from the same pen.

MAXWELL, Sir HERBERT. MEMORIES OF THE MONTHS. Sixth series, pp. xi., 314. London: E. Arnold, 1919; 7/6.

MILLSPAUGH, C. F., and SHERIFF, E. E. Revision of the [21 species of] North American species of *Xanthium*, in Field. Mus. Nat. Hist. Publ. Bot., ser, 4, pp. 9-51, 1919.

MOSS, C. E., D.Sc. THE CAMBRIDGE BRITISH FLORA. Vol. iii., Portulacaceae to Fumariaceae. Montia and Cerastium by G. C. Druce; Agrostemma, Lychnis, Viscaria and Melandryum by R. H. Compton; Fumaria by H. W. Pugsley. Cambridge University Press, 1920. pp. xvi., 200. A study of this recently-issued volume of the Cambridge British Flora deepens the sense of disappointment created by its predecessor, and strengthens the opinion that the flora is largely an artificial erection founded upon a set of over-rated drawings. After reading the introduction to this volume it is distressing to think that what might have been, botanically speaking, a great national work has been here used as a vehicle for petty personal animosity. Most botanists will agree with Dr Rendle (Nature, 11th November 1920) that " The syndics of the Cambridge University Press would have been well advised if they had exercised a fatherly censorship on several paragraphs of the introduction to the present volume." However, as nobody appears to possess the right of surveillance in the matter, and as it is unwise to allow incorrect statements issued under the sanction of the syndics of the C. U. Press to go unchallenged, some reference to them seems necessary. On p. xiv. Dr Druce is accused of " rejecting the International Rules in bulk "—a reckless charge in view of the fact that they include 58 articles and 37 recommendations covering practically the whole field of citation. Certainly, Dr Druce, on p. vii. of the Introduction to his List of British Plants ignores—on adequate grounds—the arbitrary " Nomina Conservanda " of the Vienna Congress, but only " when other generic names which appear

to be properly diagnosed, have priority "—a very important qualification. In other words, instead of "rejecting the International Rules in bulk" he has taken exception only to the Nomina Conservanda—a portion of one of the 58 articles! We find again, *l.c.* p. xvi., "Druce of course introduces a novelty—he uses a capital letter when the trivial name ends in *oides*. It seems that Druce does that always because Linnaeus did it sometimes." In the use of capitals for old generic or specific names ending in *oides* Linnaeus was by no means consistent. By general consent the leading British botanists use capitals in the former case, but there are very many such instances where Linnaeus omitted to use them or used them in one work and not in another. So too with the latter, Linnaeus used capitals for them in so many instances that it would appear to have been his intention to use them generally. At any rate, it is unwise to have two methods and the use of capitals by Dr Druce certainly lessens the absurdity of such names as *Sagina saginoides*—the Pearlwort-like Pearlwort—as *Sagina Saginoides* suggests the idea that the trivial must have been established under another genus, and it is more in accordance with general custom and commonsense to retain capitals in the cases of trivials derived from proper names—*e.g.*, *Ranunculus Baudotii* or *Sagina Boydii*—than to adopt the irritating alternative. However, the matter is not one of great importance, but the tone of the Editor's reference to it leaves much to be desired, especially in view of Dr Druce's appreciative review of the earlier volume in the *Rep. B.E.C.* 1914. The Editor's bitter attack on Mr Britten, who had adversely criticised the use, in all cases, of small letters for trivial names, (p. xv.) is by general consent equally out of place in so pretentious a work as the Cambridge Flora. As a work of reference we find the present volume unequal and disappointing. In many genera the comital distribution is singularly incomplete and the maps very misleading. Maritime plants—confined to the coast—or plants growing only in one locality, afford a reason for shading an entire county, thus giving the impression that the species has a much wider distribution than is really the case. This is specially so with plants like *Arenaria rubella*, *Cerastium nigrescens* and *Arenaria norvegica*—each limited to a very small area of Unst—for which the whole of the Shetlands is shaded. It may be added that the altitudinal limits of these rare

plants are inexcusably inaccurate. In Yorkshire, *Arenaria gothica* grows only near Ribblesdale, and in Sligo, *Arenaria ciliata* is confined to the summit of the Ben Bulben range, yet in each case the whole county is shaded. On the other hand, for *Dianthus deltoides*, Carnarvon, Glamorgan, Merioneth, Berks and Oxon are omitted, and for *Adonis annua*, Sussex and Hants (counties in which it is most persistent), Kent, Berks and Oxon are not indicated. *Claytonia perfoliata* is cited for 14 counties. It has also been seen in Jersey, Northants, Rutland, Beds, Middlesex, Gloster, Cheshire, York, Rothesay, Perth, Aberdeen and Inverness; so too with *Claytonia alsinoides*, for which only 13 counties are cited. It has been found in 26. Similar omissions occur for many other species—in both volumes—and one doubts whether the maps are worth the space they occupy; at any rate their deletion would reduce the high price of the book. The illustrations do not appeal to us. Although often mechanically accurate they are cold, hard, unnatural and lacking in vitality. In many cases there is little to suggest that they have been "drawn from living specimens" and on the whole they are distinctly poorer than the figures in some modern school-books and even than those in works published centuries ago. Frequently the specimens (from which the drawings have been made) have been badly selected — *cf. Stellaria media* and *Spergularia atheniensis*. The arrangement of the figures on the plates is often very crude and sometimes, indeed, they appear to have been indiscriminately thrown on the pages. In view of the high cost of material, there seems to have been no attempt to economise space by showing 3 or 4 small plants of the same genus (*e.g. Sagina*) on the same plate, and the height of absurdity is reached when a whole folio page is occupied by half-a-dozen fragments of a disrupted tuft of a single species named *S. boydi*, which Williams in his monograph reduces to a variety. Although disappointed with the drawings as a whole, one expected to find—from their very nature and accuracy—much assistance from the dissections, but here again, the writer finds them inadequate and suffering by comparison with existing work of a much less pretentious character. The standard of species chosen in the Flora differs from that of other good critical works and upon it much might be said—both for and against. The following reductions from specific rank afford material for serious

thought:—*Caltha radicans*, *Ranunculus reptans*, *R. scoticus*, *R. heterophyllus*, *R. pseudofluitans*, *R. lutarius*, *Herniaria hirsuta*, *Spergula sativa*, *Sagina ciliata*, *S. Reuteri*, *S. scotica*, *Silene quinquevulnera*, *S. dubia*, *Thalictrum dunense*, and *Papaver Lecoqui*. With these we may contrast the elevation to species of *Nymphaea alba* var. *occidentalis*, *Sagina Boydii*, *Thalictrum elatum*, *Ranunculus aleae* and *R. triphyllus*. Three species are made out of the Chickweed—*Stellaria media*, *S. apetala* and *S. neglecta*—and while *Arenaria leptoclados* is reduced to a variety, the three closely allied *A. norvegica*, *A. gothica* and *A. ciliata* are kept distinct, and so too, are *A. verna* and *A. rubella*. Mr Sprague (Kew Bulletin, No. 9, 1920) has already condemned the use of *Alsine* in the sense employed in the Flora. Among the new plants described are several forms and a sub-var. of *Lychnis Flos-cuculi* and two forms of *Viscaria alpina* (Lychnis). *Thalictrum elatum* Jacq. is given as British from ? Wales, N. Riding, Durham, Cumberland and Perth. Under *Ranunculus Ficaria* a new forma *luxurians* is described and figured, and an additional full species of Buttercups is included as *R. aleae* Willkomm (if indeed, that be correctly identified), which Rouy treats as a sub-species and Burnat as a variety. The treatment of the Water Buttercups is the most disappointing portion of the Flora. Obviously on such a variable series of plants there must be divergent views, but no British botanist seems pleased with the names or limitations of species here given, and those who know the plants best agree in their disapproval of the treatment as a whole. Ten species are said to be described; there are only nine given (22 species of Ranunculus are said to be included, 23 are described). There is no mention of the distinct *R. sphaerospermus*—by no means a rare plant. *R. heterophyllus* disappears; *pseudo-fluitans* is degraded to a form of *R. aquatilis*, a name rejected by most botanists as a *nomen confusum*; and *penicillatus* is put as a form of *R. trichophyllus*! We cannot for a moment concur in the suggestion that the Lynn Coron *cambricus* has any near relation to the Rescobie *subaequaneus*—the *confervoides* of Hooker (not *confervioides* as given in the Flora), nor should we put the latter under *Drouetii*. The creation of a large number of new forms—under *R. trichophyllus* there are three varieties and seven forms—adds to the general confusion To those who value a stable and uniform system of nomenclature and who

realise how the constant (and often unnecessary) changing of plant-names discourages the study of systematic botany it is a matter of regret that the revival of long obsolete names (such as *R. obtusiflorus* for *R. Baudotii* and of *Cucubalus Behen* for *Silene inflata*) should be suggested. However, the latter has the advantage of yielding ten new combinations and settles—if any one follows it—the difficulty as to the trivial of the Bladder Campion. The distribution of its var. *pubescens* is by no means limited in its northward range by Cambridge. Druce has seen it in Lincoln, Baker reports it as very characteristic in Monsal Dale, Lees says it is common about Ripon, and it is mentioned in the *Flora of Perthshire*. The genus *Lychnis* is divided into four genera—*Agrostemma*, *Lychnis*, *Viscaria* and *Melandryum*—by Mr Compton, and his description of these offers many points of great interest. Dr Druce supplies an admirable revision and treatment of *Montia* and *Cerastium*, and Mr Pugsley a scholarly account of the difficult genus *Fumaria*. The work of the three botanists in question is so uniformly excellent that one is tempted to wish that the practice of employing external specialists for particular genera had been more widely followed, and especially that Mr James Groves had been induced to undertake the *Batrachia*. We share the opinion of many that the time was not propitious for the issue of so important a work in the original instance, and the subsequent abnormal increase in the cost of publication does not justify the continued production of so expensive a book—especially in view of the pressing need for a reliable British Flora in one volume at a moderate price. W. H. PEARSALL.

MURR, Dr J. FELDKIRCH. Weiteres über Urgesteinflora auf Flysch, Kriede, Lias und Trias, in Oster. Bot. Zeit. 207, 1919. La mie scoperte botaniche nel Trentino dal 1897 al 1906, con alcune aggiunte. This contains a large number of new varieties.

NORSTEDT, O. Prima loca Plantarum Suecicarum [from Franck, 1638, downwards], in Bot. Notiser, 1920.

NUTTALL, C. CLARKE. BEAUTIFUL FLOWERING SHRUBS. pp. 280, with coloured illustrations by H. Essenhigh Corke. Waverley Book Co., 1920; 40/-.

OLIVER, F. W. BLAKENEY POINT, 1917-19. This interesting summary states that on the New or Samphire Marsh the ground-level has risen a foot since 1910. At that date there were about 20 clumps of *Aster Tripolium*; to-day this area is one dense growth of *Aster* with a fringe of *Salicornia*.

OSTENFELD, C. H. A List of Arctic Caryophyllaceae, in Meddel. om Gronland 220, 1920. Thirty-eight species are mentioned, No. 3 being *Arenaria ciliata*, under which as a sub-species is *norvegica* (Gunn.) Fries. It is pleasing to see that *C. nigrescens* Edmondston is the name used for the Shetland plant, but which editorial supervision prevented me from using in the *Cambridge Flora*, as Ostenfeld says *C. arcticum* Lange Fl. Dan., fasc. 50, 1880, t. 2962, is only in part the same plant and is not the *C. arcticum* Lange Consp. Fl. Groenl. 31, 1880. *Honckenya peploides* has a var. *diffusa* (Hornem.) which occurs in Scotland but is omitted from the *Cambridge Flora*. Under *Minuartia verna* Hiern has placed the Ben Lawers plant, which also occurs in Shetland as var. *rubella* (Wahl.). Vore Linde Arter, in Dansk Skovf. Tidssr. 165, 1920. Describes four species of *Tilia*, giving figures of *platyphylla* and *cordata*. A variety of the latter is *ovalifolia*. The Park Lime, *T. intermedia* Hayne = *T. europaea* L., he considers to be a hybrid of the two foregoing. Although usually barren, it has seeded (teste Prof. Somerville) in Oxford.

OSTENFELD, C. H. On *Euphorbia Esula* and its Allies, in Bot. Notiser 125, 1920. He believes the three species, *Esula*, *virgata*, and *salicifolia*, are not true natives of Scandinavia. *Salicifolia* has been found at Upsala, *Esula* and *virgata* in many places, and he gives characters which distinguish them.

PELLETT, FRANK C. AMERICAN HONEY PLANTS, together with those which are of special value to the Beekeeper as sources of Pollen; 8vo., pp. 297, tt. 155. America Bee Journal, Hamilton, Illinois; 2 dollars 50 cents.

PEMBERTON, Rev. JOSEPH H. ROSES, THEIR HISTORY, DEVELOPMENT AND CULTIVATION. Ed. 2, pp. 334. Longmans & Co.; 15/-.

PENNELL, F. W. Scrophulariaceae of the Local Flora. Contributed to New York Bot. Gard. no. 212, 1919. It gives keys to the genera and a description of the species. The names *Linaria Linaria*, *Mimulus guttatus* and *Veronica Tournefortii* are employed.

PENYCOSTE, Dr F. H., and Miss. Cornish Phenology, in Science Progress, July 1920.

PROBST, R. Die Adventiv-und Ruderalflora von Solothurn und Umgebung, in Mitt. der Naturf. Gesell. Solothurn. 5 Heft, xvii., Bericht, 1911-14. Reprint. This contains a list of 511 species and many sub-species of alien plants derived not only from wool but to a large extent of garden origin. A second Beitrag appeared in the same publication in Heft xviii., 1914-19. This contains a figure of *Thellungia advena* O. Stapf, supposed to be of Australian origin, also *Chenopodium auricomiforme* Murr & Thell.

PUGSLEY, H. W. Notes on British Hawkweeds, in Journal of Botany 281, 1920. *Plantago alpina* and *P. maritima*, *l.c.*, 149.

REDGROVE, H. STANLEY. BYGONE BELIEFS, being a series of excursions into the Byways of Thought. pp. xvi., 205, tt. 32. W. Rider & Son, London, 1920; 10/6.

RIDDELSDELL, Rev. H. J. British Rubi, 1900-20, in Journal of Botany 101, 1920. An attempt to summarise the changes in our ideas about British Rubi since the publication of Rogers' Handbook. Some of these have been forestalled in the *British Plant List*. The works of Focke and Sudre receive little or no attention. Those will doubtless be given later. Plant and Rose Records, *l.c.* 113, 114.

RIDLEY, H. N. *Plantago Cynops* in Kent, in Journal of Botany 271, 1920. See also page 35.

RIVETT, MAUD F. The Anatomy of *Rhododendron ponticum* and of *Ilex Aquifolium* in reference to Specific Conductivity, in Ann. Bot. xxxiv., pp. 525-550, 1920.

ROLFE, R. Orchid Review, 1920. This includes a reference to

Colonel Godfery's paper read at the British Association Meeting in Bournemouth. The statement that *O. ericetorum* was first separated from *O. maculata* by E. F. Linton is not quite correct. Webster first named a var. (or, as he thought, a good species) from *maculata* under the name *praecox*. It is also a little uncertain whether the marsh orchid which crossed with the frog orchid on the Wiltshire downs was *latifolia*. On p. 113 there is a good figure of a group of "*O. latifolia* × *maculata*," which is probably *O. praetermissa* × *maculata*. Mr Rolfe says "it is widely diffused, fertile, and subject to reversion." *O. elata* Poir., a *latifolia* hybrid, seeds freely at Glasnevin. The original plant was said to be abundant on the plains of Mazoule, Maison Carrie, and marshes of Harratch.

RYDBERG, PAUL. Notes on Rosaceae, in Bull. Torr. Club 45, 1920.

SALISBURY, Dr E. J. A Draft Scheme for the Representation of British Vegetation in Black and White, in Journal of Ecology 1, 1920. Forty-five symbols, suggestive of the dominant species, are sketched, which seem well chosen for the purpose, now rendered necessary by the increased cost of colour-printing. It may be suggested that it would be more correct to use "Juncetum subnodulosi" rather than "obtusiflori" and "Nymphaeetum" instead of "Nupharetum," since the latter is freer from objection. The question arises, too, with "Glycerietum," which some botanists would call "Puccianelletum" and others "Atropisetum," if *Glyceria* is split into two genera.

SALISBURY, F. F., M.A. Naturalised Plants of Albany and Bathurst, S. Africa, in Rec. of Albany Museum, vol. iii., 1919. The poisonous property of *Lolium temulentum* is said to be due to a parasitic fungus in the grain.

SALISBURY, F. S. SOME HAUNTS OF WORCESTER FLOWERS. pp. 82, tt. 40. Worcester, J. S. Phillips, 1920; 1/6. Useful and practical.

SARGEAUNT, JOHN. THE TREES, SHRUBS, AND PLANTS OF VIRGIL. The poetry of Virgil, in his Bucolics and Georgics, breathes all the

fresh air of the country near Mantua where he was born, or of the Sicily of his model Theocritus. We smell his fruits and flowers; we hear the cigala in the bushes; we watch the goats that seem to hang from the rock while they are browsing. We are in Sicily or in Arcadia or wandering in Northern Italy, and in reading we feel how much the images which he presents to us gain if we can visualise the trees and plants which surround his characters and which he tells of so often and sometimes describes. To that enjoyment this little book contributes by its identification of most of Virgil's plants, and it would be well if it were in the hands of all who study or who comment on the poems of the great Roman writer. Indeed the want of such knowledge has led to some very curious information, as when Professor Conington explained that *Viburnum Tinus* is "a kind of wild bay tree." In too many cases, unfortunately, the names in Theocritus and in Virgil remain a puzzle. It is difficult, for example, to discover any plant which will agree with the statements of Theocritus, Virgil, Ovid, Columella and others, as to what they called "hyacinth." The author's suggestion of *Gladiolus segetum* may be the best, but would any one imagine a bull supporting his sides on "soft" gladiolus and that under an Ilex, or the Corycian at Tarento cutting the flowers of gladiolus while the frost was splitting the rocks and "curbing" the rivers? In this last passage indeed some MSS. have "acanthi" for "hyacinthi" and our author seems to adopt this reading on p. 10. In the article on Malus the author says it is difficult to make anything of "mala" in Ecl. ii., 51, on account of the description of the fruit, "gray with soft down," not being applicable to quinces. It is conceivable that he has missed the fragment in which Petronius frankly plagiarises this passage and substitutes "Cydonia" for "mala," describing them as "velleribus hirsuta canis." Now Petronius, as a bon vivant of pronounced character, must have known what his quinces were like. Another puzzle is Virgil's use of colour words. On p. 4 our author seems a little bitten with Mr Gladstone's idea that the colour sense was imperfect with "the ancients." Yet if we reflect on the perfection of this sense in much lower animals (as shown by the minuteness of protective colouration and of the methods whereby flowers attract their fertilising insects) we can scarcely believe that so far more developed a being as man could be inferior to them only 2000

or 3000 years ago. Even to palaeolithic man as to savages an acute colour sense could not fail to be of use in detecting prey and in avoiding enemies. It is easier to suppose that poetic phraseology and (alas!) the claims of metre were responsible for Virgil's vagueness of colour description. The book is not without its humorous side in spite of its learning. The flavouring which Thestylis (Ecl. ii. 10) concocts for the reapers (beaten up thyme and garlic), and which was mixed, it seems, with flour and cheese and oil and vinegar—

"herbs and other country messes"

as Milton puts it—certainly reminds us of the elaborate recipe to which some wit appended the advice:—"and then throw the whole beastly mess out of the window!" The book is a very admirable addition to our resources for the study of the classical names for plants. F. BENNETT.

SCHROETER, C. In the Jahrsb. Schweiz. Alpenclub 170, 1918, our hon. member gives an account of the Swiss National Park in the Lower Engadine and a description of the dominant plant associations of the area, which is fully described in Le Parc Nationale, par S. Brunies (Beuno Schwabe et Cie, Bale, 1920; 12 francs).

SEWARD, Prof. A. C. FOSSIL PLANTS. A text book for students of Botany and Geology. Vol. iv. Gingkoales, Coniferales, Gnetales. tt. 190, pp. xv., 544. Cambridge University Press; 21/-.

SHOOLBRED, W. A., M.R.C.S., F.L.S. THE FLORA OF CHEPSTOW. pp. vii., 140, and map. London: Taylor & Francis; 10/6 net. Our member is to be congratulated in producing in times even worse than those of war this handy volume. It treats of a very beautiful district, which has even a modicum of maritime plants and spreads upwards to the wooded heights of the Wynd Cliff and to an altitude in Chepstow Park of 900 feet. Its greatest length and breadth seem to be 9 and 12 miles. The geological strata and the surface soils are very variable, so that a rich flora is to be expected. It has one plant practically confined to it in Britain, namely, *Euphorbia stricta*. Other rarieties are *Hutchinsia*, *Pyrus cordata* (if that be the correct name), *Sedum rupestre*, *Pyrola secunda*, *Salvia pratensis*, *Polygona-*

tum odoratum, *Lilium Martagon*, *Carex digitata*, *C. montana*, *Rumex crispus*, var. *planifolius*, *Viola rupestris*, and *Campanula patula*. Mr Shoolbred has included 1013 species of flowering plants and ferns and 179 mosses. It may be necessary to say that this number includes natives and adventive species. *Polygonum cuspidatum*, which is naturalised on the Wye, and *Populus deltoidea*, which occurs in both counties, may be added. We notice that while *Helleborine* and *Centaurium* are rightly adopted, *Nasturtium* is retained instead of *Radicula*. We prefer to put the var. *oedocarpa* And. under *Carex flava* rather than under *C. Oederi*, which seems a distinct species, nor is there need to say *C. curta* Good., *C. canescens* auct., non Linn., which is reversing the fact. It is *C. canescens* Linn., but not of all authors. So, too, with *C. muricata*, which is L. Sp. Pl. in an aggregate and perhaps even in a restricted sense. In many instances the plants of Linnaeus' Herbarium do not agree with the *Species Plantarum*, but time need not be wasted in reiterating them. Space is saved by omitting the earliest notice of plant occurrence. To any visitor who wishes to explore this fascinating country the flora may most cordially be recommended.

Sipkes, C. Dutch Orchidaceae, in Nederland Kringkundig Arch. 145-154, 1919. Includes eight new varieties of *Orchis morio*, one of *Habenaria Gymnadenia*, and two of *Habenaria viridescens*. The author tells me he has found *O. praetermissa* in Holland, near Aalsmeer, Castricum Groede, and Heille on the Belgian Frontier. He at first thought it a good species allied to *incarnata* and not a hybrid.

Smith, H. Vegetationen och dess utrecklingshistoria i det central-svenska hogfjallsomradet Nordland. Hanndbibl. ix., pp. 238, Upsala, 1920. This inaugural dissertation is remarkable from the large number of hybrids given which have been found in Harjedalen and Jamtland. Among them are some which might occur in Britain :—*Woodsia alpina* × *ilvensis*, *Carex atrata* × *Halleri*, *Luzula arcuata* × *spicata*, *Draba incana* × *rupestris*, and *Poa alpina* × *pratensis*. This last is named *P. herjedalica*.

Sprague, T. A. *Stellaria* or *Alsine*, in Kew Bulletin 308, 1920. An extremely valuable paper, giving the most complete history yet

published of the genus or genera. He holds, in contradiction to the views of many American authorities, that the name *Stellaria* should be used and should include *Alsine media* L., notwithstanding that *Alsine* has priority of place in the *Species Plantarum*, giving a reason not previously urged—that Linnaeus, in order to conform to his Artificial System, dissociated *Alsine*, a Tournefortian genus, from *Stellaria*, which he established in 1735. He suggests that "priority of place" for genera should be reconsidered, since in *Sp. Pl.* " the generic name in Pentandria simply meant that it came before one in Decandria." He agrees with splitting the genus *Arenaria*, the second genus being *Minuartia*, and disagrees with Moss, who wishes to retain *Alsine*, a name which, as Sprague shows, is untenable since it involves ruling out the first edition of the *Species Plantarum*, which is contrary to International Rules. Neither can *Alsine* be used, as advocated by Hiern, to represent *Spergularia* (a conserved name), since *Alsine* L. = *Stellaria* L., and he gives six reasons for using the latter name. Moreover, Cyrillo was the first to unite the two genera under the latter name, which is allowed by the International Rules. Therefore, the name *Alsine* L., which is badly defined in *Gen. Pl.* and which as a type species is aberrant, disappears, *Spergularia* being at present a conserved name, representing *Alsine* L. emend Reich. 1832, *Buda* and *Tissa* Adanson. The last of these has strict priority. Fernald (*Rhodora* 1, 1919) however (and in this I should agree) uses *Arenaria* L. so as to include *Minuartia*. The multiplication of these small and often ill-defined genera is to be deprecated, especially when it involves the change of well-known names.

Stapf, Dr Otto. Gramineae—Flora of Tropical Africa. Vol. ix., pt. iv., pp. 577-760, 1920. Of the 178 genera, *Setaria*, which is 75, completes the part.

Stephenson, T. & T. A. A New Marsh Orchis, in Journ. Bot. 164, 1920. *i.e. Orchis purpurella*. The British Marsh Orchids in relation to Mendelian Principles in Journ. Bot. 243, 1920. The Genus Epipactis in Britain *l.c.* 209-213, with figures of the labellum. The British Palmate Orchids *l.c.* 258-262. In this paper *praetermissa* and *purpurella* are kept as distinct species.

Stone, Herbert. A Guide to the Identification of our most

USEFUL TIMBERS, being a Manual for the Use of Students of Forestry. Cambridge University Press, pp. 52, 1920; 7/6. Descriptions of the transverse, radial and tangential sections are given, and paragraphs are devoted to the various trees with which, for instance, Ash may be confused and how it may be distinguished from them. Keys to the broad-leaved and coniferous trees are given, and there are twelve good figures of sections of woods. One hopes that another volume will include the other timbers used in Britain.

STORK, HARVEY E. Studies in the Genus *Taraxacum*, in Bull. Torr. Club 199, 1920. *Taraxacum* exhibits parthenogenesis as established by Raunkier's classic experiment, but his suggestion that this occurred in all forms of the genus was disputed by Dahlstedt, and Rosenberg showed that *T. confertum* was normally sexual. Mr Stork made cultures and found that *erythrospermum* reproduced itself with only a change in size, and that out of eight sets of *vulgare* seven came true and could not be distinguished from each other.

SUDRE, H. RUBI EUROPEA. This monumental work on the Brambles has been already mentioned in the *Report*. The major species number 110. Only one, *R. orthocladus* Ley, of those described by British authors in recent years is included in this number, all those of Moyle Rogers and Babington being placed in a subordinate position. Doubtless the views of Sudre will not receive unqualified assent by British workers but the work is one of great importance and this volume, with its beautiful plates, will have to be carefully studied by all workers on the genus. The following are the more important changes in nomenclature which are made and also the new plants he includes for Britain.

754. RUBUS NITIDUS W. & N., var. HAMULOSUS (L. & M.) Sudre Rubi Eur. 19. Brit. Rubi n. 3. Var. ANGLICANUS Sudre, *l.c.* = 755. *R. opacus* Rogers Handb. 23, p.p., not of Focke. Somerset (? etc.).

755. R. OPACUS Focke, var. GLANDULIFER Sudre, *l.c.* 19 as a var. of the subspecies. Graffham, Sussex, LINTON.

757. R. INTEGRIBASIS P. J. M. (not of Rogers), var. GENUINUS Sudre, *l.c.* 20. Britannia. Var. SUBOPACUS Sudre in Bouv. Rub. Anjou 7, 1907 = 755. *opacus*, f. *minor* Rogers Handb. 23. Brit. Rubi n. 106. S. Devon.

761. R. IMBRICATUS Hort, var. DISCOLOR Sudre. Britain. Var. RECTISPINUS Sudre = 758. *R. cariensis* Rogers, not of Génév. N. Devon. See p. 67.

763. R. CARPINIFOLIUS Weihe, var. LAXUS Sudre, *l.c.* 23. Mitcheldean, Gloster. Var. LENTIGINOSUS (Lees) Sudre. Carnarvon, etc. M. Sudre says British authors have confounded distinct plants under this name.

766 (3). R. OPLOTHYRSUS Sudre. Branksome Park, Dorset, ROGERS as *dumnoniensis*. Sudre Rubi Eur. 60.

766. R. CRYPTADENES Sudre Obs. 31, 1904 = *R. erythrinus* Rogers, non Genev. Brit. Rubi n. 108. Var. STEREACANTHOIDES Sudre Bat. 81, 1908. Marsdur, Yorks, BAKER. Var. BIPARTITUS Sudre, *l.c.* Surrex [? Surrey or Sussex], MURRAY. This is subordinate to *argenteus*, which has a var. CLIVICIOLUS Sudre Rubi Eur. 57. Woolard, N. Somerset, FRY.

770. R. OXYANCHUS Sudre Obs. 18, 1904 = *R. nemoralis* Rogers, not of P. J. M. with var. SILURUM (Ley). Subordinate to this is R. VIRIDICATUS Sudre Obs., *l.c.* = *R. nemoralis* Rogers, p.p. Brit. Rubi n. 56, in part. Iford Bridge, S. Hants, LINTON. See p. 38.

773. R. POLYANTHEMUS Lindbg. in Bot. Not. 105, 1883, vice *R. pulcherrimus* Neuman, not of Hooker.

773. R. HEREFORDENSIS Sudre Obs. 33, 1904 = *R. pubescens* Rogers, p.p. Caplar, Hereford, Ley [? Capley]. Sudre Rubi Eur. 64. Brit. Rubi n. 115. R. HEREFORDENSIS × VESTITUS = *R. leucostachys*, var. *gymnostachys* Rogers. Brit. Rubi n. 14. Kerne Bridge, Hereford, ROGERS.

776. R. OBVALLATUS Boul. & Gillot, var. BAGNALLII Sudre, *l.c.* 66 = *R. bracteatus* Bagnall. Brit. Rubi n. 110. Berks, etc.

777. R. VILLICAULIS Koehl., var. ATRICAULIS N. Boul. Yorks. Here also is R. INSULARIS Aresch. Brit. Rubi 77, 111 = *R. villicaulis* Rogers, p.p.

780. R. SAMPAIANUS Sudre, *l.c.* 43. Rubi Eur. 259. Witley, Surrey, LINTON.

783. R. CLETHROPHILUS Genev. Ess. 257, 1869 (R. RAMOSUS Briggs), var. PUBESCENS Sudre, *l.c.* = 787. *R. pubescens*, var. *subinermis* Rogers, not *R. subinermis* Rupr. Brit. Rubi n. 81.

784. R. THYRSOIDEUS Wimm. Under this is R. CANDICANS

Weihe which, with var. COARCTATUS Sudre Bat. 24, 1904, occurs in Britain but not type *thyrsoideus*. See p. 92.

785 (2). R. WINTERI P. J. Muell. Focke Syn. 196, 1877 = *R. argentatus*, var. *robustus* Rogers Handb. 39.

785 (3). R. PROPINQUUS P. J. Muell. Vers. n. 20, 1859 = *R. argentatus* Rogers Handb. 39, non P. J. M. Brit. Rubi n. 30.

791 (2). R. SCHLECHTENDALII W., var. ANGLICUS Sudre. *R. Schlechtendalii* Rogers. Brit. Rubi 84. Mortimer Common, Berks. Here comes R. HIRSUTISSIMUS Sudre & Ley. W. Newton, Hereford, LEY.

794. R. COLEMANNI Bloxam, var. DECLINIS Sudre. Brit. Rubi n. 12. Hambledon Common, Surrey, MURRAY. Var. FEROCISSIMUS Sudre Rubi Eur. 116. Lafkton Hill (?), Cheshire, WOLLEY-DOD.

796. R. ORTHOCLADOS Ley × GRATUS Focke = *R. dobuniensis* S. & Ley. Gloucester, LEY. Sudre, *l.c.* 31.

800. R. PYRAMIDALIS Kalt. × PROPINQUUS Sudre = 799. *R. iricus* Rogers. Under 800 Sudre puts 772. *R. dumnoniensis* with new vars. :—var. EUPECTUS Sudre. Cowleigh, Hereford, LEY, and var. TRANSIENS *Sudre*. Dorset. Brit. Rubi n. 86. Here, too, are put R. AMPLIFICATUS Lees and R. MELANOCLADUS Sudre (the 798. *hirtifolius* of Rogers, not of P. J. M.).

800. R. PYRAMIDALIS × CAESIUS. Dorset, E. F. LINTON, under the name *Balfourianus*. This latter plant is also thought to be a hybrid. Babington and other botanists have included very different plants under this name. See p. 237.

804. R. LASIOCLADOS Focke. Sudre Rubi Eur. 103, identifies this as *R. vestitus leucanthemus* × *Winteri*. M. Sudre, I think on insufficient grounds, replaces *R. leucostachys* Sm. by *vestitus* which dates from a year later. Under it he has subordinate species R. LEUCOTRICHUS Sudre Bat. 55, 1906, var. SUBEGLANDULOSUS Sudre, from Edmondsham, Dorset, LINTON, also a hybrid LEUCOTRICHUS × PYRAMIDALIS = *R. cornaviensis* Sudre. Pensylvania, Cheshire, WOLLEY-DOD.

807 (2). R. MACROSTACHYS P. J. M. in Flora 150, 1858, var. SEPINCOLUS Sudre Rubi Eur. 105. Caplar, Hereford, LEY. [? Capley]. Here also comes R. WOLLEY-DODII Sudre, *l.c.* 106 = *R. criniger* (Linton) Rogers Handb. 52, p. min. part. Edge Park, Cheshire, WOLLEY-DOD.

810. R. MUCRONATIFORMIS Sudre Bat. 39, 1905 = *R. mucronatus*, var. *nudicaulis* Rogers (Brit. Rubi n. 88). As a sub-sp. of *R. hypomalacus* Focke. See p. 30.

816. R. OBTRUNCATUS P. J. M. in Flora 152, 1858, var. ANGUSTICUSPIS Sudre Obs. 35, 1904 as sp. = *R. setulosus* Rogers Brit. Rubi n. 121, not of M. et Lefv. Oxford, etc.

835. R. FUSCUS Weihe, var. ADAMSII Sudre Rubi Eur. 142. Brit. Rubi n. 94, p.p. Crowell Hill, Oxfordshire, Rev. D. O. ADAMS. It is, in part, the *R. Babingtonii*, var. *phyllothyrsus* Rogers.

843 (2). R. ERRATICUS Sudre, in Bull. Bot. Soc. Fr. 91, 1899. Herefordshire, LEY.

844 (2). R. LOEHRI Wirtg. Brit. Rubi n. 18. Sudre, *l.c.* 154.

850. R. ROSACEUS Weihe, var. SCABRIPES Genev. Brit. Rubi n. 21. Chard, Somerset, MURRAY.

857 (2). R. SPINULIFER M. et Lefv. = *R. Koehleri* Rogers, p.p. Brit. Rubi n. 127. Walford, Hereford, LEY.

860. R. MARSHALLI Focke & Rogers. This, Sudre states, is a hybrid of *Babingtonii* and *fusco-ater*. The var. *semiglaber* has a differ nt origin.

865. R. ANGUSTIFRONS Sudre Ronc. bret. 21, 1904 = *R. serpens* Rogers, p.p., not of Weihe. Brit. Rubi n. 74. Var. PALLIDISETUS Sudre. Gloucester, LEY & ROGERS. Brit. Rubi n. 47.

866 (2). R. SCHLEICHERI Weihe. Yorkshire. Sudre Rubi Eur. 199.

866 (3). R. RIVULARIS P. J. M. & Wirtg., var. HIRTIFORMIS Sudre = *R. hirtus*, var. *rotundifolius* Rogers Brit. Rubi n. 102. Chard Common, Somerset.

866 (4). R. NAPOPHILOIDES Sudre. Bull. Bot. Soc. Fr. 25, 1804 = *R. flaccidifolius* Rogers, not of P. J. M. Woburn Sands. Brit. Rubi n. 129.

868. R. ROTUNDELLUS Sudre. Bull. Bot. Soc. Fr. 23, 1904. St Leonards Forest, Sussex. p. 188, under *Koehleri*.

870. R. HYSTRIX Weihe, var. MURRAYI Sudre 181. This is the 852. *adornatus* of Rogers Handb. 80, not of Muell. Brit. Rubi 71.

876. R. POLYANTHEMOS × CAESIUS = *R. Warrenii* Sudre is

said, Rubi. Eur. 240, to be *R. dumetorum*, var. *concinnatus* Warren.

876. R. ALTERNIFLORUS, var. HEREFORDENSIS L. & W. × CAESIUS = *R. semialterniflorus* Sudre, *l.c.* 240. The *sublustris*, Brit. Rubi n. 106, Sudre says is *R. alterniflorus*, var. *herefordensis* × *caesius*.

876. R. PROPINQUUS × CAESIUS. Buckden, Hunts, W. R. LINTON, teste Sudre, *l.c.* 242.

876. R. ADSCITUS × CAESIUS = p. 246. *R. corylifolius*, var. *fasciculatus* Rogers, p.p. Curdworth, Warwick, BAGNALL. Brit. Rubi 50.

876. R. ECHINATOIDES × CAESIUS = *R. dumetorum*, var. *diversifolius* Rogers. Sudre Rubi Eur. 248. Cheshire, WOLLEY-DOD; Somerset.

876. R. RUFESCENS, var. DASYPHYLLUS × CAESIUS = *R. dasyphylloides* = 251. *R. dumetorum*, var. *ferox* Rogers, non W. & N. Bournemouth, S. Hants; Shirley, Derby. Brit. Rubi 131.

876. R. APICULATUS × CAESIUS = *R. semiapiculatus* Sudre, *l.c.* 248. Herefordshire, LEY.

876. R. LONGISEPALUS × CAESIUS = *R. Pseudopsis* Gremli = *R. dumetorum*, var. *britannicus* Rogers Handb. 93. Surrey. Brit. Rubi 105.

SULMAN, Miss FLORENCE. A POPULAR GUIDE TO THE FLOWERS OF NEW SOUTH WALES. Vol. ii., pp. xxxi., 249, tt. 71. Angus & Robertson, Sydney; 6/-.

THELLUNG, Dr ALBERT. Zur Gliederung von *Hordeum murinum* L., in Allg. Bot. Zeitschr. xxiv., 6, 1920, includes a var. *intercedens* Thell. and a sub-sp. *leporinum* A. & G., with three new forms.

TOPPIN, Major S. M., R.A.M.C. Notes on the Balsams of Chitral and the Kachin Hills, in Kew Bulletin 345, 1920. Includes details of the flower of *I. Roylei* Walp. and other species, about 50 being described.

VOIGT, ALBAN. Beitrage zur Floristik des Tessins, in Berict. Schweiz. Bot. Gesell. 33, 1920. In this valuable paper our member gives the results of his researches in this beautiful district, to which he has made many important additions. These include many ad-

ventive species, among them the West Floridan Indian climber *Apios tuberosa* and the ubiquitous *Matricaria suaveolens.* 114 species are additional to the Canton and 16 are new to the Swiss Flora. Among the plants found are *Juncus obtusiflorus*, *Aconitum Anthora*, *Clematis alpina*, *Cuscuta Cesatiana*, *Artemisia Selengensis* (a Siberian species which threatens to be a perfect pest at Lugano and Maggiore), *Cyperus Michelianus* and *glomeratus* near Chiasso.

WADE, A. E. NARBOROUGH BOG AND AYLESTONE MEADOWS: an Ecological Study from an Original Survey. A memoir of the Leicestershire and Rutland Flora, 1919. This is a very useful account of the area and of the plant associations it contains.

WATSON BOTANICAL EXCHANGE CLUB, 1918-20. Secretary, G. Goode; Distributor, J. E. Little. Vol. 3, pt. 3, pp. 87-130. Memoir and excellent portrait of Rev. E. S. Marshall.

WEBSTER, ANGUS D. LONDON TREES. pp. 218, tt. 32. Swarthmore Press, 1920; 15/-. *Ailanthus glandulosa*, *Catalpa bignonioides*, *Platanus*, *Pyrus Aria*, all do well even in smoky atmosphere. Even *Paulownia imperialis* attains a considerable size.

WHELDON, J. A. Llanberris Lichens, in Journal of Botany 11, 1920. It contains a new species, *Bilimbia cambrica*, from Snowdon, at 3000 feet. Another unexpected species found on Snowdon was *Cerania vermicularis*, which Mr Wheldon showed us *in situ*.

WHITE, F. A. The Flora of the Somme Battlefields, in Gard. Chron. ii., 276, 1920. *Brassica arvensis* is the most characteristic species, but the Poppies and the Scarlet Pimpernel are all common. Nettles are 6 feet high at Serre.

WOLLEY-DOD, Lt.-Col. A. H. A Revised Arrangement of British Roses, in Journal of Botany Supplement, 1920.

YOUNG, W. Preliminary Notes on the Flora of Fife and Kinross, in Trans. Bot. Soc. Edin. p. viii., 1920. It is to be hoped that the completed work may find a publisher.

OBITUARIES.

BAKER, JOHN GILBERT. Botanists have a proverbial longevity, and a striking example is afforded by one of the greatest of British systematists who died on August 16th of this year at Kew, full of honours, in the 87th year of his age, he being born at Guisborough on January 13th, 1834. Taxonomic Botany has lost one of its most industrious exponents and the botanical world one of the kindest-hearted and most simple-minded of men. This Club and Society loses a remarkable link with the past. To him it practically owes its existence. He was the guardian of its early years, its acute observer, its industrious investigator and valued referee for several decades. His early biography is so identified with us that to attempt to delineate it is to write our history. To our more recent members, many of whom have grown up since his active years, it may be well to recall the fact that our Society was first founded as the Botanical Society of London on July 27th, 1836, at a meeting convened by Mr Daniel A. Cooper at the Crown and Anchor Tavern, Strand. The objects were the advancement of Botanical Science in general, but more especially Descriptive and Systematic Botany, by the reading of original papers on the habitats, particular characters, etc., of plants, and by the formation of a Library, Museum, and Herbarium for reference and exchange of specimens. The name first suggested was the Practical Botanists' Society of London. The subscription was fixed at a guinea. Ladies were eligible as members. The Council was formed of six members, with a Treasurer and Honorary Secretary, its first paid Curator being Daniel Cooper, the author of *Flora Metropolitana*. The first meeting was on October 12th and the second meeting was held on Thursday, November 3rd, 1836, Dr J. E. Gray, keeper of the Zoological Department of the British Museum, occupying the chair. It was then decided to take rooms for the Library, Museum, and meetings at 11 John Street, Adelphi, and November 29th, the anniversary of John Ray's birth, was fixed for the anniversary meeting. It may be added that the first Secretary was W. M. Chatterley, and its President was Dr J. E. Gray, who, although his father's name (S. F. Gray) is on the title page, had the greater part in the preparation of the *Natural Arrangement of*

Plants, issued in 2 volumes in 1821. The members of Council included G. E. Dennes, C. E. Sowerby, Dr M'Intyre, and Dr Bell Salter. At the December meeting Dr M'Intyre read a paper on the Flora of Warley Common, Essex, which enumerated 23 Filices, 136 Monocotyledons, and 522 Dicotyledons, exclusive of Salices. On January 5, 1837, Daniel Cooper read a paper on the Flora of Battersea Fields, in which he stated that 406 species (the specific standard being that of Lindley's Synopsis) had been found on a piece of ground 1½ miles long and 1 mile broad. The report read at the anniversary meeting states that " 4819 specimens of British plants had been received; 1313 of these had been arranged in the Herbarium. The duplicates will be distributed by the Curator . . . among the members . . . in proportion to their contributions." A large herbarium of French plants, supposed to have belonged to Jean Jacques Rousseau, was presented by the Secretary. A number of North American plants, collected by the officers of the Hudson Bay Company, was given by Joseph Freeman. Three new British plants were sent:—*Claytonia alsinoides*, by Mr W. Baxter of Oxford; *Spartina alterniflora* from Itchen Ferry, by the Vice-President, Dr Macreight; and *Cinclidium stygium*, from Mr Leyland of Halifax. Drawings of *Victoria regia* and *Loranthus Smythii* were presented by R. H. Schomburgk from British Guiana. At the subsequent monthly meetings good papers were read and interesting exhibits shown. At the anniversary meeting on November 29, 1838, the membership-roll had increased to 100, of whom 24 were foreign and 34 corresponding members. The receipts were £71 16s 6d, the expenses £66 16s 10d; 18,592 plants had been received, including a valuable set of Willows from Mr Baxter, as well as 10,000 foreign specimens, H. B. Fielding being the chief donor. At the meeting on November 15, 1840, the Rev. A. Bloxam showed a small, slender-stemmed and purple-flowered *Euphrasia* from Seamor Moor, Scarborough, which was doubtless *E. gracilis* Fries. At the annual meeting, November 29, 1841, 24,860 British and 6000 foreign specimens were announced as having been sent in. Rev. A. Bloxam exhibited *Myriophyllum alterniflorum* (which he first made clearly known), gathered at Twycross in 1839. On November 29, 1842, the Society had grown to 152 members. H. C. Watson presented 5500 British plants. On November 29, 1844, there were 173 members. G. E. Dennes was Secretary and J. E. Gray

still President. In this year the first edition of the *London Catalogue* was compiled by Mr H. C. Watson. At the annual meeting in 1849 the Society numbered 249, and in 1850, 255 members. Mr H. C. Watson was requested to compile a third edition of the *London Catalogue*, which had its origin in the Society and which gave to it its name. These were the palmy days of the Society, which had very excellent meetings, some interesting excursions, and a good Exchange Club; but the expenses of the rooms for the valuable Library and Herbarium in London and of a paid Curator were too great for the receipts, and gradually the Society fell into monetary troubles, so that in 1858 the books and plants had to be disposed of and the rooms closed and the Society as such terminated. Its career had been useful and indeed brilliant. Its minutes contain much of interest and value. Some day, if time and money could be found, one would like to give a precis of them as a Supplement to this *Report*. The Thirsk Natural History Society had been founded in 1853, and one of its most active members was John Gilbert Baker, who was then engaged in a drapery business in that pleasant Yorkshire town. He had as an intimate friend, Mr W. Foggitt, a chemist of the same place. They were both intensely interested in Botany, and both have relatives in our Society of to-day. To Baker's zeal the Thirsk Society owed its success. The members started a Botanical Exchange Club in 1858 in connection with it, Baker having got into touch with many members of the Botanical Society of London and induced them to join and thus to carry on the traditions as well as one of the main features of the old Society. The Club met monthly at Thirsk under the Presidency of J. G. Baker. The reports of the meetings appeared from time to time in the *Phytologist* until that excellent botanical publication succumbed. In 1862 there appeared as a separate publication the first *Report of the Botanical Exchange Club of the Thirsk Natural History Society*, which is given *in extenso* in Seeman's *Journal of Botany* p. 142, 1863. An abstract of the 1864 *Report* appears on p. 252 of the same Journal in 1864. In 1865 J. G. Baker and W. Foggitt acted as Curators. It then consisted of 50 members. In that year the Thirsk Natural History Society was dissolved, but the Exchange Club connected with it was removed to London, and the *Report* for 1866 appeared under the new name of the London Botanical Exchange Club, with J. G. Baker and H. Trimen as Curators. This

change was brought about by a disastrous fire on May 14, 1866, which destroyed Baker's shop and dwelling-house, his library and specimens. The damage amounted to £10,000, scarcely a tenth of which was insured. By that date Baker's botanical work was known to be of a high order of merit, and his fellow-botanists and friends presented him with a handsome sum to replace his library; indeed, as he says, "it is far more than sufficient to replace all my botanical belongings which money can restore." The Secretary for the subscription list was J. T. Boswell Syme, and W. Carruthers, Rev. W. W. Newbould, Edward Newman, and H. C. Watson acted as the Committee. It may be added that Mr Baker's brother lived in the adjoining house, which was also burned, and that both families barely escaped with their lives. The destruction of his premises and the great monetary loss which it involved led him to ponder over his future career. Financial success was more likely to be achieved in business. Botany, unless professorial, offered small encouragement, but his scientific ardour was well developed and he took the wiser course, and in January 1866 was appointed first assistant in the Kew Herbarium. This explains the removal of our Club and its change of name. The *Report* for 1867 by the same Curators contains a description of a new Rose, *R. Hailstoni*, by Baker. In 1868 Boswell Syme was its Curator, Baker and Trimen acting as Secretaries. In 1869 Trimen withdrew on his appointment to an assistantship at the British Museum, and in that year Seeman's *Journal of Botany* bore on its title page the names of Baker and Trimen as assistant editors. To this Journal for many years Baker contributed most valuable articles. In 1869 he published in the Linnean Society's *Journal* a Monograph of the British Roses, arranged under 13 species. It was a very useful work, and its main divisions were adopted by British botanists for many years. It included about 20 varieties to which his name as author was attached. The *Report* for that year was edited by Boswell Syme, the word " London " dropping from our title. In 1872 Seeman's connection with the *Journal of Botany* ended and H. Trimen became its editor, assisted by J. G. Baker. This lasted till 1876, when Baker's name disappeared from the title page. The subsequent history of the Club need not be further alluded to except to say that in 1879 great difficulties were encountered in distributing the specimens, a task which had been most

carefully performed by T. Archer Briggs from 1875 to 1877. Baker edited the *Report* for 1878, the *Report* for that year announcing that Mr Charles Bailey had kindly undertaken the general management of a new Exchange Club, a task he most efficiently performed until 1892, when it came under the present regime. It may be added that the largest membership roll of the London Botanical Society was 255; that of the Botanical Exchange Club (including the Thirsk) was 65. From 1858 for very many years Mr Baker was one of our most valued members, and on the death of Sir Joseph Hooker in December he was made its only British Honorary Member. It is necessary now to go back to Baker's early history as apart from our Club. He was born at Guisborough on January 13, 1834, coming from a family of hardy Yorkshire dalesmen who had their home in Danby dale. His schooling was obtained at the Friends' Schools at Ackworth and Bootham, where natural history was wisely a portion of the curriculum. This stimulated him to study the plants of the vicinity when he was only 12 years of age. Baker published his first work on "The Flowering Plants and Ferns of Great Britain" when he was 21, but the previous year he had a note on *Carex Persoonii* in Yorkshire (*Phytologist* 738), which he found in Snaileswort in a rather boggy wood near the source of the Locker Beck. It may be well to add that it is a form of *C. canescens*, not the true *Persoonii*. He and his friend William Foggitt must have tramped over a large part of the neighbouring country. It is, of course, with Baker's study of British plants that we are most interested. Therefore a short reference must be made to his important contributions to British Field Botany. In 1854, in conjunction with John Nowell he issued a Supplement to the *Flora of Yorkshire*. This was still further treated of in his *North Yorkshire*, published in 1863. This important work was not only a Flora but an excellent digest of the county's Lithology, Geology, Topography and Physical Geography; indeed, the plants were considered not only as individuals but with reference to their surroundings—a pioneer in the study of Ecology. In it he enumerates 1155 species of Flowering Plants and Ferns as well as the Mosses. (A large portion of the stock of this work was destroyed in the fire at Thirsk.) In 1866, with Dr G. R. Tate, he published a *Flora of Northumberland and Durham*. To complete the tale of the Floras we may say that in 1885 appeared *A Flora of*

the English Lake District—a fascinating area which afforded him 50 Ferns, 850 flowering plants and about 100 adventive species. These Floras give evidence of his intimate knowledge of plants, their relation with the surroundings, of his gift of terse definition, apt generalisation, and of his knowledge of the altitudinal range of species. Ecology had its forerunner in Baker, and the information he gives is not too encumbered with uncouth terminology. His Monograph of the Roses has already been noted. This appeared in the *Naturalist* for 1863. In Seeman's *Journal of Botany* he wrote a paper on British Pansies in 1863, and in 1865 he published a paper on the English Mints, a sound and practical memoir, although at that time hybridity was not sufficiently taken into account. He grouped the Mints (omitting *Pulegium*) under 13 species, *alopecuroides* being placed under *sylvestris*, while *crispa* and *cardiaca* are kept distinct. The latter name was used in Johnson's *Gerard* of 1633 and revived by Baker two centuries afterwards. As we have seen, he was appointed to Kew in 1866, Oliver being then the keeper and Sir Joseph Hooker director. Britain was, however, too small an area to occupy his time for long. The great clearing-house of Kew demanded other work. In the *Journal of the Linnean Society* will be found a most important series of works from his pen—such are *The Flora of North China*, 1876; *The Flora of Madagascar* 1881-90, in which he describes 1200 new species; *The Flora of the Mauritius and the Seychelles*, 1887. He also specialised on certain groups, and there are monographs of the Scilleae, 1872; Tulipeae, 1873; Asparagaceae, 1884-5; Anthericeae, 1876; Iridacearum, 1877; Colchicaceae, 1879; Aloineae and Yuccoideae, 1880. He also contributed many popular monographs on these and other genera to the *Gardeners' Chronicle* and descriptions of new and rare plants to Saunders' *Refugium Botanicum*, of which he supplied the text for four out of the five volumes. In 1877 appeared as a separate work *A Handbook of the Fern Allies*, which contains six of his species of *Lycopodium* and about 130 of his Selaginellas out of the 334 enumerated—an astounding piece of work. His Handbook of the Amaryllideae appeared in 1888, that of the Bromeliacae in 1889. The Handbook of the Irideae in 1892, a volume of 232 pages, also contained a large number of new species. One wishes he could have prepared a more elaborate work with plates, treating as it does of

such a handsome group of fashionable garden plants. He also contributed the Filices and Compositae to the *Flora Brasiliana*, and the Leguminosae to the *Flora of British India*; also to Oliver and Dyer's *Flora of Tropical Africa*, and the whole of the sixth vol. of the *Flora Capensis* is by him, in which he describes and names 1055 species and varieties. In 1890 he was made keeper of the Kew Herbarium, an office which he held for nine years. In 1907 he collaborated with Miss Wilmott in her beautiful and costly work *A Book on Roses*, the coloured plates of which have been drawn by Alfred Parsons. It must be added that he also largely helped in the preparation of Hooker's *Student's Flora*, the Rubi, Rosae and Hieracia being arranged by him. He also wrote the Botany for the *Victorian County History of Yorkshire* in 1907. In 1884-5 he occupied the presidential chair of the Yorkshire Naturalists' Union, the subject of his address being "Recent Progress in English Botany and Fathers of Yorkshire Botany." He lectured on Botany for many years to the London Hospital and to the Society of Apothecaries. Few botanists have better deserved the F.R.S. which was bestowed on him in 1878 or the Doctorate of Science given him, and not with undue precipitation, by Leeds last year. He was also a Medallist of the Linnean and Horticultural Society; a Vice-President of the Linnean Society and member of the Irish Academy. His name is commemmorated in Botany by the genus *Bakeria*, a genus of the Bromeliaceae, and in a Loranthaceous genus—*Bakerella* of Van Tieghem, and there are many species named after him. The British ones include *Rosa Bakeri* Déség., *Rubus Bakeri* F. A. Lees, and *Galium Bakeri* Syme. The number of his published papers is very large (over 400), Christensen giving 83 on Ferns alone, and the number of species and varieties named by him run into many thousands. Even in his later years he could find time to write of the Flora of Burnham Beeches, and fascinating papers from his pen appeared in the *Gardeners' Chronicle* on the "Holy Land: its Botany and Physical Geography" as recently as 1917 (*Rep. B.E.C.* 319, 1919). Thus, full of years and honours, with all the laurels of a most industrious career, with the respect and affection of all those who knew him, our dear colleague passed away in the morning of August 16, 1920, and his body was laid to sleep in the Friends' Burial-ground at Isleworth. A wreath of monocotyledonous flowers,

which had been specially the subject of his researches, was appropriately sent by the Kew staff to place upon his grave. My own acquaintance with him dates back to the early seventies, when he kindly helped me with critical plants, especially with Roses. Once in later years I met him at Thirsk as I was motoring through Yorkshire, and on more than one occasion he has been in Oxford, where he was delighted to see the beautiful specimens of Miller's glabrous Elm at Besilsleigh and the vegetation of the saline meadow at Marcham. His kindliness stands out as a striking trait in his character, as does his readiness to help others. This sometimes leads me to take greater trouble over a hopeless bundle of mixed-up fragments of squashed specimens which some contributors think are the proper material to send in for identification. Not only has the Society lost its Honorary Member but it has lost a wise counsellor and a sincere well-wisher. Note his kindly greeting on page 12 of the fifth volume of our 60th annual *Report*, when he concludes by offering "his best wishes for the continued prosperity of the Club," which he may be said to have re-established. Notices of Gilbert Baker's life appear in the *Naturalist* 5-8, 1907; in the *Friends' Quarterly Examiner* 454, 1920, by J. Burtt-Davy; in the *Gardeners' Chronicle* i., 102, 1920; the *Journal of Botany*, and the *Kew Bulletin*, No. 9, 1920, which contains the additional papers of Baker's to those in the Royal Society's Catalogues. See also *Kew Bulletin*, 1897 and 1907.

Bell, A. Montgomerie. Born at Edinburgh, 1845; died at Oxford, 1920. The subject of this notice was the son of Mr W. S. Bell, the Regius Professor of Conveyancing in Edinburgh University. He was educated at the Academy of that city and at Glasgow University, and was a member of Balliol College, Oxford, from 1864-9, taking his degree in the latter year and his M.A. in 1871. He won several prizes in the sports. He lectured at Worcester College in 1869, and became a Master of Marlborough in 1870. Subsequently he lectured at St John's, Oxford, and undertook private tuition, among his pupils being Lord Haig. He was the author of several school books and he contributed to the *Cornhill* and other periodicals and newspapers. Recently he wrote a work on Johnson. His chief interest, however, lay in Anthropology. He made im-

portant discoveries and researches into the history of primitive man in Britain. In 1883 he discovered palaeolithic flint implements on the high plateau near the sources of the Darent and Eden, and this was followed in 1890 by his finding at Wolvercote, close to Oxford in the river gravels 100 feet above the present level of the Thames, a series of very fine palaeolithic implements, together with plant remains of that period. At Iffley, too, he discovered evidences of the existence of a large colony of palaeolithic men. In later years Mr Asquith granted him a pension from the Civil List. Mr Bell served as President of the Ashmolean Natural History Society in 1898-9. Among the plant remains referred to there was scarcely a species not now found in the neighbourhood of Oxford except what may be a leaf of the arctic willow. Mr Bell had always a love for Botany, and during the past 10 years he had been engaged in making a series of drawings of our British plants, several hundreds in number. These are very well done, with clear definite outlines and with the natural habit well portrayed. He was always ready to give assistance in any matter relating to this Society, for which he had a warm liking. For some years angina symptoms had troubled him. This year the writer, who had called on him, when he was on a visit to Oxford, in order to bring him to lunch, found that he had only recently been found dead in his rooms. Mr Bell had intensely strong Scottish affinities and a great sympathy with the Stuarts. It was perhaps the writer's championship of George Don which laid the foundations of an affectionate friendship of over 25 years, only broken by death. Quite recently, through his kindness, his brother's (John M. Bell) herbarium, which gained the Balfour prize for plants collected round Edinburgh about 1858, came into the possession of the writer. In person Mr Bell was tall and strongly built, and his goodly presence suggested that of a Scottish laird of the olden time. though he never here wore the kilt.

Clarke, Henry. Born in London, July 18, 1858; died October 12, 1920. He was the son of Daniel Clarke and was educated as an architect at King's College. He proceeded to Guy's Hospital and, qualifying in 1874, was appointed Medical Officer to Wakefield Prison, which position he held till his retirement in 1908. In 1907 he took the M.D. of Durham. He was the author of many valuable

medical papers. On his retirement he bought Courns Wood, near Naphill, in Bucks, where I made his acquaintanceship and saw his already considerable collection of water-colour drawings of British plants. This work occupied his leisure, although he gave freely of his time during the war to help his colleagues. He was an accomplished artist and loved books and their covers—for he was a good bookbinder. His plant-drawings are accurate and pleasing and number many hundreds. He also painted many fungi. His right hand was alone used in the work as he lost the use of the left some years ago. His death was very sudden. He had only recently sent, as was his custom, plants for identification from Cardigan. Many new records of his from that county have been published in our *Reports*.

COLGAN, NATHANIEL. Born May 28, 1851; died October 2, 1920. Mr Colgan was born in Dublin and became clerk to the Metropolitan Police of that city, an office he held till the age-limit. He was a good linguist and travelled in France, Switzerland, Italy and Morocco. A. G. More left him and R. W. Scully to complete and see through the press the second edition of *Cybele Hibernica*, which was published in 1898 and was very carefully and ably performed. In 1904 Colgan published a *Flora of Dublin*, a quite excellent production. He also contributed a paper on the occurrence of *Artemisia Stelleriana* on the North Bull to the *Journal of Botany*. There is an appreciative memoir with a portrait in the *Irish Naturalist* 125. 1920, by R. W. Praeger.

FARRER, REGINALD. Born 1880; died 1920. His almost tragic death from diphtheria in the wilds of Northern Burma or Tibet on October the 16th terminated a career of exceptional interest and brilliancy. He was the eldest son of Mr James Farrer of Ingleborough, and thus was nurtured amid beautiful scenery and among literary associations in his home life which doubtless fostered his own predilections. In his young days his health was delicate and thus he never had a public school education, being perhaps not only a loser but a gainer by the omission. He entered Balliol College in 1898, and under the auspices of his cousins, the Ansons, I made his acquaintance. At that time he was interested in Botany, but

liked the flowers more for their own sakes than for their connection with a science. He took classical honours in his examination and then began a career of travel, which only ceased with his death. Under his guidance I saw *Arenaria gothica* at Clapham, which he had found in a new locality. On Ingleborough (see *Report* ii., 256; v., 592) he detected a hybrid Saxifrage between two such unexpected parents as *tridactylites* and *hypnoides*, which I connected with his name as × *S. Farreri*. Together we explored the Isle of Walney and saw *Geranium lancastriense* in all its beauty, and traversed Ingleborough and its limestone pavements. The next time we met was in a very different scene. It was at Kandy. He had recently taken the yellow robe, and had been staying with a native Rajah who, as I said, had all the gems of the world in his mines save the opal and diamond. "Ah, but," he said, "last night I saw some of the finest opals I have ever seen." Some of the finest in Britain, I remarked belonged to Mrs Gaskell. "Well" he said, "so small is the world. these were worn by Mrs Gaskell's daughter," the daughter of my valued friend, Captain Gaskell, of Kiddington, alas, now no more. Farrer then told me of his visit to the shrine in order to see Buddha's tooth, which is preserved in the Temple at Kandy. It is contained in casket after casket, each more costly than the other, seven in all, before the last is opened to expose this historic relic, which, however, some observers say grew in something much less venerable than the mouth of Buddha. We who were not Buddhists were not allowed to see for ourselves. At Kandy we met the Empress Eugenie, who, like us, went to visit the buried city of Anarudjapura with its great dagobas, which explained to us for the first time the two generic names *Buda* and *Tissa* used by Adanson for *Spergularia*, *Buda* being a variant of Budha, and *Tissa* is the Divina pie tissa to whom one of the dagobas, over three hundred feet high of brickwork, is dedicated. Farrer wrote several novels, but it was in his books of travel that he achieved his great success. For many years he had a rock-garden at Clapham, and in order to stock this with rarieties he made his journeys. They resulted in his adding a very large number (several hundreds) of new and interesting species, among which may be singled out for their beauty *Gentiana Farreri* and *Lilium Farreri*. Sir I. B. Balfour and W. W. Smith dedicated *Farreria*, a new genus of the Thymelaeaceae, in his honour. Many

other species bearing his name have been described in the *Notes from the Royal Botanic Garden, Edinburgh*. He was awarded the Gill Memorial Medal of the Royal Geographical Society. *The Garden of Asia* and *On the Eaves of the World* stand apart from most works by their vivid, if not too ornate, word-painting. They, however, give the arm-chair botanist an opportunity of taking in some of the glories of a high-alpine flora in or on the confines of India. Still more recently his adventurous journey into China was detailed in the *Gardeners' Chronicle*. Many of his plants are described by himself in vol. xlii., p. 47-114, of the *Journal of the Horticultural Society*. His *Alpine and Bog Plants* appeared in 1908. His two volumes on *The English Rock Garden* were reviewed at length in our last *Report*. Who then could have anticipated that his life should so soon have closed? In some way, sad and premature as it was, it was more in consonance with his outlook than a passing away in a prosaic manner in a civilised surrounding. He loved the wilds, like the Scholar Gipsy. They took the toll; "he came to Oxford and his friends no more." There is a pleasant tribute to him in the *Gardeners' Chronicle*, with a portrait, ii., 247, 1920, and the same excellent publication contains several articles written by Farrer on his last journey.

Jackson, John Reader, A.L.S. Born in Kent in 1837, he was educated for an architect, but being introduced to Sir William Hooker he was induced to join the scientific staff at Kew in 1858. For forty-three years he was at Kew, acting as keeper of the Economic Museum there, and excellently explained its contents to myriads of visitors. He was elected A.L.S. in 1868. He was the author of *Commercial Botany of the Nineteenth Century*, 1890, and of an *Official Guide to the Museum of Economic Botany*, 1883, and edited an issue of Barton and Castle's *British Flora Medica* in 1877. After his retirement he served for several years on the Exeter Diocesan Conference. He died at his residence, Claremont, Lympstone, on October 28th, aged eighty-three years.

Moreton, Lord. Henry Haughton Reynolds-Moreton, 1857-1920. The death of our member, the only son and heir of the Earl of Ducie, took place from bronchial pneumonia, at 37 Park Lane, on February 27, 1920. He was Liberal Member for West Gloucester-

shire from 1880 to 1885. His country residence (an inheritance from his mother, a Langton) was at Sarsden in Oxfordshire, and he frequently sent me notes on the local flora. His especial interest was in microscopic fungi. He found the *Tulipa sylvestris* near his residence. He inherited the love of horticulture and arboriculture from his father, whose ancestral domain at Tortworth has the largest Chestnut in Great Britain, besides some extraordinary fine specimens of other trees. Earl Ducie, F.R.S., who still survives, was born in 1827.

ROGERS, Rev. WILLIAM MOYLE. Born at Helston, July 12, 1835, died at Bournemouth, May 26, 1920. He was educated at Helston Grammar School, and without having had a University training was admitted to priest's orders in South Africa by Bishop Gray in 1861. Returning to England he was curate successively of Yarcombe, S. Devon (1862-4); Holy Trinity, W. Cowes (1865); Upton-on-Severn, Worcestershire (1866-7); Chetnole (1868-9) and Woolland, Dorset (1869-72), where he married a daughter of Major Chadwick, of Chetnole. He was Vicar of Stapleford, Wilts, in 1872; Curate of Trusham, Devon, 1876-82; and Vicar of Bridgrule, Devon, 1882-5 (teste Crockford), when his health, never robust, broke down, and he retired to Bournemouth, where he resided till his death. The frequent changes of residence gave him the opportunity, of which he took full advantage, of investigating the flora of many areas, and a long list of articles on them have appeared in the *Journal of Botany*. From this it will be gathered that, even if Rogers had not specialised on *Rubi*, his contributions to Topographical Botany would have been important. He rendered substantial aid to Mansel Pleydell's *Flora of Dorset*, to Murray's *Flora of Somerset*, and I owe him gratitude for his welcome notes for the *Floras of Oxfordshire and Berkshire*. He was an energetic member of the Record Club from 1877. He joined the Botanical Exchange Club in 1883, and from that time till last year he remained a member and acted as a most painstaking and conscientious referee on *Rubi*, of which he was the acknowledged British expert. This prickly genus in Smith's *English Flora* numbered 13 species in addition to *R. arcticus*, which is probably an error. Since that time many botanists tried to investigate them—Bell-Salter, Lindley, Bloxam, Hort, Lees, Bagnall, Coleman, Leices-

ter-Warren, Briggs, and notably Babington, who published a Handbook in 1869 which enumerated 45 species. Moyle Rogers, after prolonged, laborious work, left our British *Rubi* at about 120. Among the new species described by him are *R. lacustris*, *Lettii*, *Leyanus*, *iricus*, *hibernicus*, *mollissimus*, *dumensis*, *anglicanus*, *echinatoides*, *raduloides*, *Griffithianus*, *dasyphyllus* and *Marshalli* (this with Focke), besides numerous varieties and sub-species. Since the publication of Rogers' *Handbook* in 1900 two important works on European *Rubi*, those of Focke and Sudre, have appeared. It is somewhat striking that not a single one of Rogers' species is included in the List of the 114 major European species given by Sudre; those mentioned being accorded a subordinate position as minor sub-species, or even lower grades. Whatever may be their ultimate position, one knows that it was only after the closest examination of specimens and minute and careful study that Moyle Rogers ventured to describe new species. Whether he took sufficiently into account the effects of recent or past hybridisation may be open to discussion, but this is neither the time nor the place to develop the question. One thing is obvious, that in a workable arrangement there must be greater grouping and a probable reduction in the number of major species than at present obtains. Moyle Rogers was at one time strongly drawn to the Roses, on which he did useful work. *Rubus Rogersii*, named in his honour by the Rev. E. F. Linton, although not given by Sudre among the numbered European species, is placed subordinately to *R. affinis* W. & N. by Sudre, and not as a hybrid or variety. Focke gave it specific rank. Moyle Rogers was one of the kindliest of men. He was gentle and considerate of others, disliked controversy, was the reverse of dogmatic, and was most painstaking, industrious and careful. The loss to this Exchange Club is indeed a grievous one, but he did his best to make it less severe by cheerfully putting his specimens and knowledge and experience at the service of the Rev. H. J. Riddelsdell, whom he wished to be his understudy. His own son, the Rev. F. A. Rogers, has his father's love of the science and has himself done most excellent work in African Botany. Although retired from parochial work, our member's services were always cheerfully given to the various parishes in Bournemouth, and the same kindly disposition which characterised his botanical life was eminently manifest in his sacred calling.

STANTON, GEORGE, 1840-1920. Born at Bramley, near Guildford, he became a gardener at Rydinghurst; Knowle Royal Garden, Windsor; Kew, and eventually at Park Place, Henley. There he made notes on the local flora in the three counties, which I have been glad to utilise. He had a large number of men under his control, and was an acknowledged authority on horticulture. In 1918 he was elected President of the Kew Guild, and the French Government in 1911 nominated him as Chevalier du Mérite Agricole. He died on the Park Place Estate on March 14, 1920.

STEDMAN, FRANK WILLIAM, chemist, Ashford, Kent, died suddenly on November 12, 1920. He was apprenticed at Cirencester, and on his taking a business at Ashford interested himself in local Botany. He found the Lizard Orchis in his neighbourhood and knew the localities of the Kentish members of that genus.

Botany has lost also three distinguished continental systematists:—

BECCARI, ODOARDO, 1843-1920, Director of the Botanic Garden at Florence. He was a great authority on Palms and an explorer in Malay and New Guinea, which resulted in the publication of three large volumes, 1877-86, of *Malesia*. Other works are *Palmæ del Madagascar*, 1912, and in the *Annals of the Royal Botanic Garden, Calcutta*, *Asiatic Palms—Lepidocarycae*, with over 400 plates.

DE CANDOLLE, AUGUSTIN PYRAMUS. Born in England in 1869; died at Geneva, May 8, 1920, only eighteen months after his distinguished father. He was the fourth generation of a great botanical family. His botanical output does not compare with that of his predecessors, but his systematic work included descriptions of Tonkin and Madagascar species.

SACCARDO, PIER ANDREA. Born at Treviso, 1845; died 1920. Director of the Botanic Garden, Padua, and Emeritus Professor in the University there. He was a recognised authority on Fungi. His *Sylloge Fungorum* is a monumental work extending to 22 volumes which appeared from 1882 to 1913. In them an enormous number of new species are described. He is also the author of the *Cronologia della Flora Italia*, a companion volume to the *Flora Analitica d'Italia* of Fiori, Paoletti, and Beguinot, in which he gives

the earlier records for Italy of the flowering plants and ferns. He, however, omitted any reference to the very early herbal of Gregory of Reggio, 1606, which is at Oxford. He also wrote *Chromotaxia*, a book on colour nomenclature.

NEW COUNTY AND OTHER RECORDS.

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

1. CLEMATIS VITALBA L. Irfon Bridge, Builth, Brecon, introduced, WEBB.

3. THALICTRUM FLAVUM L., var. RUFINERVE (Lej. & Court.). Denbighshire, E. F. PAYNE. This is similar to the Llansilin plant, so named by Rev. E. F. Linton, but which Herr J. Freyn referred to *T. gallicum*. Our Thalictra sadly need revision. The *Cambridge Flora* gives no varieties of *flavum*.

†14. ADONIS AESTIVALIS L. Near Wilmington, Hull, York, W. JOHNSON.

†16. A. ANNUA L. St Hélier, Jersey, 1858, PIQUET.

*21. RANUNCULUS AURICOMUS L. St Ouen's, Jersey, 1890, PIQUET.

27. R. ARVENSIS L. Near Chepstow, Monmouth, *Fl. Chepstow.*

36. R. FLUITANS Lam. In the Axe, Axminster, Devon, Miss TODD.

*38. R. TRICHOPHYLLUS Chaix. Braid Ponds, Midlothian, 1858, BELL, in *Hb. Druce.*

39 (2). R. SPHAEROSPERMUS Boiss. & Blanch. St Osyth, Essex, 1912 [Ref. No. 7], BROWN.

40. R. HETEROPHYLLUS Weber, var. TRIPHYLLUS (Wallr.). Ford, Bucks, DRUCE; Raynes Park, Surrey, BRITTON. Var. SUBMERSUS Godr. Newport, Isle of Wight, STRATTON; Beardsall, Derby, ANSELL.

*42. R. BAUDOTII Godr. Farming Woods, Northants, 1875, DRUCE. Var. MARINUS (Arr. & Fr.). Brick ponds near the sea, Cardiff, Glamorgan, RICHARDS.

47. R. FICARIA L. Plentiful in Unst, SAXBY. Forma LUXURIANS Moss. Hertford, ANSELL.

51. HELLEBORUS VIRIDIS L. *Magor Llanfihangel, Monmouth, *Fl. Chepstow*; near Leominster, Hereford, DALTRY.

*54. AQUILEGIA VULGARIS L. With white, purple and blue flowers on the railway embankment, Falgarth, Brecon, WEBB.

†72. BERBERIS VULGARIS L. St Martin's, Jersey, PIQUET. Rejected in the *Flora of Jersey.*

77. CASTALIA ALBA Wood, var. OCCIDENTALIS Ostenf. Near Walls, Shetland, DRUCE. Passed by OSTENFELD.

80. PAPAVER RHOEAS L., var. CAUDATIFOLIUM Fedde. Neithrop, Oxon; Southam, Warwick; Castle Hedingham, Essex, DRUCE; Belsize Park, with var. SUBINTEGRUM W. & L., var. TRIFIDUM Fedde, Croxley Green, Herts, RICHARDS. Var. STRIGOSUM Boenn. Godalming, Surrey, BISHOP.

†90. GLAUCIUM CORNICULATUM Curt. St Ouen's, Jersey, with

other casuals, PIQUET. Given in *Camb. Fl.* as if native there, but it is only adventive and has disappeared..

†95. HYPECOUM PROCUMBENS L. Near Wymondham, Norfolk, Miss POMEROY.

†100. CAPNOIDES SOLIDA Moench. Albury Park, Surrey, BISHOP.

104. FUMARIA CAPREOLATA L., var. BABINGTONII Pugsley. John o' Groats, Caithness, DRUCE.

106. F. PURPUREA Pugsley. Llandrindod Wells, Radnor, Miss TODD.

107. F. BORAEI Jord., var. GRACILIS Pugsley. Barnes Common, Surrey, as *muralis*, GROVES. Var. BRITANNICA Pugsley. Ide, Devon, Miss TODD. Var. LONGIBRACTEATA Pugsley. Church Stretton, Salop, 1907, C. BAILEY.

108. F. MURALIS Sond. The Jersey record may be deleted, Piquet's specimen is *F. Bastardi*.

*108 (3). F. MARTINI Clav. (F. PARADOXA.) Near Bath, Somerset, Mrs SANDWITH.

†116. MATHIOLA INCANA Br. Woolacombe, N. Devon, 1920, naturalised, Mrs DRUMMOND. Also quite naturalised and in quantity on the *Fort, St Helier, Jersey, and, as a garden escape, on the sands near Pontac, Jersey, 1920, DRUCE.

†119. M. BICORNIS Br. Waste ground, Sutton's Farm, Reading, MURRAY.

*124. RADICULA SYLVESTRIS Druce. Penrhyndeudraeth, Merioneth, JONES.

142. CARDAMINE PRATENSIS L. A beautiful flore pleno form, which kept true in cultivation, was found at Beardsall, Derbyshire. in 1846, by WHITTAKER, in *Hb. Ansell.* Mr D. HAMER sent from

Carmarthen a leaf showing the buds on the margin of the leaflet, and a similar specimen was found by Miss DRUMMOND near Hampton Court. At Syredale in the Orkneys, and also in Unst, it was in good fruit.

[160. DRABA RUPESTRIS Br. Mr Temperley and his son gathered a single specimen on Widdybank, which has much the same aspect as the Ben Lawers plant. *D. incana* was plentiful there. It will be well to bear it in mind].

*167. COCHLEARIA OFFICINALIS L. On the muddy coast of the Dorey, Montgomery, WEBB.

†176. HESPERIS MATRONALIS L. Near the Barracks, Kilkenny. Hon. Mrs FIENNES.

†184. SISYMBRIUM ALTISSIMUM L. Norwich, E. Norfolk, W. G. CLARKE.

†187. S. LOESELII L. Gartcosh, Glasgow, GRIERSON.

†188. S. IRIO L. Felixstowe, E. Suffolk, 1920, M. COBBE. The third time for that county.

†200. CONRINGIA ORIENTALIS Dum. Aldeburgh, E. Suffolk, A. B. COBBE; Denbigh, B. ALLEN.

202. CAMELINA SATIVA Crantz. Leven Links, Kinross, 1857, BELL.

202 (2). C. ALYSSUM (Mill.) Thell. = FOETIDA Fr. St Davids, Fife, BELL.

†218. BRASSICA JUNCEA Coss. Thetford, W. Norfolk; Felixstowe, E. Suffolk, M. COBBE; Pembrey, Carmarthen, HAMER; Kirkwall, Orkney, DRUCE.

†222. B. POLLICHII (Sch. & Sp.) Druce. Rewley, Oxon, GAMBIER-PARRY; Pembrey, Carmarthen, HAMER; Lakenheath, W. Suffolk; Felixstowe, E. Suffolk, A. B. COBBE.

†223. B. ERUCASTRUM L. Carmarthen, HAMER.

*†227. DIPLOTAXIS MURALIS DC. Finstown, Orkney, DRUCE and JOHNSTON. Var. BABINGTONII. Pembrey, Carmarthen, HAMER.

232. BURSA BRITTONII (Almq.). Haroldswick, Shetland, DRUCE.

*233. CORONOPUS DIDYMUS Sm. Felixstowe, E. Suffolk, M. COBBE; Botley, Oxford, DRUCE; railway station, Edinburgh, 1857, BELL.

236. LEPIDIUM LATIFOLIUM L. Abundant at Felixstowe, E. Suffolk, M. COBBE.

†237. L. DRABA L., var. SUBINTEGRIFOLIUM Mich. Par, Cornwall, THURSTON. Sub-var. VIRIDESCENS Druce. Near Carmarthen, HAMER.

†239. L. PERFOLIATUM L. Felixstowe, E. Suffolk, M. COBBE; Exmouth, S. Devon, Mrs WEDGWOOD; St Ouen's Bay, Jersey, 1901, *Hb. Piquet;* Cirencester, Gloster, GREENWOOD; *Kirkwall waterworks, Orkney, DRUCE.

†240. L. RAMOSISSIMUM Nelson. Mile Camp, North Stoneham, S. Hants, RAYNER; Glasgow, GRIERSON.

†240 (2). L. NEGLECTUM Thell. Glasgow, GRIERSON; Felixstowe, E. Suffolk, M. COBBE.

246. L. SMITHII Hook. A plant very near to *alatostylum* Towns., was found at the Lizard, Cornwall, 1920, by Miss TODD.

†247. L. VIRGINICUM L. St Peter's Valley, Jersey, 1901, PIQUET; Thetford, W. Suffolk, Miss COBBE.

†247. L. DENSIFLORUM Schrad. Ide, Devon, Miss TODD; Chichester, W. Sussex, DRUCE; Charleston, Cornwall, Mrs WEDGWOOD; Thetford, W. Suffolk, Miss COBBE; Mickleham, Surrey, BISHOP.

252. IBERIS AMARA L. Church Hill, Royston, Herts, sent as *ruficaulis*, J. E. LITTLE, in *Wats. B.E.C.* 1913. Thellung refers this to var. DECIPIENS (Jord.) Thell. in 1920.

†253. I. UMBELLATA L. St Saviour, Jersey, 1852, as *amara* (See *Flora*), PIQUET; Burntisland, Fife, 1858, BELL.

†256. ISATIS TINCTORIA L. This came up (1897) after the moving of some earth in making a new footpath. In Lincolnshire it is now only grown on estuarine alluvium. WOODRUFF-PEACOCK, *in litt.*

†258. VOGELIA PANICULATA Horn. Aldeburgh, E. Suffolk, M. COBBE; Lifton, N. Devon, W. WISE.

†262. BUNIAS ERUCAGO L. Tollcross sand-pits, Glasgow, GRIERSON; West Mount, Jersey, PIQUET.

264. CRAMBE MARITIMA L. Barton Bradstock, Dorset, GRAVESON.

†266. RAPISTRUM PERENNE All. Guildford, Surrey, DRUCE.

†267. R. ORIENTALE DC. Medway Bank, Aylesford, Kent, TALBOT.

†268. R. RUGOSUM All. Felixstowe, E. Suffolk, A. B. COBBE.

291. VIOLA STAGNINA Kit. Near Drumcose Post Office, Fermanagh, STEELE, in *Irish Nat.* 95, 1919.

293. V. SYLVESTRIS Kit., var. PUNCTATA Druce. Alphamstone, etc., N. Essex; Hitcham, W. Suffolk; Wentbridge, S. E. Yorks, BROWN; Brampton, Cumberland, BELLAMY.

294. V. RIVINIANA Reichb., f. NEMOROSA Neum. Pebmarsh, Great Tey, N. Essex, BROWN; St Ouen's, Jersey, DRUCE. Forma MINOR Murbeck. Fordham Heath, N. Essex; Bromeswell Walks, W. Suffolk, BROWN. × CANINA. Oakvale, Liverpool, 1843, H. SHEPHERD.

*295. V. RUPESTRIS Schmidt, var. GLABRESCENS Neum. The stipules are not broad enough to be quite characteristic. La Moye, Jersey, DRUCE. On the serpentine at Baltasound, Unst, new to Scotland, DRUCE; Linton, Cambridge, BROWN; Upper Wharfedale, W. Yorks, 1918, WATERFALL; Torquay, S. Devon, Miss LARTER.

296. V. CANINA L. *Near Tintern, Monmouth, *Fl. Chepstow*; in a cleistogamous state at Waulkmill Bay, Orkney, DRUCE. *Var. ERICETORUM (Schmidt). La Moye, Jersey, 1920, DRUCE. Var. PUSILLA Bab. *La Moye, Jersey, DRUCE; Fordham Heath, N. Essex, BROWN; Sands of Barry, Forfar, 1844, GARDINER. × LACTEA. Spurn Head, E. Yorks, 1898, WATERFALL, in *Hb. Brown*. Mrs Russurim sent from the Norfolk Breckland to Lady Davy, 'Miss Pallis's Violet.' See *Brit. Violets*, p. 82.

298. V. ODORATA L., var. DUMETORUM (Jord.). Alphamstone, N. Essex, BROWN; St Saviour, Jersey, 1852, PIQUET, in *Hb. Druce*. At Baldon, Oxford, a form with an abnormal development of stoloniferous flowers occurred, and Mr Foggitt sent the same from Thirsk. × HIRTA = SEPINCOLA. Edwardstone, W. Suffolk, BROWN; Worcester, 1853, T. GISSING, in *Hb. Piquet*. × HIRTA = MULTICAULIS Jord. Lockley's Warren, Herts, 1876, BLOW, in *Hb. Piquet*.

299. V. HIRTA L., var. HIRSUTA Lange. Hertford, ANSELL, an *imberbis* form.

*300. V. CALCAREA Greg. Tidenham, W. Gloster, RIDDELSDELL, in *Fl. Chepstow*.

*301 (2). V. EPIPSILA Ledeb. Hartlebury Common, Worcester, 1855, T. GISSING, as *palustris*, in *Hb. Druce*; Chepstow Park, Monmouth, *Fl. Chepstow*.

306. V. CURTISII Forst., *var. PESNEAUI R. & F. Mochras, Merioneth, JONES; Santon Warren, Norfolk, REYNOLDS. New to Norfolk. I gathered it near Brandon in Suffolk.

319. DIANTHUS ARMERIA L. Wacton, Norfolk, CLARKE; Bouley Bay, Jersey, 1903, PIQUET, as *D. deltoides*.

336. SILENE CUCUBALUS Wib., †var. ROSEA (DC.). Colchester, BROWN.

*338. S. CONICA L. In great abundance on the dunes at Pembrey, Carmarthen, HAMER.

†339. S. CONOIDEA L. Jersey, HUNNYBUN, in *Camb. Fl.* as if native, but it is merely alien.

†340. S. NOCTIFLORA L. Between Crick and Mount Ballan, Monmouth, *Fl. Chepstow.*

†341. S. DICHOTOMA Ehrh. Llanelly, Carmarthen, HAMER; St Ouen's, Jersey, 1901, PIQUET.

†343. S. ANGLICA L. Lydney, W. Gloster; Kilgwrrwg, Monmouth, *Fl. Chepstow.*

†344. S. QUINQUEVULNERA L. Golf links, Felixstowe, E. Suffolk, M. COBBE.

†350. S. MUSCIPULA L. Ibrox, Lanark, GRIERSON.

†356. S. ANNULATA Fenzl. Field near St Lawrence Church, 1857; St Ouen's, Jersey, 1901, PIQUET.

†364. LYCHNIS CORONARIA L. Langland, Glamorgan, WEBB; Marston, Oxon, DRUCE.

370. CERASTIUM VULGATUM L., var. LUCENS Druce. On the serpentine at Balta, Unst, the same as the Cabrach plant, DRUCE.

372. C. PUMILUM Curt. On ant heaps, on Ilsley Down, Berks, 1920. Not seen since I first found it in that area in 1885, DRUCE; *Newport, Pembroke, DRUCE; *Great Orme, Carnarvon, REYNOLDS, a great extension of its range.

*373. C. SEMIDECANDRUM L. Portskewett, etc., Monmouth, *Fl. Chepstow.*

374. C. TETRANDRUM Curt., var. ZETLANDICUM Murb. Balta, Unst, DRUCE.

394. ARENARIA TENUIFOLIA L. Charlestown, Cornwall, probably adventive, TRESIDDER. Var. LAXA (Jord.). Thetford, W. Norfolk, M. COBBE. Var. HYBRIDA (Vill.). Rondham, W. Norfolk, M. COBBE.

*399. SAGINA NODOSA Fenzl. Between Howey and Vanelwedd, Radnor, WEBB. Var. MONILIFORMIS. *Baltasound, Unst, Shetland, DRUCE.

401. S. SUBULATA Presl, var. GLABRATA Lange. Near Burga Water, Shetland.

*406 (2). S. REUTERI Boiss. Penarth, Glamorgan, 1909, TROW, in *Herb. Brit. Mus.*, ex PEARSALL.

410. SPERGULA SATIVA Boenn. Lochgelly, Fife, BELL.

†418. CLAYTONIA SIBIRICA L. Woods at Armidale, Skye, Miss FLORA RUSSELL.

†419. C. PERFOLIATA Donn. St Clement, Jersey, 1908, *Hb. Piquet.*

*421. MONTIA FONTANA L. = M. LAMPROSPERMA Cham., var. BOREORIVULARIS Druce. Burrafirth, Unst, DRUCE.

*421 (2). M. VERNA Neck., var. INTERMEDIA (Beeby). Brecon Beacons, BARTON.

424. ELATINE HEXANDRA DC. Cym Bychan, Harlech; Llyn Tecwyn, Merioneth, JONES.

†426. HYPERICUM HIRCINUM L. Highcliffe, near Christchurch, S. Hants, 1919, BISHOP.

†427. H. ELATUM Ait. Carmarthen, HAMER.

435. H. QUADRANGULUM L. A form with something of the appearance of *Desetangsii*, near Hartford Bridge, Hants, Lady DAVY and Mrs THOMPSON.

†439 (4). MALOPE HISPIDA Cav. Cultivated field, Beaminster, Dorset, GRAVESON.

†441. ALTHAEA ROSEA L. Langland, Glamorgan, WEBB.

†442. A. OFFICINALIS L. Edge of the canal, near Byfleet, Surrey, 1920, two large clumps, BRITTON.

†*443. A. HIRSUTA L. St Ouen's Bay, Jersey, PIQUET.

452. MALVA SYLVESTRIS L., var. ANGUSTILOBA Celak. With periwinkle-blue flowers, at Thetford Camp, W. Suffolk, A. B. COBBE.

†*458. M. CRISPA L. St Peter's Common, Jersey, PIQUET.

*463. TILIA PLATYPHYLLOS Scop. Castle Woods, Monmouth, *Fl. Chepstow.*

*467. LINUM ANGUSTIFOLIUM Huds. Tintern, etc., Monmouth, *Fl. Chepstow.*

†468. L. USITATISSIMUM L., sub-var. ALBIFLORA. Leith Docks, in some quantity, FRASER.

469. L. ANGLICUM Mill. Aylmerton, E. Norfolk, CLARKE.

†479. GERANIUM PHAEUM L. Braunceston, E. Norfolk, CLARKE.

†479 (2). G. ENDRESSI Gay. Ilfracombe, N. Devon, *Dev. Rep.*, 1, 1920.

*481. G. PYRENAICUM Burm. f. Tintern, Monmouth, *Fl. Chepstow.*

*485. G. ROTUNDIFOLIUM L. Old gravel pit at Postfield, near Chichester, W. Sussex, BURDON. Subsequently we found it in quantity south of the city in hedges. Old Town Wall, Chepstow, Monmouth, *Fl. Chepstow.*

488. G. ROBERTIANUM L., sub.-sp. CELTICUM Ostenf. Galway, 1920, Mrs EVANS.

497. ERODIUM PIMPINELLIFOLIUM Sibth. Near Exeter, Devon, Miss TODD.

†505. OXALIS CORNICULATA L., forma. Carmarthen, D. HAMER.

†506. O. STRICTA L. Bewdley, Worcester, 1855, T GISSING, in *Hb. Druce.*

†508. ? O. VIOLACEA L. Llanstephan Green, Carmarthen, HAMER.

†513. IMPATIENS GLANDULIFERA Royle. By Rheydder Bridge, side of Wye, Radnor, WEBB; Silverton, near Exeter, D'URBAN.

529. LUPINUS ANGUSTIFOLIUS L. Thetford Camp, W. Suffolk, A. B. COBBE; perhaps this near Kidwelly, Carmarthen, HAMER.

534. GENISTA PILOSA L. Found by D. A. JONES in a new station in 1901 on Cader Idris range, *i.e.*, Gan Graig, Merioneth.

*539. ULEX MINOR Roth. Epping Forest, S. Essex, 1844, ANSELL.

543. ONONIS REPENS L., var. HORRIDA Lange. Barnham, W. Suffolk, ROBINSON; Carmarthen, not uncommon, HAMER.

†548. TRIGONELLA FOENUM-GRAECUM L. Colchester, 1920, BROWN.

†550. T. POLYCERATA L. Felixstowe Docks, E. Suffolk, M. COBBE.

†*562. MEDICAGO FALCATA L. Kirkwall, Orkney, DRUCE. Var. TENUIFOLIOLATA Vuyck. Felixstowe Docks, E. Suffolk, A. B. COBBE.

†579. M. HISPIDA Gaertn., var. APICULATA (Willd.). Anniesland, Glasgow, GRIERSON.

†581. M. MINIMA Desr. On the coast near Seascale, Cumberland, probably introduced in the wool of sheep or fur of rabbits from a torpedoed vessel. The carcases drifted on to the shore which later afforded this and *M. denticulata.* R. HELLON.

†584. M. CILIARIS Krock. Leith, FRASER.

586. M. LUPULINA L., var. UNGUICULATA Ser. Guestling, E. Sussex, GRAVESON, GREGOR, and REDGROVE; West Drayton, Middlesex, L. B. HALL. See *Rep. B.E.C.* 551, 1910, where I gave the description.

†592. M. SULCATA Desf. Felixstowe Docks, E. Suffolk, M. COBBE.

†*593. MELILOTUS OFFICINALIS Lam. Kirkwall, Orkney, DRUCE.

†597. M. INDICA All. Bitterne Park Brickfield, S. Hants, RAYNER; Glamorgan, WEBB.

599. TRIFOLIUM PRATENSE L., var. PARVIFLORUM Bab. Between Ware and Stanstead, Herts, 1846, ANSELL.

†602. T. OCHROLEUCON Huds. Gravel pit, Chichester, BURDON.

†*604. T. HIRTUM All. Byfleet, Surrey, Lady DAVY. Det. TURRILL.

*620. T. SUBTERRANEUM L. In a sown lawn at Tenby, Pembroke, ? introduced, ARNETT.

†623. T. TOMENTOSUM L. Cultivated ground near Malvern, Worcester, TOWNDROW; Colchester, BROWN.

*628. T. REPENS L., var. RUBESCENS Seringe. Near Hungerford, Berks, 1919, Major BATES VAN DE WEYER.

†635. T. AGRARIUM L. Glasgow, GRIERSON.

641. ANTHYLLIS VULNERARIA L., var. OCHROLEUCA Corb. Common about Plemont, Jersey; Baltasound, Unst, DRUCE.

646. LOTUS ULIGINOSUS Schk., var. GLABER Bréb. Potterne, Wilts, GWATKIN; Kirkwall, Orkney, DRUCE.

653 ASTRAGALUS GLYCYPHYLLOS L. Near Welbeck, Notts, GOULDING, sine pers. auth.

†666. CORONILLA VARIA L. Gravel pit near Wymondham, Norfolk, Miss POMEROY; slag heap, Grosmont in Eskdale, Yorks, T. C. TAYLOR; Degenham, Essex, L. B. HALL.

†667. C. SCORPIOIDES Koch. Hertford, GRAVESON.

†*670. ORNITHOPUS PINNATUS Druce. St Ouen's Bay, Jersey, 1854, PIQUET.

†673. ONOBRYCHIS VICIIFOLIA Scop. Quenvais, Jersey, 1857, *Hb. Piquet.*

†690. VICIA NARBONENSIS L. Hertford, GRAVESON, with var. SERRATIFOLIA; also both at Colchester, BROWN.

†691. V. LUTEA L. Needwood Forest, Staffs, Sir ROGER CURTIS.

†695. V. MELANOPS S. and S. Hertford, GRAVESON.

698. V. ANGUSTIFOLIA L., sub-var. ALBA. Bramshill, N. Hants, Mrs THOMPSON; Briton's Pond, Guildford, Surrey, CLARKE, ex KENNEDY. A very pretty plant which is to be tested in culture. Var. ACUTA Pers. Kirkstall, Yorks, PULLAN. Var. GARLANDII Druce. The Quenvais, Jersey, DRUCE.

†706. V. GRACILIS Lois. Near Goring, Oxford, Miss NEILD.

712. LATHYRUS MARITIMUS Big. In great abundance near Bawdsey Ferry, E. Suffolk, M. COBBE. Persistent search at Burrafirth, Unst, failed to discover the var. ACUTIFOLIUS, the only station for this variety, DRUCE.

†718. L. HIRSUTUS L. Needwood Forest, Staffs, Sir ROGER CURTIS.

†*721. L. CICERA L. Amongst grass, on the margin of a cornfield, Sawbridgeworth, Herts, 1846, G. WOLSEY; Don Bridge, Jersey, 1905, PIQUET.

†723 (2). L. HIEROSOLYMITANUS Boiss. Near Hull, 1920, JOHNSON; Colchester, BROWN.

†724. L. OCHRUS L. Felixstowe Docks, E. Suffolk, M. COBBE; Colchester, 1780, BROWN.

†726. L. APHACA L. Near Hull, Yorks, JOHNSON. The pale-flowered form at Pyrford, Surrey, Lady DAVY.

729. L. MONTANUS Bernh. A very broad-leaved and strong plant, near Southam, Warwick, DRUCE & KING.

738. PRUNUS CERASUS L. Beachley, etc., W. Gloster, *Fl. Chepstow*.

740. P. INSITITIA L. Killin, M. Perth. DRUCE & FRASER; *Castle Woods, etc., Monmouth, *Fl. Chepstow*.

*753. RUBUS PLICATUS W. & N. Tiptree Heath, N. Essex, BROWN.

*778. R. SELMERI Lindeb. Stanway, N. Essex, BROWN.

*782. R. LEUCANDRUS Focke. Taw Valley, below Belstone, S. Devon, BARTON.

*785. R. GODRONII Lec. & Lam. Danbury Common, S. Essex, BROWN.

*791. R. MACROPHYLLOIDES Génév. West Cleave Wood, Okehampton, S. Devon, BARTON.

*814. R. VESTITIFORMIS Rogers. Park Corner, Oxon, DRUCE.

*830. R. NEWBOULDII Rogers. Stanway, etc., N. Essex, BROWN.

*832. R. PODOPHYLLUS P.J.M. Bar Hill Wood, Staffs, DALTRY.

*842. R. MACROSTACHYS P.J.M. Stanway, N. Essex, BROWN.

*850. R. INFECUNDUS Rogers. Bentley, E. Suffolk, BROWN.

861. R. VIRIDIS Kalt. Park Corner, Oxon, DRUCE.

†877. R. LACINIATUS Willd. Somer Norton, Somerset, Mrs THATCHER; Lessness, Kent, in a large wood, St. J. MARRIOTT.

†878. R. SPECTABILIS Pursh. Arrochar, Dumbarton, GRIERSON.

883. GEUM RIVALE L. A pretty monstrosity with a sessile flower in the leaf axil, was sent by Mr Philip Burtt from Mr S. Hobhouse. It came from the high limestone hills about a mile south of Hawes, at 1200 ft. altitude. × G. INTERMEDIUM Ehrh. Catcombe Wood, near Calne, Wilts, Lady DAVY & Mrs COLVILLE.

†885. FRAGARIA MOSCHATA Duchesne. Hernstone Lane, Bridgend, Glamorgan, Hon. Mrs A. LEITH.

886. F. VESCA L., var. SYLVATICA. Teviotbank, Kelso, Roxburgh, 1894, BAILEY, as *elatior*.

†887. F. CHILOENSIS Duchesne. Mumbles Railway, Glamorgan. WEBB.

†892. POTENTILLA RECTA L. Boar's Hill, Berks, 1914, DRUCE; also in 1919, by Major BATES VAN DE WEYER; Millbrook, Jersey, 1851, PIQUET.

†906. P. NORVEGICA L. Aldeburgh and Felixstowe, E. Suffolk; Thetford, W. Norfolk, M. COBBE.

*909. ALCHEMILLA ACUTIDENS Buser. Between Grassington and Conistone, M.-W. Yorks; Cross Fell, Westmoreland; Glen Falloch, W. Perth (Marshall), C. E. SALMON, in *Journ. Bot.* 113, 1920.

909. A. PRATENSIS Schmidt. Near Caswell Wood, W. Gloster, 1895, BAILEY.

†910. A. ARGENTEA Don. Still on the grass lawn of the Hotel at Unst, and one plant in the adjoining field. Certainly introduced. DRUCE.

913. AGRIMONIA EUPATORIA L., var. SEPIUM Bréb. Littleworth Common, Surrey, BRITTON.

914. A. ODORATA Mill. Behind Gorey Castle, Jersey, 1851, PIQUET; Tintern, Monmouth, *Fl. Chepstow*.

†918. POTERIUM POLYGAMUM W. & K. West Mount, Jersey, 1906, DRUCE.

†924. ROSA GALLICA L. Hortal. Castle green, Kirkwall, Orkney, DRUCE.

928. R. ANDEGAVENSIS Bast. Twinstead, N. Essex, DRUCE.

929. R. ASPERNATA Déség. A plant near this at Highnam, W. Gloster, GAMBIER-PARRY; Twinstead, N. Essex, DRUCE.

942. R. OMISSA Déség. Great Bedwyn, N. Wilts, HURST.

†*944. R. POMIFERA Herrm. Dolgelley, Merioneth, GAMBIER-PARRY.

966. CRATAEGUS MONOGYNA Jacq., var. INCISIFOLIA Druce. Chichester, W. Sussex; Twinstead, N. Essex; near St Albans, Herts, DRUCE. Var. QUERCIFOLIA Loud. Dartmouth, S. Devon; Appledrum, W. Sussex, DRUCE.

†972. COTONEASTER MICROPHYLLA Wall. On the railway bank, Hangleton, Sussex, Miss COTTIS; abundant at Dolygaer, Brecon, WEBB; Tidenham, W. Gloster, *Fl. Chepstow.*

†993. SAXIFRAGA SIBTHORPII Boiss. Garden weed at Winchester, Miss WILLIAMS.

1001. RIBES GROSSULARIA L. A curious sterile form, Madeley Bar, Staffs, DALTRY.

1011. SEDUM RUPESTRE L. St Helier, Jersey, 1851, PIQUET.

†1018. S. DASYPHYLLUM L. Near St Asaph, Denbigh, WEBB.

†1023. S. SPURIUM Bieb. Waste place, Lordswood, Southampton, RAYNER.

1025. S. ROSEUM Scop. First evidence for Carmarthen, Black Mountain, 1859, GISSING.

*1027. DROSERA ANGLICA Huds. Over a dozen large plants in a bog in the west of Merioneth, JONES.

1030. HIPPURIS VULGARIS L. *Warren, Harlech, Merioneth. JONES; very small specimens near Haroldswick, Unst, DRUCE.

1033. MYRIOPHYLLUM ALTERNIFLORUM DC. Canal at Lichfield, Staffs, DRUCE.

1036. CALLITRICHE OBTUSANGULA Le Gall. First evidence for Jersey, St Peter's, 1852, as *verna*, PIQUET.

*1037. C. PALUSTRIS L. Fairwater, Glamorgan, RIDDELSDELL, in *Journ. Bot.* 113, 1920.

1038. C. POLYMORPHA Lönnr. (Named by A. Bennett). Chipping Campden, E. Gloster, RIDDELSDELL, in *Journ. Bot.* 113, 1920.

1039. C. INTERMEDIA Hoffm. Fine specimens in canal, Cirencester, Gloster, GREENWOOD; first evidence for Glamorgan, Swansea, 1859, as *autumnalis*, GISSING.

*1040. C. AUTUMNALIS L. Eddleston, Peebles, 1857, BELL, in *Hb. Druce.*

1042. PEPLIS PORTULA L. *Gors Llwyn, Brecon, WEBB; near Estaline, Orkney, DRUCE.

*1045. LYTHRUM HYSSOPIFOLIA L. Husbands Bosworth, Leicester. ELLIS, ex HORWOOD; †Burnley, S. Lancs, RITCHINGS, ex TRAVIS.

1049. EPILOBIUM TETRAGONUM L. Gors Llwyn, Colbren, Brecon, WEBB.

†1071. FUCHSIA RICCARTONI Hort. In a moor, among heather, Syredale, Orkney, BURDON & DRUCE. Colonel Johnston, who was with us, has since learned that it was planted there.

*1073. CIRCAEA ALPINA L. The Hudnalls, Hewelsfield, W. Gloster, *Fl. Chepstow.*

†1077. MESEMBRYANTHEMUM EDULE L. Ventnor, Isle of Wight; near Exeter, Devon, RAYNER.

†1077 (3). M. AEQUILATERALE Haw. Dawlish, Devon, D'URBAN. Det. Dr RENDLE.

†1082. ASTRANTIA MAJOR L. By the Evenlode, Oxon, POWELL.

†1088. BUPLEURUM FRUTICOSUM L. This has been long naturalised near Malvern (see *Fl. Worc.* 162). It is still there, teste Rev. F. BENNETT. About ten years ago I saw it at Slapton, S. Devon, whence Miss TODD has sent specimens this year.

1090. B. ROTUNDIFOLIUM L. Abundant near Northants, DRUCE.

1097. APIUM GRAVEOLENS L. Culross, Fife, BELL.

†1098. A. LEPTOPHYLLUM F. v. Muell. Watton station yard, W. Norfolk, ROBINSON. Det. TURRILL.

*1099. A. INUNDATUM Reichb. f. Commin-y-Rhos, Brecon, WEBB.

†1101. AMMI MAJUS L. Pyrford, Surrey, on ground manured with shoddy waste, Lady DAVY & DRUCE; Felixstowe, E. Suffolk, M. COBBE.

†1102. A. VISNAGA L. Carmarthen, HAMER.

†1103. CARUM CARVI L. Abundant and completely naturalised about the kirk of Baltasound, Unst; coast, John o' Groats, Caithness; Stromness, Orkney, DRUCE.

*1113. PIMPINELLA MAGNA Huds. Woodmills, Hants, 1852, PIQUET. Townsend rejects *P. magna* for the county although it is given for N. & S. in *Top. Bot.*

*1127. ANTHRISCUS SCANDIX Beck. Portskewett, etc., Monmouth, *Fl. Chepstow.*

†1128. A. CEREFOLIUM Hoffm. Hayling Island, Hants, Miss HILLARD; Devizes, Wilts, TALBOT.

1131. CRITHMUM MARITIMUM L. Near Landguard Fort, Felixstowe, A. B. COBBE. One locality only given in *Fl. Suffolk*.

*1134. ŒNANTHE CROCATA L. East Mersea, N. Essex, BROWN.

*1136. O. SILAIFOLIA Bieb. Cherwell Meadows, Aynhoe, Northants, abundant. Last year Mr Riddelsdell found it in the Oxon meadows at Somerton, which induced me to search higher up the valley, DRUCE.

†1152. PEUCEDANUM OSTRUTHIUM Koch. Llanelly, Carmarthen, HAMER.

†1152 (2). P. GRAVEOLENS B. & H. St Ouen's, Jersey, 1857, PIQUET.

1154. HERACLEUM SPHONDYLIUM L., var. ANGUSTIFOLIUM Huds. Commoner than the type round Llandewlrewm, Brecon; Llanelwedd to Howey, Radnor, WEBB.

†1157. CORIANDRUM SATIVUM L. Pembrey, Carmarthen, HAMER; Kirkwall Waterworks, Orkney, DRUCE.

1172. HEDERA HELIX L., var. SARNIENSIS Druce. St Anne's, etc., Jersey; *Chichester, W. Sussex; also at Mont Saint-Michel, Brittany, DRUCE.

†1187. LONICERA XYLOSTEUM L. Clements Quarry, Mumbles, Glamorgan, WEBB.

1192. GALIUM BOREALE L. The Beacons, Brecon, TROW.

1193. G. MOLLUGO × VERUM. Minsterworth, Gloucester, GAMBIER-PARRY.

*1194. G. ERECTUM Huds. Between Rhaydder and Elan, Radnor, WEBB; Downatown, Birsay, Orkney. Named by Bennett

Bakeri. I should put it under *erectum*. Distributed this year by Preb. Burdon.

1195. G. HERCYNICUM Weig. Galled with *Eriophyes galiobius*. From the downs in Sussex, WEBSTER.

1210. ASPERULA ARVENSIS L. Near Bennington High Wood, Herts, GRAVESON.

1214. SHERARDIA ARVENSIS L., var. MARITIMA Griseb. Berry Head, S. Devon, Miss TODD. Var. HIRSUTA Baguet. Ferryside, Carmarthen, HAMER.

*1215. VALERIANA OFFICINALIS L. (MIKANII). Perddyn Glen, Brecon, WEBB.

*1216. V. SAMBUCIFOLIA Mik. Side of river at Grouville, Jersey, 1875, PIQUET.

1225. VALERIANELLA CARINATA Lois. Hayling Isle, S. Hants. Miss HILLARD; *Beaminster, Dorset, GRAVESON; Lynton, N. Devon. L. B. HALL.

1226. V. RIMOSA Bast. Barry, Glamorgan, Miss VACHELL.

†1230. DIPSACUS LACINIATUS L. Marston brickyards, Oxon, DRUCE.

†1233 (2). CEPHALARIA TATARICA Schrad. Railway-cutting, Neithrop, Oxon, DRUCE.

†1242. GRINDELIA SQUARROSA Dunal. Felixstowe Docks, E. Suffolk, M. COBBE.

†1252. ASTER NOVI-ANGLIAE L. Near Kidwelly, Llanstephan, Carmarthen, HAMER.

1258. A. TRIPOLIUM L., var. GLABER Bolz. Finstown, Orkney, DRUCE.

*1261. ERIGERON ACRE L. Near Caldicot, Monmouth, *Fl. Chepstow*.

†1262. E. CANADENSE L. Carmarthen, HAMER.

†*1265. FILAGO SPATHULATA Presl. Levenhall, Midlothian, FRASER.

1268. F. GALLICA L. Berechurch, October 1920, in some plenty, TRETHEWY. It is very gratifying to know that this rare species, which is often ephemeral, persists in Essex. Mr Brown distributed it this year from this locality.

†1271. ANAPHALIS MARGARITACEA Clarke. Ystradgynlais and Abercrave, Brecon, WEBB; Hamlet of Lake, near Tavistock, Devon, well established, HARRIS in *Dev. Rep.* 8, 1920. Burn of Beaguoy, Orkney, in a stream-bed, but grown in garden not far away. DRUCE.

1274. GNAPHALIUM ULIGINOSUM L., *var. PILULARE (Wahl.) Koch. Mullion, Cornwall, Miss TODD.

*1275. G. SYLVATICUM L. Llanwrthwl, Brecon, WEBB. *Var. ALPESTRE Gren. Tingwall, Shetland. This is the *norvegicum* of Edmondston's *Flora of Shetland*.

†1278. G. UNDULATUM L. Spreading rapidly over the sandy soils in Jersey, seeding freely, DRUCE.

†1291. AMBROSIA ARTEMISIFOLIA L. Thetford, W. Suffolk, M. COBBE; St Ouen's Bay, Jersey, 1906, PIQUET; Silloth, Cumberland, WATERFALL.

1292. A. TRIFIDA L. Thetford, W. Suffolk, M. COBBE; Docks, Lisiand, Cheshire, WATERFALL.

†1294. XANTHIUM STRUMARIUM L. Felixstowe, E. Suffolk, M. COBBE (one locality only in *Fl. Suffolk*); St Peter's Valley, Jersey, 1896, PIQUET.

†1295. X. SPINOSUM L. Felixstowe, E. Suffolk, M. COBBE; St Ouen's Bay, Jersey, PIQUET.

†1301. HELIANTHUS ANNUUS L. Chigwell, S. Essex, REDGROVE.

†1302. H. RIGIDUS Desf. Denham, Bucks, REDGROVE.

†1306. GUIZOTIA ABYSSINICA Cass. Salisbury, Wilts, GODDARD; Pyrford, Surrey, Lady DAVY; Reading, Berks, MURRAY.

†1311 (2). BIDENS PILOSA L. Bristol, Mrs SANDWITH.

†1312. GALINSOGA PARVIFLORA Cav. Handcross, Sussex, Mrs GRAHAM.

†1315. HEMIZONIA PUNGENS T. & G. Dovecourt, Essex; Felixstowe, E. Sussex, A. B. COBBE; Hertford, GRAVESON; Silloth, Cumberland, WATERFALL.

1329. ACHILLEA MILLEFOLIUM L., var. CONSPICUA Druce. Twinstead, N. Essex, DRUCE.

†1332 (2). A. FILIPENDULINA Lam. (EUPATORIUM Willd.). On the railway at Neithrop, Oxon, 1920, DRUCE.

†1336. SANTOLINA CHAMAECYPARISSUS L. Ferryside, Carmarthen, HAMER.

*1343. ANTHEMIS ARVENSIS L. Lindors Farm, Monmouth, *Fl. Chepstow.* Piquet's "*arvensis*" from Samares, Jersey, is only *A. Cotula.*

†1344. A. RUTHENICA Bieb. Cornfields, Jersey, 1900, as *arvensis*, PIQUET.

†1352. CHRYSANTHEMUM MYCONIS L. Leith, Midlothian, FRASER & GRIERSON.

1353. C. LEUCANTHEMUM L., with tubular ligules. Bewdley, Worcester, 1854, GISSING; Alveston, W. Gloster, Miss ROPER.

1356 (5). C. LACUSTRE Brot. Alien. Hortal. Langland, Glamorgan, WEBB.

1360. MATRICARIA INODORA L., var. flore pleno. Maisemore, Gloster, GAMBIER-PARRY. A frequent garden plant in the Orkneys. Var. SALINA Bab. Carmarthen, HAMER.

*1361. M. CHAMOMILLA L. Chepstow, W. Gloster, *Fl. Chepstow.*

†1362. M. SUAVEOLENS Buch. Near the lighthouse under Hermaness, the most northern point of the British Isles. DRUCE.

†1363 (2). M. DISCIFORMIS DC. Bristol, Mrs SANDWITH.

1370. ARTEMISIA SCOPARIA W. & K. Crosby, Lancs, 1895, Rev. W. W. MASON.

1373. A. VULGARIS L., var. COARCTATA Fors. Ferryside, Carmarthen, HAMER; St Brelade's, Jersey, PIQUET.

†1380. A. BIENNIS Willd. Thetford, Caistor-on-Sea, W. and E. Norfolk, M. COBBE; Ferryside, Carmarthen, HAMER.

†1388. DORONICUM PARDALIANCHES L. Frequent at Disserth, Radnor, WEBB.

1395. SENECIO ERUCIFOLIUS L. To a glabrous form of this Dr Thellung refers the "*S. crassifolius* from Walmer" collected by Miss DAY, in 1907.

†1396. S. SQUALIDUS L. Carmarthen, HAMER.

†1402. S. CINERARIA DC. Caswell, Glamorgan, WEBB.

†1408 (24). S. SMITHII DC. (CINERARIA GIGANTEUS Sm. Eng. Bot. ii., 2, t. 65). In a ditch between John o' Groats and Castleton, Caithness, 1919 and 1920, Mrs WEDGWOOD & DRUCE. Det. THELLUNG.

†1412. ECHINOPS SPHAEROCEPHALUS L. Neithrop, Marston brick-yards, Oxon, 1920, DRUCE; near Carmarthen, HAMER; Fort Regent, Jersey, 1903, PIQUET.

*1415. CARLINA VULGARIS L. Colbrennan tips, Radnor, WEBB.

*1431. CIRSIUM TUBEROSUM All. On the chalk near Eversden, Cambridge, A. H. EVANS. A remarkable and most interesting extension of its range. One of the best finds of the year.

†*1432. C. OLERACEUM Scop. St Peter's Valley, Jersey, 1861, PIQUET.

†1433. C. ARVENSE Scop., var. MITE M. & K. Dovercourt, Essex, A. B. COBBE. Var. INCANUM Ledeb. (of SETOSUM). By the Aire, Shipley, Yorks, A. M. SMITH.

1434. C. PALUSTRE Scop., *var. FEROX Druce. Baltasound, Unst, Tingwall, Ronas Voe, Sandwick, etc., Shetland; Birsay, Hoy, etc., Orkney, DRUCE.

*1439. ONOPORDON ACANTHIUM L. Tintern Road, Monmouth, *Fl. Chepstow.*

1449. CENTAUREA JACEA L. In De Crespigny's old locality near Kingswood, Surrey, 1920, REDGROVE. Var. ANGUSTIFOLIA (Gugler). Don Bridge, PIQUET; Val des Vaux, Jersey, Dr BULL, as *nigra*; Wellington College, Berks, BRITTON.

†1450. C. NIGRESCENS Willd. Goring, Oxford, 1917, GAMBIER-PARRY.

1451. C. NEMORALIS Jord., teste Britton. St Albans, Herts; Hopcroft's Holt, Oxon; Grendon, Bucks; Selham, Sussex; Boar's Hill, Berks; Pan Downs, Isle of Wight, DRUCE; St Saviour's, Jersey, PIQUET; S. Tawton, Devon, FOX. Forma RADIATA. Carisbrooke, Isle of Wight; Boar's Hill, Berks; Binsey, Oxon; St Albans, Herts; Grendon Meadows, Bucks; Brackley, Northants, DRUCE.

1451. C.CONSIMILIS Jord. West Horsley, Surrey [1766], BRITTON.

1451. C. MICROPTILON Gren., forma. Wood Perry Wood, Oxon, DRUCE; Banstead and Epsom Downs [2 and 86], Surrey, BRITTON.

1452. C. NEMOPHILA Jord. Lower Morden, Surrey [2040], BRITTON.

1454. C. CYANUS L. Dinham, etc., Monmouth, *Fl. Chepstow.*

1462. C. SOLSTITIALIS L. In great abundance at Felixstowe, E. Suffolk, M. COBBE.

1463. C. MELITENSIS L. Felixstowe, E. Suffolk, M. COBBE; Colchester, BROWN.

1494. CREPIS BIENNIS L. Newport, Countess Wear, S. Devon, D'URBAN; field near Askham Bog, York, GRAVESON.

†1495. C. NICAEENSIS Balb. By the water-works, Kirkwall, Orkney. Shown us by Col. Johnston. It has persisted for many years.

*1559. HIERACIUM PROXIMUM F. J. H. Keswick, Cumberland, PUGSLEY, in *Journ. Bot.* 282, 1920.

*1591. H. FARRENSE F. J. H. Hesleden Glen, W. Yorks, PUGSLEY, in *Journ. Bot.* 285, 1920.

*1608. H. IRRIGUUM Fr., var. SCANICUM (Dahlst.), teste PUGSLEY, *l.c.* Saintfield, Co. Down. Named in the *Wats. B.E.C.* 16, 1902-3, *diaphanoides*. This I gathered near Dublin in 1907.

1641. HYPOCHOERIS GLABRA L. Frequent at St Brelade's, etc., Jersey, with a form worth further study, DRUCE. Miss A. B. COBBE found at Thetford Camp, W. Suffolk, a similar plant to the large form referred to in *Rep. B.E.C.* 288, 1918.

1646. TARAXACUM SPECTABILE Dahlst. Common in Orkney and Shetland, DRUCE.

*1646. T. GEIRHILDAE Beeby. I put this as a var. of *T. spectabile* Dahlst. Stromness, Orkney. I found it in the locus classicus by the Loch of Girlstone, Shetland, DRUCE.

1646. T. NORDSTEDTIANUM Dahlst. Chichester, W. Sussex, DRUCE.

†*1647. CHONDRILLA JUNCEA L. St Ouen's Bay, Jersey, 1905, PIQUET.

†*1648. LACTUCA VIROSA L. Near Severn Tunnel Junction, Monmouth, *Fl. Chepstow.*

†1653. L. TATARICA C. A. Mey. Docks, Felixstowe, E. Suffolk, M. COBBE.

1655. SONCHUS PALUSTRIS L. Near the Waveney, E. Suffolk, 1920, GRAVESON. It was in some quantity and in good condition. This very important re-discovery leads one to hope that the Fen Ragworts may yet be found to exist.

1656. S. ARVENSIS L., var. GLABRESCENS G. G. & W. East Mersea, N. Essex, BROWN.

1657. S. ASPER Hill, var. PUNGENS Bisch. Wytham, Berks. Distributed this year. Neithrop, Botley, Oxon; Thame, Bucks; Wilsford, Wilts; St Neot's, Hunts; Southam, Warwick; Aynhoe, Northants, DRUCE. Var. INTEGRIFOLIUS Wallr. St Helier, Jersey; Chichester, W. Sussex; Cardiff, Glamorgan; St Neot's, Hunts; Croughton, Peterborough, Northants; Chatteris, Madingley, Cambridge; Twinstead, N. Essex; Sudbury, Suffolk; near Aylesbury, Bucks; Wilsford, Wilts; Southam, Warwick; Lichfield, Staffs; Lochearnhead, Perth; Inverness; Wick, Caithness; Kirkwall, Orkney; Scalloway, Unst, Shetland, DRUCE.

1658. S. OLERACEUS L., var. TRIANGULARIS Dum. Newport, Countess Wear, S. Devon, D'URBAN; Wilsford, Wilts; Croughton, Northants; Oxford; near Woburn, Beds; St Neot's, Hunts; Lichfield, Staffs, DRUCE. Var. LACERUS Willd. Crabbe, St Brelade's, Jersey; Petit Bot, Guernsey; near Yarmouth, Isle of Wight; Chichester, W. Suffolk; Aynhoe, Northants, DRUCE. It is probable that these varieties are elementary species.

†1661. TRAGOPOGON CROCIFOLIUS L. Bulwark, Chepstow, Monmouth, the ground now built over, Capt. FRASER, in *Fl. Chepstow.*

1664. LOBELIA DORTMANNA L. This is the "*Isoetes*" from

Lough Magillie, Wigtown, 1883, C. BAILEY. The Quillwort is still a desideratum for this county.

*1665. L. URENS L. Native on a heath in the vicinity of Poole, Dorset, Sir H. C. HAWLEY, *in litt.* An important record for the year. Near Highcliffe, S. Hants, Mrs LUFF.

1666. JASIONE MONTANA L., var. MAJOR M. & K. L'Etac, Jersey; Saxa Vord, Unst, DRUCE.

1672. CAMPANULA LATIFOLIA L. Cheddington, Dorset, GRAVESON. Only one locality in *Fl. Dorset.*

†1674. C. RAPUNCULOIDES L. Hedge, near Thetford, West Norfolk, M. COBBE.

†1676. C. PERSICIFOLIA L. Etchilhampton Down, Wilts, one specimen, GWATKIN. It is grown in the cottage gardens of the village.

1694. ERICA CINEREA L., var. SCHIZOPETALA. Charbe Common, Lee-on-Solent, S. Hants, Miss HILLAR; Saxa Vord, Unst, DRUCE.

†1704. BORETTA CANTABRICA O. K. Henwood, Berks, Lady DOUIE. Certainly planted there.

†1706. RHODODENDRON PONTICUM L. Langland, Glamorgan, seeding freely, WEBB.

1712. HYPOPITYS MONOTROPA Crantz, var. GLABRA (Roth). On Holly near Billingshurst, Sussex, WEBSTER; Wyndcliff, Monmouth, SHOOLBRED, *in litt.* and in *Journ. Bot.* 227, 1920, where *Helleborus atroviridis* should be *Helleborine atroviridis.*

1721. STATICE PLANIFOLIA Druce. Baltasound, Unst; *Cairngorm, Easterness. As Mr Beeby pointed out, this differs from the type by flowering a fortnight or so earlier in cultivation, a somewhat remarkable character since normally it is a plant of mountain shoulders and summits and only in the north Shetlands descending to 300 feet. The type grows in Jersey as well as S. MARITIMA Mill. DRUCE.

1725. PRIMULA VULGARIS Huds., forma or sub-var. ROSEA. Found in a wood on the slope above Bury Lodge, S. Hants, by Sir T. BUTLER. It had never been noticed there previously.

†1731. CYCLAMEN HEDERIFOLIUM Ait. In woods between Pen Moel and Lancaut, near Gloster; Usk Road, near Chepstow, Monmouth, *Fl. Chepstow.*

†*1734. LYSIMACHIA PUNCTATA L. Of garden origin, but established, near Stenness, Orkney, DRUCE.

*1742. ANAGALLIS FEMINA Mill. Arthog, Merioneth, JONES.

†1750. VINCA MAJOR L. Cwmtwrch, Brecon, WEBB.

*1755. CENTAURIUM VULGARE Rafn. St Catherine's Bay, Jersey, PIQUET.

*1758. C. CAPITATUM Druce. Near Carmarthen, HAMER.

1763. GENTIANA AMARELLA L., var. CALYCINA Druce. Locally common at Burrafirth, Unst; Dunscansby Head, Caithness, DRUCE.

†1777. POLEMONIUM CAERULEUM L. Bank of river between Kimpton Hoo and Whitwell, Herts, 1847, ANSELL.

†1781. HELIOTROPIUM EUROPAEUM L. Swaythling, S. Hants, RAYNER.

†1783. OMPHALODES VERNA Moench. Panshanger Park, Herts, 1844, ANSELL. Doubtless planted.

†1787. LAPPULA ECHINATA Gilib. Newport, Countess Wear, S. Devon, D'URBAN; near Weston, Bath, N. Somerset, GREEN; Beaminster, Dorset, GRAVESON.

†1789. BENTHAMIA (AMSINCKIA) ANGUSTIFOLIA (Lehm.). Thetford, Felixstowe, W. and E. Suffolk, Miss COBBE.

†1789 (3). B. LYCOPSIOIDES Lindl. Colchester, BROWN.

†1789 (5). B. INTERMEDIA Druce. Earls Croome, Worcester, CARLETON REA; Hertford, GRAVESON.

†1789 (6). B. MENZIESII (Nelson & M'Bride). Kirtlington, Oxon, FELLOW.

†1793. SYMPHYTUM ORIENTALE L. Lane near St Helier, Jersey, 1908, as *tauricum*, PIQUET.

†1798. ANCHUSA SEMPERVIRENS L. Brecon, WEBB.

†1799. A. UNDULATA L. Thetford Camp, W. Suffolk, M. COBBE.

†1802. A. AZUREA Mill. Neithrop, Oxon, DRUCE.

†1803. A. PROCERA Bess. Thetford Camp, W. Suffolk, M. COBBE, teste THELLUNG.

1813. MYOSOTIS PALUSTRIS Hill, var. STRIGULOSA (Reichb.). Traeth Glasly, Merioneth, LLOYD WILLIAMS.

1817. M. SYLVATICA Hoffm. Plantation near Godalming, Surrey, probably planted, DRUCE; Elan Woods, Brecon, WEBB; Barton Bradstock, Dorset, GRAVESON. If native here a new county record.

*1821. M. LUTEA Pers. (BALBISIANA). St Catherine's, Jersey; Balta, Unst, from the extreme north and south of the British Isles, DRUCE.

*1825. ECHIUM VULGARE L. Tipsot, Ystradgynlais, Brecon, WEBB.

†1827. E. PLANTAGINEUM L. Field near Boxgrove, W. Sussex, one plant, F. DRUCE. Passed as correct by C. C. LACAITA.

†1830. CERINTHE MINOR L. Thetford Camp, W. Suffolk, A. B. COBBE; Welbeck, Notts, GOULDING.

1831. VOLVULUS SEPIUM Med., var. COLORATUS (Lange). Cadgwith, Cornwall, Miss TODD.

†1831. V. DAHURICUS (Sims). Marston, Oxon, DRUCE.

†1837. CUSCUTA EPILINUM DC. Twinstead, N. Essex, DRUCE.

1838. C. EUROPAEA L. Hedge, Shepperton, Middlesex, 1920, BRITTON. In the *Fl. Middlesex* it is said to have been last seen in the county in Hyde Park in 1821. Mr Hunnybun's record for this county in *Journ. Bot.* 58, 1918, is an error, as the locality he gives near Windsor is of course not in Middlesex but in Bucks where it has been known for many years.

1839. C. EPITHYMUM Murr. West side of Burrafirth, Unst, Saxby *Flora*. This needs confirmation as it is an unlikely plant to occur there. *Dyffryn, Merioneth, JONES.

†1851. PHYSALIS ALKEKENGI L. Fields at St Helier, St Ouen's, Jersey, 1901, PIQUET.

†1852. NICANDRA PHYSALOIDES Gaertn. St Ouen's, Jersey, 1906, PIQUET.

†1853. LYCIUM CHINENSE Mill. Cwmtwrch, Brecon, WEBB.

†1855. DATURA STRAMONIUM L. Thetford, W. Norfolk; Felixstowe, Aldeburgh, E. Suffolk, A. B. COBBE. Exceptionally fine.

†1860. VERBASCUM PHLOMOIDES L. Waste ground, Byfleet Park, Surrey, BRITTON.

†1863. V. VIRGATUM Stokes. Cirencester, Gloster, GREENWOOD; Bangor, Carnarvon, Mrs WEDGWOOD.

†1864. V. BLATTARIA L. St Columb Major, Cornwall; Shalford, Surrey, Mrs WEDGWOOD; Tan-y-Bwlch, Merioneth, JONES; Dudbridge, Gloster, BAILEY.

†1864 (3). V. SINUATUM L. Levenhall, Edinburgh, FRASER.

*1867. V. NIGRUM L. Tan-y-Bwlch, Merioneth, JONES.

†1873 (2). LINARIA DALMATICA Mill. Neithrop, Oxon, DRUCE.

†1877. L. PURPUREA Mill. St Vincent's Rocks, Gloster, PAGE.

†1880. L. PELISSERIANA Mill. Between Pendinas and the river Istwith, south of Aberystwith, Cardigan, JONES.

*1883. L. MINOR Desf. St Brelade's, Jersey, PIQUET.

1884. L. SPURIA Mill., var. PELORIA. Great Bedwyn, Wilts, HURST.

†1889. ANTIRRHINUM MAJUS L. Brecon Castle, WEBB.

†1898. MIMULUS GUTTATUS DC. River Gynon, near Llwdcoed, Brecon; Wye, at Rhayader, Radnor, WEBB; Mailand Burn, Unst, DRUCE.

†1899. M. MOSCHATUS Dougl. Whiddon, Devon, Miss TODD; on dredged mud, Hertford, GRAVESON.

*1912. VERONICA AQUATICA Bernh. Forfarshire, 1835, REID, in *Hb. New York*; Saumares Miles, Jersey, DRUCE.

*1912 (2). V. ANAGALLIS-AQUATICA L., vera. Blanches Banques, Jersey, DRUCE.

1918. V. VERNA L. Exceptionally fine specimens were gathered by Miss M. COBBE, on Thetford Heath and Warren this spring.

†1922. V. TRIPHYLLOS L. Charlestown, Cornwall, Mrs WEDGWOOD & RILSTONE.

†1927. V. PEREGRINA L. St Saviour's, Jersey, 1876, Dr BULL.

†1930 (4). V. SPECIOSA R. Cunn. Langland, Glamorgan, WEBB; near Barmouth, Merioneth, frequently planted on the coast, DRUCE.

*1931. EUPHRASIA STRICTA Host. Pembrey, Carmarthen, HAMER.

1931. E. HIRTELLA Jord. Moretonhampstead and Manaton,

N. Devon, and E. FOULAENSIS Towns. Moretonhampstead, N. Devon, LARTER, in *Devon Rep.* 5, 1920. On whose authority these very critical plants are named is not stated.

1932. E. BOREALIS Wetts. Stenness, etc., Orkney; Baltasound, Unst, DRUCE. To this species Dr Ostenfeld and Dr Jorgensen refer some beautiful plants which are a new form to me from Hoy, Swanbister, Syredale, Orkney; Asta, Tingwall, Sandwick, Stroma, Whiteness, Lerwick, Ronas Voe, Balta, Burrafirth, and Haroldswick, Shetland, DRUCE.

1933. E. BREVIPILA Burn. & Gremli. St Lawrence, Isle of Wight, LOYDALL; Llandrindod, Radnor, Miss TODD; Moss-side, Stafford, S. A. BENNETT; Cnochan, W. Ross & W. Sutherland; Duncansby-Head, Caithness; Kirbister, Orkney; Scalloway, Baltasound, Shetland; *St Brelade's, Jersey, DRUCE.

1934. E. NEMOROSA H. Mart., var. CILIATA Drabble. Park Corner, Oxford; Princes Risborough, Bucks; Tubney, Berks; between Bethesda and Llanberris, Carnarvon; Bodeilio, Anglesey; Twinstead, N. Essex; Linton, Cambridge; Duncansby Head, Caithness, DRUCE.

1935. E. CURTA Wetts., var. GLABRESCENS Wetts. Kirbister, Orkney; Newborough, Anglesey; Castle Rock, Co. Down, DRUCE.

1936. E. OCCIDENTALIS Wetts. Harlech, Merioneth, DRUCE.

1938. E. FOULAENSIS Towns. Baltasound, Burrafirth, Stroma. Whiteness, Tingwall, etc., Shetland, DRUCE.

1939. E. GRACILIS Fr. Tyn-y-Croes, Merioneth; Grand Mare, Guernsey, DRUCE.

1940. E. SCOTICA Wetts. Braemore, W. Ross; Glen More, Easterness; Ronas Voe, Tingwall, Burrafirth, Baltasound, Saxa Vord, Shetland, DRUCE.

1940 (2). E. MINIMA Fr. Carnedd Llewellyn, Carnarvon, DRUCE.

1940 (3). E. CONFUSA Pugsl. Exmoor, S. Somerset, 1919, PUGSLEY, *in litt.*

1941. E. ROSTKOVIANA Hayne. Burrafirth, Shetland, as a very curious form, DRUCE.

1943. E. KERNERI Wetts. Twinstead, N. Essex; Swaffham, W. Norfolk; Llanberris, Carnarvon, DRUCE.

1951. PEDICULARIS SYLVATICA L., sub-var. ALBA. Exbourne, N. Devon, Rev. A. C. MORRIS.

1952. RHINANTHUS MAJOR Ehrh. Baltasound, Unst, DRUCE.

1953. R. RUSTICULUS (Stern.) Druce. *Baltasound. Plants similar to the Rev. E. S. Marshall's Stenness specimens. This starved form grew in a few places on the south side of the Loch of Stenness, as Mr Marshall describes, but it gradually merged into plants I should have been content to call *stenophyllus* or *Crista-galli*.

1954. R. STENOPHYLLUS Schur. Tidenham Chase, W. Gloster, *Fl. Chepstow*.

1955. R. MONTICOLA Druce. Glen More, Easterness, DRUCE.

1960. MELAMPYRUM PRATENSE L., var. HIANS Druce. Perdyn Glen, Brecon, WEBB. Var. LAURIFOLIUM (Beauv.). Ufton Wood, Warwick, DRUCE.

1971. OROBANCHE MINOR Sutt., *var. FLAVESCENS Reut. Near Beaminster, Dorset, GRAVESON.

1972. O. PURPUREA Jacq. Mundesley, E. Norfolk, CLARKE.

1975. UTRICULARIA VULGARIS L. *Reen, Monmouth, *Fl. Chepstow*; Bewdley, Worcester, 1899. The record in the *Flora* was not definitely from a Worcester locality.

*1976. U. MAJOR Schmid. Tingwall, Bardister, Shetland, DRUCE.

1978. U. MINOR L. Tingwall, Shetland, DRUCE.

1989. MENTHA ALOPECUROIDES Hull. Rondham, Norfolk, M. COBBE; Bishop's Stortford, Essex, BROWN; Linton, Cambridge, GRAVESON & DRUCE; Tinsley Green, Sussex, GRAVESON; St Saviour's Valley, Jersey, as *rotundifolia*, PIQUET.

1990. M. LONGIFOLIA Huds. Kilkenny, Ireland, Hon. Mrs FIENNES. Var. NEMOROSA, teste A. BENNETT. Slateford, Edinburgh, FRASER. M. LONGIFOLIA × ROTUNDIFOLIA. St Lawrence Valley, Jersey, as *alopecuroides*, PIQUET.

1994. M. AQUATICA L. Galled with *Eriophyes mentharius*. Carmarthen, HAMER.

1995. M. PUBESCENS Willd., agg. Bayford, Herts, W. GRAVESON.

1997. M. GENTILIS L. Liskeard, Cornwall; Bovey Tracey, Devon, Miss TODD; Swallowfield, Berks, Miss BACON; Wye banks above Tintern, Monmouth and W. Gloster, *Fl. Chepstow*.

*2012. SATUREIA NEPETA Scheele. Netley, S. Hants, 1852, PIQUET.

†2023. SALVIA PRATENSIS L. Near Guildford, Surrey, 1847, ANSELL.

†2025. S. NEMOROSA L. Thetford, W. Suffolk, M. COBBE.

*2034. NEPETA CATARIA L. Near L'Etac, Jersey, 1855, PIQUET.

2042. SCUTELLARIA GALERICULATA L., var. PUBESCENS Benth. Langharne, Carmarthen, HAMER.

2044. PRUNELLA VULGARIS L., var. NEMORALIS Beg. Carmarthen, HAMER.

*2046. P. LACINIATA L. On the downs near Herne Bay, E. Kent, W. R. SHERRIN.

†2048. SIDERITIS MONTANA L. Felixstowe Docks, E. Suffolk, M. COBBE.

2056. STACHYS SYLVATICA L., f. MONSTROSA. The corolla tube not exerted, the perfect flowers green, with reddish margins, leaves yellowish-green, with red markings. Tickenham, etc., N. Somerset, and near Caldicot, Monmouth, CECIL & NOEL SANDWITH.

2056. × S. AMBIGUA Sm. Mosterton, Dorset, GRAVESON. In Shetland frequently as a garden plant and usually without *sylvatica* near.

*2061. GALEOPSIS VERSICOLOR Mill. Peat moor, and in cultivated ground near Glastonbury, N. Somerset, Mrs SANDWITH.

*2072. LAMIUM HYBRIDUM Vill. Sedbury, W. Gloster, *Fl. Chepstow.*

2077. BALLOTA NIGRA L. Abundant, with white flowers, at Bawdsey Ferry, Suffolk, A. B. COBBE. It is a pretty, small-leaved form of *albiflora* which seems a distinct variety.

*2077. B. RUDERALIS Sw. Thetford, W. Suffolk, M. COBBE; Portishead, N. Somerset, an abnormal form with less attenuate calyx-teeth, Mrs SANDWITH.

*2091. PLANTAGO HUDSONIANA Druce. Ledmore, W. Ross, DRUCE.

2092. P. LANCEOLATA L. A curious monstrosity in which the inflorescence is almost replaced by long leafy bracts, Mangrove Lane, Hertford, 1847, ANSELL. *Var. DEPRESSA. Burrafirth, Shetland, DRUCE.

*2098. P. MEDIA L. St Ouen's Bay, Jersey, 1854, PIQUET. Babington recorded it as common, but there is no record in the *Flora of Jersey.* Perhaps this is an alien specimen.

2099. P. MAJOR L., var. INTERMEDIA (Gil.). Near Wymondham, Norfolk, Mrs RUSSURIM.

*2102. ILLECEBRUM VERTICILLATUM L. New Forest, S. Hants, RAYNER; in great quantity near Doves, Kent, Mrs GODDEN. These two important discoveries extending the range from Cornwall to Kent, are among the best of the year. The question arises—have they been previously overlooked, or are they comparatively recent arrivals? With regard to the latter record, Mrs Godden pertinently suggests that the locality given in the *Flora of Kent* of four miles S.W. of Dover may be a misreading for Doves, Kent, as the locality is just about four miles from that place. If so, the plant has a longer history in Kent.

†2105. HERNIARIA HIRSUTA L. Charleston, Cornwall, RILSTONE & Mrs WEDGWOOD.

2109. SCLERANTHUS ANNUUS L., var. HIBERNUS Reichb. Newquay, Cornwall, VIGURS.

2110. AMARANTHUS RETROFLEXUS L., var. DELILEI (Richt. & Lor.) Thell. St Saviour's Valley; old quarry, St Peter's Valley, Jersey, PIQUET.

†2113 (2). A. THUNBERGII Moq. Thetford, W. Suffolk, A. B. COBBE.

2114 (3). A. SILVESTER Vill. (A. ANGUSTIFOLIUS). Waste places, St Helier, Jersey, PIQUET.

2120. CHENOPODIUM HYBRIDUM L. Hayling, S. Hants, Miss HILLARD; *Kirkwall, Orkney, DRUCE & JOHNSTON.

2122. C. MURALE L. Pembrey, Carmarthen, HAMAR. Var. MICROPHYLLUM Boiss. Felixstowe, E. Suffolk, A. B. COBBE; Glasgow, GRIERSON.

†2123. C. OPULIFOLIUM Schrad. Rainham, Essex, L. B. HALL.

2124. C. ALBUM L., var. VIRIDESCENS St Amans. Wellingborough, Northants; St Philip's, Bristol; Drayton, Middlesex; Cardiff, Glamorgan, DRUCE. Var. VIVAX Sonder (cf. Murr *Bot. Mag. Cap.* 9, 1903). Falmouth, Cornwall, 1917, M. COBBE. Var. VIRIDE

(L.). Beaumaris, Anglesey; Byfleet, Surrey; Dundee, Forfar, DRUCE. Var. EROSUM. Marston, Oxford, DRUCE. Var. OBTUSATUM Gaud. Stockleigh Pomeroy, S. Devon, *Hb. Druce*. Var. PEDUNCULARE (Pers.). Pyrford, Surrey, DRUCE. Var. SERRATIFOLIUM Murr. Water Eaton, Bucks, REDGROVE. Var. PAUCIDENS (Murr). Thames Ditton, 1868, WATSON; Woking, Surrey, DRUCE; Galashiels, Selkirk, Miss HAYWARD. Var. SUBFICIFOLIUM (Murr). Thames Ditton, 1868, WATSON; Pyrford, Surrey, 1915, DRUCE; Walton, S. Lancs, WHELDON; Sibford, Oxon, DRUCE. Watson says he raised his plants from seeds of wild *candicans*. They may have been crossed, however. Also from Heronry, Birch, Essex [Ref. No. 1623], BROWN. This is intermediate with the type. Var. SUBOPULIFOLIUM (Murr). Radwinter, N. Essex, 1898, DRUCE; Galashiels, Selkirk, Miss HAYWARD.

†2124 (3). C. BERNBURGENSE (Zschacke). Falmouth, Cornwall, 1917, RILSTONE; Little Herkesely, Essex [Ref. No. 976], 1916, BROWN.

2124 (5). C. LANCEOLATUM Muhl. Alresford, N. Essex [Ref. No. 218], BROWN; Pyrford, Surrey; Cardiff, Glamorgan, 1916, DRUCE; Prescott, Lancs [× 454], TRAVIS; Bradford, York, as *alba* × *striatum*, CRYER; Selkirk, DRUCE.

*2124 (7). C. LANCEOLATIFORME Murr. Botley, Oxon, DRUCE; Galashiels, Selkirk, Miss HAYWARD.

†2125. C. LEPTOPHYLLUM Nutt. Aldeburgh, Felixstowe, E. Suffolk, A. B. COBBE.

2126. C. FICIFOLIUM Sm. Bradford, York, CRYER; Mathern, etc., Monmouth, *Fl. Chepstow*.

2127. C. GLAUCUM L. Degenham, Essex, L. B. HALL; *garden ground, St Helier, Jersey, 1909, PIQUET.

†2131 (2). C. HIRCINUM Schrad., var. SUBTRILOBUM Issl. Felixstowe, E. Suffolk, A. B. COBBE.

*2131 (4). C. BERLANDIERI Moq. Pyrford, Surrey, 1915,

DRUCE; Billingshurst, W. Sussex (as *opulifolium*, var. *betulifolium*), 1917, WEBSTER; Botley, Oxon, 1916, DRUCE. Forma nova HASTATUM Murr. Billingshurst, W. Sussex, WEBSTER.

†2131 (12). C. AURICOMIFORME Murr & Thell. Bradford, York, CRYER. This was thought by Dr Thellung to come under *paniculatum*, but Murr refers it to this species.

†2134. C. VIRGATUM Ambrosi. Thetford Warren, E. Suffolk, plentiful, A. B. COBBE.

2139. SPINACIA OLERACEA L., var. SPINOSA. Glasgow, GRIERSON.

2144. ATRIPLEX PATULA L., var. BRACTEATA Westerl. Alphamstone, N. Essex, BROWN; Cardiff, Glamorgan; Pyrford, Surrey, DRUCE.

2146. A. CALOTHECA Fr. Caithness coast, LILLIE, ex BENNETT, in *Journ. Bot.*, is an error. Not true *calotheca*, Mr Bennett tells me.

2147. A. HASTATA L., var. OPPOSITIFOLIA Moq. Walton on the Naze, S. Essex, BROWN. Var. MICROTHECA Rafn. Hitchin, Herts, LITTLEBURY.

2148. A. DELTOIDEA Bab. Little Buddow, S. Essex; Beaumont cum Moze, N. Essex, BROWN; Pembrey, Carmarthen, HAMER.

†2153 (10). AXYRIS AMARANTOIDES L. Thetford, W. Suffolk, A. B. COBBE.

2168. SALSOLA KALI L., var. TENUIFOLIA Reichb. Thetford Camp, W. Suffolk, M. COBBE, teste THELLUNG, the same as my Southwick, Sussex, plant.

†2170. POLYGONUM CONVOLVULUS L. Kirkwall, Orkney, DRUCE.

2176. P. TOMENTOSUM Schrank. (MACULATUM). Leith, Midlothian, FRASER.

*2182. P. RAII Bab. St Aubin's, Jersey, DRUCE; Carmarthen, HAMER.

2184. P. AVICULARE L., var. RURIVAGUM (Jord.). = ANGUSTIFOLIUM Gray which preserves the older trivial. Slapton, Devon, DRUCE; Saintfield, Co. Down, WADDELL.

2184. P. HETEROPHYLLUM Lindm. Rozel, Jersey; Kirkwall, Orkney; Scalloway, Balta, Shetland, DRUCE.

*2184 (2). P. CALCATUM Lindm. Bradford, York, CRYER. Reduced to a sub-species by Dr Thellung.

†2191. P CUSPIDATUM S. & Z. Cwymtrvch Cwmtwrch, Carmarthen, WEBB; Crawley, Sussex, GRAVESON.

†2191 (2). P. SACHALINENSE Schmidt. Wye side, Chepstow, Monmouth, SHOOLBRED, *in litt.*

*2195. RUMEX HYDROLAPATHEUM Huds. Exeter Canal, Devon, D'URBAN; between Mathern and St Pilore, Monmouth, *Fl. Chepstow.*

2196. × R. CONSPERSUS Hartm. Hitchin, Herts, LITTLE, adventive. The plant needs further study. A closely allied plant occurs in Essex.

†2201. R. SANGUINEUS L. Near cottages, Mounton, Monmouth, *Fl. Chepstow.*

*2205. R. PULCHER L. Castle Dell, Monmouth, *Fl. Chepstow.*

2206. R. LIMOSUS Thuill. Blackheath, Kent, Miss G. BACON; Rondham, Norfolk, M. COBBE.

†2210 (3). R. DENTATUS L. Glasgow, GRIERSON. Det. TURRILL.

†2210 (4). R. SALICIFOLIUS Weinm. Hertford, GRAVESON; Glasgow, GRIERSON.

†2229. EUPHORBIA ESULA L. Dagenham, Essex, L. B. HALL.

†*2229 (2). E. VIRGATA W. & K. Left bank of Tyne, Haddington, 1913, FRASER. In Balfour's *Flora of Edinburgh*, 1863, *E. Esula* is mentioned for Haddington. This, too, may be *virgata*. Caversham, Oxon, MURRAY; Melksham, Wilts, T. H. GREEN; Woldingham, Epsom Downs, Surrey, BRITTON.

†2237. E. LATHYRUS L. Felixstowe, E. Suffolk, abundant, A. B. COBBE; *native in wood, Great Dinham, Monmouth, *Fl. Chepstow.*

2243. MERCURIALIS ANNUA L., var. AMBIGUA (L.). St Aubin's, Jersey, DRUCE.

2246 (2). ULMUS PLOTII Druce. Wardington, Oxon; near Southam, Warwick; Morgans Walk, Hertford, 1847, ANSELL.

*2254. MYRICA GALE L. Cwmddsudwr Hilld, Brecon, WEBB.

*2262. QUERCUS SESSILIFLORA Salisb. Jersey, probably planted, DRUCE.

†2265 (2). JUGLANS REGIA L. Seedlings, ? bird-sown, Royston, and springs, Hitchin, Herts, LITTLE.

*2271. SALIX PURPUREA L. Portskewett, Monmouth, *Fl. Chepstow.* × S. RUBRA Huds. *River bank between Brockweir and Bigsweir, Monmouth, *Fl. Chepstow.*

2276. S. AURITA × CAPREA = S. CAPREOLA Kern. Twinstead, N. Essex, DRUCE.

2296. CERATOPHYLLUM SUBMERSUM L. St Osyth, N. Essex, BROWN.

*2299. HYDROCHARIS MORSUS-RANAE L. St Brelade's, Jersey, 1911, ATTENBOROUGH.

*2303. CORALLORRHIZA TRIFIDA Chât. In a damp wood near Braithwaite, Cumberland, POSTGATE, ex STANSFIELD.

2306. LISTERA CORDATA Br. See *Rep. B.E.C.* 680, 1918. The

locality, Maentwrog, Merioneth, JONES, belongs to this species, not *Neottia*, an error in transcribing.

2313. CEPHALANTHERA DAMASONIUM Druce. Highnam, W. Gloster, GAMBIER-PARRY.

2314. C. LONGIFOLIA Fritsch. Arthog, WILLIAMS; above Harlech, Merioneth, JONES.

2315. HELLEBORINE PALUSTRIS Schrank. Eight miles beyond Sidmouth, S. Devon, Rev. Dr WAY.

2316. H. LATIFOLIA Druce. Near Buchanan Castle, Stirling, Hon. Mrs BARING; Dolgelley, Merioneth, JONES.

2318. H. PURPURATA Druce. Campden Wood, Gloster, Earl of GAINSBOROUGH & HORWOOD.

2326. ORCHIS INCARNATA L., var. DUNENSIS Druce. Llangenneth Burrows, Gower, Glamorgan, L. G. PAYNE; Braunton Burrows, N. Devon, MORRIS. Piquet's Jersey plant is *O. praetermissa* and his *latifolia* from Port Marquet is probably a hybrid of *praetermissa* with *maculata*.

2326 (2). O. PRAETERMISSA Druce. Selham, Sussex, BURDON, DRUCE & LACAITA; Chard, N. Somerset, Miss TODD; Whittington, Gloucester, CARLETON REA; Sherwood, Newton St Cyres, S. Devon, D'URBAN.

2327. O. MACULATA L., var. MACROGLOSSA Druce. Middlewick, Colchester, BROWN.

2327 (2). O. FUCHSII Druce. Selham, Sussex; Wytham, Berks, DRUCE; Bleak Hill, Woodbury Common, S. Devon, D'URBAN. Large specimens, which are often mis-labelled *latifolia*, have been sent to the Club this year. ALBAN VOIGT sends a red-flowered form from the Canton Ticino, Switzerland.

2331. O. HIRCINA Crantz. Several plants on the Quenvais in Mr Attenborough's locality; one plant near Goodwood, Sussex; *a

solitary specimen in a field about two miles from Headington, Oxon, July 1920, T. J. WALL. Mr H. Balfour has cultivated *hircina* for the past 12 years at Headington from tubers brought from France. One year a specimen was over a yard high. I conjecture that the seeds may have blown to Headington—a favourable locality. This may also be the explanation of the other sporadic occurrences in England.

2334. OPHRYS SPHEGODES Mill. Near Stanton St John, Oxon, CHAMPION. It was found there about a century ago. On the Quenvais, Jersey, DRUCE.

2335. O. TROLLII Heg. Near Hardwicke, Oxon, Lady ROSE.

*2338. HABENARIA GYMNADENIA Druce (CONOPSEA). Hoyle's Wood, Pembroke, ARNETT.

2339. H. ALBIDA Br. Arthog, Merioneth, WILLIAMS; Harlech, Merioneth, JONES; south side of Ballybory Lough, Louth, BRUNKER, in *Irish Nat.* 98, 1919.

2340. H. VIRIDIS Br., var. BRACTEATA A. Gray. Brickendon, Herts, 1847, ANSELL; Barpham Downs, W. Sussex, BURDON. *Var. OVATA Druce. Baltasound, Unst, Shetland; Standing Stones of Stenness, Orkney, DRUCE.

2343. H. BIFOLIA Br., var. vel lusus ECALCARATA Druce. Perridge, near Exeter, Rev. Dr WAY.

†2355. CROCUS VERNUS Mill. (AUREUS). Frithville, Lincoln, REDGROVE.

†2360. SISYRINCHIUM ANGUSTIFOLIUM Mill. Portmadoc Docks, Carnarvon, ex JONES; Hamworthy, Dorset, GODDARD, *in litt.*

†2361 (2). S. CHILENSE Hook. A solitary specimen at Thetford, W. Suffolk, A. B. COBBE.

†2372. NARCISSUS BIFLORUS Curt. St Peter's Parish, Jersey, DRUCE.

2382. RUSCUS ACULEATUS L. Harlech, Merioneth, adventive, JONES; *between the Cwm and Bicca Common, Monmouth, *Fl. Chepstow.*

2385. POLYGONATUM MULTIFLORUM All. Wood near Box Hill, Surrey, L. G. PAYNE.

†2386. P. ODORATUM Druce (OFFICINALE). Panshanger Park, Herts, 1847, scarcely wild, ANSELL.

†2390. ASPHODELUS FISTULOSUS L. Waste ground, St Leonard's Sussex, Rev. A. G. GREGOR.

†2399. ALLIUM ROSEUM L. Near Bosahan, St Martin's, Cornwall, Miss VIVIAN.

†2401. A. TRIQUETRUM L. Dartmouth, S. Devon, MILNE.

2403. A. OLERACEUM L. Whempstead, Herts, GRAVESON.

2409. SCILLA VERNA Huds. Abundant at Balta, Unst, DRUCE. With white flowers at Merthyr Mawr, Glamorgan, WEBB = sub-var. ALBIFLORA.

2411. S. HISPANICA Mill. Meadow near Beaminster, Dorset, GRAVESON; said to grow between Perranporth and Truro, Cornwall; Watford, Herts; Northolt, Middlesex, BRITTON, in *Journ. Bot.* 227, 1920.

2416. LILIUM MARTAGON L. In woods on both sides of the Wye Valley, *Monmouth, *Fl. Chepstow.*

2420. GAGEA LUTEA Ker-Gawl. Abundant in a new locality near Beckley, Oxon, DRUCE; near Croxden, Staffs, E. DEACON.

2429. JUNCUS EFFUSUS L., var. SPIRALIS McNab. Ronas Voe, Shetland; Stromness, Orkney, DRUCE.

2437. J. BULBOSUS L., var. KOCHII (Schultz) Druce; Selham, Sussex, DRUCE.

†2441. J. TENUIS Willd. Sandhills, Caistor-on-Sea, E. Norfolk, M. COBBE.

2442. J. BUFONIUS L., near var. GIGANTEUS A. & G. Newport, Countess Wear, S. Devon, D'URBAN.

*2452. JUNCOIDES PILOSA Morong ? × BORRERI (Bromf.). Piddleswood, Sturminster Newton, Dorset, with *Forsteri*, GRAVESON.

2453. J. FORSTERI Druce. St Aubin's, Jersey, DRUCE.

*2477. ECHINODORUS RANUNCULOIDES Engelm. Aberlady, Haddington, BELL, in *Hb. Druce*.

*2479. SAGITTARIA SAGITTIFOLIA L. Reens, Monmouth, *Fl. Chepstow*.

*2489. POTAMOGETON ALPINUS Balb. × GRAMINEUS = P. NERICUS Hagstr. River Don, at Alford, N. Aberdeen, 1919, DRUCE & Mrs WEDGWOOD.

2493. P. GRAMINEUS L., *var. LACUSTRIS Fr. Tingwall, Shetland, DRUCE.

2495. P. NITENS Web. Bardister Loch, Tingwall, Shetland, DRUCE. *Var. SUBINTERMEDIUS Hagstr. Stenness, Orkney, DRUCE.

2498. P. LUCENS L., *f. OVATIFOLIUS M. & K. Teviot, below Roxburgh, MATTHEWS; Clattercut, Oxford, 1885, DRUCE.

2501. P. PRAELONGUS Wulf. Bardister, Asta, Tingwall, Shetland, DRUCE.

2502. P. PERFOLIATUS L., var. RICHARDSONII. See *Journ. Bot.* 25, 1889. This is an error as *Richardsonii* does not occur in Europe. The plant is var. GRACILIS Ch. & Schl., f. LANCEOLATUS, teste Hagström. *Var. OVATIFOLIUS Wallr. Stream, west side of Kew Gardens, Surrey; Odiham, N. Hants; River Bann and Lough Maglo, Antrim; Killarney, Kerry; Loch Leven, Kinross, etc., DRUCE.

*2503. P. CRISPUS × MUCRONATUS = × P. LINTONI Fryer. In considerable quantity in the canal near Lichfield, Stafford, growing with small numbers of *P. crispus* and *P. mucronatus* (*Friesii*), but of a different facies from the Chesterfield plant. It is rather remarkable that the two localities for the hybrid should be in canals with a large quantity of suspended matter in the water and frequently disturbed by canal-boat traffic. Can the resisting power against foreign pollen be reduced in these conditions? The cross once made seems to have, as in other species, great vegetative luxuriance so that individually in this area they number twenty to one of the parents. Sir ROGER CURTIS was with me when it was observed, DRUCE.

2508. P. PUSILLUS L. Bardister, Asta, Tingwall, Shetland, DRUCE. * P. FRANCONICUS Fisch. = P. PUSILLUS × TRICHOIDES. Marsden, W. Kent, as *Berchtoldi*, MARSHALL; therefore *Berchtoldi* may be deleted from the British List. Bressingdon, E. Suffolk, 1883; Mason's Drain, Peterborough, Northants, 1909; Marsh Gibbon, Bucks, DRUCE; Whitewater, N. Hants, Miss PALMER.

2508 (2). P. PANORMITANUS Biv. *Hedgecourt Mill Pond, Surrey, Mrs WEDGWOOD. Var. MINOR Hagstr. Southill Park, Beds, LITTLE; *Kirbister Loch, Orkney, DRUCE. Johnston's plant, named *pusillus*, is this also. *P. TRINERVIUS Fisch. = P. PANORMITANUS × TRICHOIDES. Pond, near Aberarth, Cardigan [2278], MARSHALL; *Swainsthorpe, Norfolk, DRUCE. *P. DUALIS Hagstr. = P. PANORMITANUS × PUSILLUS. Wytham, Berks, DRUCE. My specimen from Wolverton, E. Norfolk, 1884, was the first correctly identified as *panormitanus* in Britain. I compared it with Italian specimens.

*2508 (3). P. RUTILUS Wolfg. Bardister, Tingwall, Asta Lochs, Shetland, DRUCE. New to Scotland, unless indeed Bennett's *P. pusillus*, var. *rigidus* is the same thing.

*2508 (4). P. STURROCKII Benn. Canal near Stroud, Gloster, 1900, DRUCE. Hagström considers this to be *obtusifolius* × *panormitanus*.

*2517. ZANNICHELLIA PALUSTRIS L. Near Tuthill, W. Gloster, *Fl. Chepstow.*

*2517. Z. REPENS Boenn. To this Dr Ostenfeld refers my specimen from Swanbister, Orkney, a locality whence Dr Boswell Syme distributed *Z. polycarpa*, var. *tenuissima* Fr., DRUCE.

*2518. Z. MARITIMA Nolte. Beachley, W. Gloster, *Fl. Chepstow.*

*2518 (2). Z. GIBBEROSA. St Briavel's, W. Gloster, *Hb. Bailey.*

†2527 (3). CYPERUS DECLINATUS Moench. Bradford, 1919, CRYER.

2529. ELEOCHARIS UNIGLUMIS Schultes. Swansea Bay, Glamorgan, RIDDELSDELL, in *Journ. Bot.* 113, 1920.

2530. E. MULTICAULIS Sm. A viviparous form, side of Coniston, Lake Lancs, 1919, PEARSALL; *Carmarthen Van, Brecon, WEBB.

*2531. E. ACICULARIS Br. Bouley Bay, Jersey, 1851, PIQUET. This confirms La Gasca's record.

*2535. SCIRPUS TABERNAEMONTANI Gmel. Roggiett, Monmouth, *Fl. Chepstow*; near Worcester, 1854, GISSING.

2539. S. PAUCIFLORUS Lightf. Above Dolphinton, Peebles, 1919, TEMPLEMAN; plentiful at Baltasound, Unst, DRUCE.

2542. S. SETACEUS L. At Woking, Surrey, with Lady Davy, in 1918, a form was noticed in which the spikelets were pedicellate, but it is, as Dr Ostenfeld thinks, only an old state, the bracts and nuts having dropped, DRUCE.

2544. S. FLUITANS L. In the moat of the Standing Stones, Stenness, Orkney, DRUCE.

2546. S. RUFUS Schrad. Waulkmill Bay, Orkney, with the so-called variety, BIFOLIUS, DRUCE.

*2547. ERIOPHORUM PANICULATUM Druce. Llandrindod, Radnor, Miss TODD. Earliest evidence for Worcester, Wyre Forest, 1854, GISSING.

2553. RYNCHOSPORA ALBA Vahl, forma SORDIDA. Coniston, Lake Lancs, PEARSALL.

2556. CLADIUM MARISCUS Br. Rudley, S. Hants, the third locality in Hants, Miss BUTLER and DRUCE; Glamorgan, WEBB. In 1846 a fenman, John Denton, writing to Mr George Wolsey, said he ought to have 5s for what he sent, although no large quantity. He goes on to say that if he receives nothing he will not mind but gives as a reason for his making the request that the Cladium and Sedges at one time so abounded that they were regularly mown as a crop, bound into sheaves, and sold in Cambridge for lighting fires and sold elsewhere in the county for thatching rough timber buildings. The trade in them was great. They were also used for heating ovens in villages. . . . The result of this and draining much diminished the *Cladium* so that instead of going out and gathering an armful in an hour or two . . . it took a six mile walk to obtain the specimens sent. The farm folk call the Cladium, Mother Sedge. The plants came from Waterbeech, Cambridge, *Hb. Ansell.*

*2559. CAREX RIPARIA Curtis. Gors Llwyn, Brecon, WEBB; Llynfelin, Cardigan, DRUCE.

2560. C. ACUTIFORMIS Ehrh. Gors Llwyn, Brecon, WEBB. × RIPARIA. Old brick pit, Sandhurst, Gloster, gathered by Miss TODD. I suggest this hybrid, the plant being sterile.

*2561. × C. CSOMADENSIS Simonk. Some plants in Ansell's Herbarium, 1846, labelled *C. vesicaria*, from Frank's field, Brickendon, Herts, are undoubtedly this rare hybrid.

*2565. C. LASIOCARPA Ehrh. Lasynys Bog, Harlech, JONES.

*2567. C. PENDULA Huds. Woods of the Upper Medd, Brecon. WEBB.

2570. C. HELODES Link. Selham, Sussex, DRUCE.

2572 (2). C. SADLERI Linton. Corrie above Beadheag, Glen Lyon, M. Perth, FOGGITT.

2575. C. FULVA Good. Darkadale, Hoy, Orkney, DRUCE.

2576. C. FLAVA L., var. OEDOCARPA Anders. Balta, Walls, Loch of Fleet, Tingwall, Shetland; Hoy, etc., Orkney, DRUCE.

2576. C. FLAVA × LEPIDOCARPA. With both parents at Darkadale, Orkney; Tingwall, Shetland, DRUCE.

2576. C. FLAVA × FULVA. Sawbridgeworth and Ashwell, Herts, as *fulva*, 1846, *Hb. Ansell*; a small form, Cannock Chase, Stafford; Moss of Darkadale, Orkney (perhaps *lepidocarpa* × *fulva*), DRUCE.

2577. C. OEDERI Retz. Harlech, MERIONETH; Kirbister, Orkney, DRUCE.

2578. C. EXTENSA Good. Near Kirbister, Orkney, DRUCE.

*2585. C. MONTANA L. Parkgate Forest, Isle of Wight, DRUCE. In company with Sir JAMES and Lady DOUIE I noticed this sedge in the spring of 1920, having just before predicted it as a likely plant to occur. Reference to *Top. Bot.* shows that it is new to the Island Flora, DRUCE.

2586. C. TOMENTOSA L. Barnsley, in still another locality near Cirencester, Gloster, GREENWOOD.

2589. C. PALLESCENS L. Marsh at La Motte, Jersey, 1851, PIQUET. This is not inserted in the body of the *Flora of Jersey*.

2591. C. PANICEA L. Exceptionally large specimens with spikelets two inches long, Thetford, W. Suffolk, Miss COBBE.

2593. C. LIMOSA L. Near Dumfries, J. CRUICKSHANK, 1839, ex *Hb. J. Backhouse*, a much earlier record than that given in the *Fl. Dumfries*. Moss of Darkadale, Orkney, BURDON, JOHNSTON & DRUCE.

2599. C. SALINA Wahl., var. KATTEGATENSIS (Fr.). In splendid condition by the Wick river, Caithness, about two miles above the town, growing with *C. aquatilis* (some specimens of which were four feet high) and hybridising with it, DRUCE.

2604. C. GOODENOWII Gay, var. RECTA A. & G. Near Hertford, 1846, ANSELL. Var. CHLOROCARPA A. & G. Tingwall, Burrafirth, Shetland; Kirbister, Orkney, DRUCE.

2613. C. VULPINA L., var. NEMOROSA Lej. Beaminster, Dorset, GRAVESON.

2615. C. PAIRAEI F. Schultz. W. Sussex, DRUCE; Sandyford, Dublin, STELFOX.

2617. C. PANICULATA L. × VULPINA = × *BOENNINGHAUSIANA Weihe. Penzance, Cornwall, 1878, CURNOW, in *Hb. Piquet*; Bayswater, Oxford, DRUCE; Park Wood, Bramfield, Herts, GRAVESON.

2619. C. DIANDRA Schrank. Found by the Rev. R. J. BURDON with Col. JOHNSTON and myself in the Moss of Darkadale, Orkney. It is not given in *Fl. Orcadensis* but we subsequently learned that it had been previously found by Mr Scarth.

*2623. C. DIVISA Huds. Damp pasture, Woburn Park, Beds, JACKSON, in *Journ. Bot.* 91, 1920.

2625. C. INCURVA Lightf. Longniddry, Haddington, earliest evidence, 1858, BELL, in *Hb. Druce.*

2627. C. PAUCIFLORA Lightf. Eskdale, Cumberland, R. H. WILLIAMSON. Only one previously recorded locality in that county and that twenty miles away from the present record.

†2630. SETARIA VIRIDIS Beauv. Aldeburgh, E. Suffolk, A. B. COBBE; Beaminster, Dorset, GRAVESON.

†2631. S. GLAUCA Beauv. Aldeburgh, E. Suffolk, A. B. COBBE; Ide, Devon, Miss TODD; Beaminster, Dorset, GRAVESON.

2635. PANICUM ISCHAEMUM Schreber. Mullion, Cornwall, TRESIDDER.

†2654. PHALARIS PARADOXA L. Par, Cornwall, MEDLIN; railway tip, Malvern, Worcester, TOWNDROW; on dredged mud, Hertford, with *P. minor*, GRAVESON.

2655. P. ARUNDINACEA L., †var. PICTA L. By the Mailand Burn, and at Baltasound, Unst, DRUCE.

*2674. PHLEUM ALPINUM L. On the east face of Helvellyn, Westmorland, GILBERT ADAIR.

†2679. P. GRAECUM B. & H. On dredged mud, Hertford, GRAVESON.

†2680. P. PANICULATUM Huds. Eastham churchyard, Cheshire, 1842, H. SHEPHERD. Not mentioned in the *Flora*.

2683. AGROSTIS VERTICILLATA Vill. Mrs Wedgwood gathered it at St Sampson, Guernsey, in the summer. We had previously seen the foliage in April. Piquet's Jersey *verticillata* is *Agrostis alba*, var. He says it is plentiful on the north coast, but at present *verticillata* has obtained no hold in Jersey.

2684. A. ALBA L., var. STOLONIFERA (L.) Blytt. Nevin, Carnarvon, Miss COBBE. Var. COARCTATA Hack. Hoy, Orkney; Lerwick, Shetland, DRUCE. Var. MAJOR Gaud. Samares Miles, Jersey, 1865, as *Milium effusum*. The latter should be deleted from the Jersey Flora. Watton, Caithness, DRUCE.

2685. A. TENUIS Sibth., var. PUMILA (L.). Balta, etc., Ronas Voe, Shetland; Stenness, Hoy, Orkney, DRUCE. Var. ARISTATA. Winchmore Hill, Middlesex, L. B. HALL.

2690. POLYPOGON MONSPELIENSE L. Bowling Distillery, Glasgow, GRIERSON.

2693. CALAMAGROSTIS EPIGEIOS Roth. *Glen More, Easterness, over 900 ft., a considerable extension of its range, Mrs WEDGWOOD and DRUCE; Limeslade, Glamorgan, WEBB.

2706. AIRA CARYOPHYLLEA L. Hoy, Darkadale, Finstown, Orkney, DRUCE & JOHNSTON.

2711. DESCHAMPSIA SETACEA Hack. Near Woking, Surrey, Lady DAVY.

2717. AVENA FATUA L., var. HYBRIDA (Peterm.) Asch. Chichester, W. Sussex, DRUCE.

†2719. A. STRIGOSA Schreb. Trinity, Jersey, 1905, PIQUET.

2722. A. PUBESCENS Huds. Darkadale, Orkney, DRUCE.

2725. ARRHENATHERUM TUBEROSUM (Gilib.) Druce. Baltasound, Unst, Ronas Voe, Shetland; Kirkwall, Orkney, DRUCE; *Portskewett, Monmouth, *Fl. Chepstow.*

†2726. GAUDINIA FRAGILIS Beauv. Ryde, Isle of Wight, H. H. KNIGHT; Glasgow, GRIERSON; Pyrford, Surrey, Lady DAVY.

†2737. CYNOSURUS ECHINATUS L. Thetford Heath, Warren Heath, Ipswich, Suffolk, M. COBBE; Drayton, Middlesex, DYMES; on mud from river, Hertford, GRAVESON.

2738. C. CRISTATUS L. A viviparous and panicled form at Newport, Countess Wear, Devon, D'URBAN.

*2746. CATABROSA AQUATICA Beauv. Moors, Monmouth, *Fl. Chepstow.*

†2755. BRIZA MAXIMA L. Glasgow, a small spikeletted form, GRIERSON.

†2757. B. MINOR L. Bootle, Liverpool, 1817, H. SHEPHERD.

2759. POA PRATENSIS L., var. LATIFOLIA Weihe. A large spikeletted form at Bettyhill, W. Sutherland; Dornoch, E. Sutherland; Clova, Forfar; Hambledon, Bucks. Var. SUBCAERULEA (Sm.). Shell sand, John o' Groats, Caithness; Balta, Unst, Shetland, DRUCE.

*2759 (2). P. IRRIGATA Lindm. Ballater, S. Aberdeen, with shorter and broader glumes, near *sylvestris* Lindm., DRUCE.

†2760. P. PALUSTRIS L. Near Salisbury, Wilts, GODDARD.

2762. P. NEMORALIS L. Bagley Wood, Berks. See *Rep. B.E.C.* 531, 1918. This eximious form comes nearest to var. *Reichenbachii* (A. & G.), teste Lindman. DRUCE.

2765. P. COMPRESSA L. On a wall near Dublin, STELFOX, in *Irish Nat.* 1920.

2772. GLYCERIA FLUITANS Br., var. TRITICEA Lange. Claxton. E. Norfolk, BROWN; near Tongue, W. Sutherland; Ronas Voe, Shetland, DRUCE. × PLICATA. Alphamstone, N. Essex, BROWN.

*2773. G. PLICATA Fr. Samares, Jersey, PIQUET.

2776. G. MARITIMA Wahl., *var. DISTANTIFORMIS Druce. Kirkwall, Orkney, DRUCE.

2776. G. MARITIMA × DISTANS. Chichester, W. Sussex, DRUCE.

*2778. G. PROCUMBENS Dum. Marais à la Cogne, Jersey, 1876, PIQUET.

2782. × FESTUCA ADSCENDENS Retz. Beaminster, Dorset; Askham Bog, York, GRAVESON.

2785. F. RUBRA L. Burrafirth, etc., Shetland; Kirkwall, Orkney, DRUCE.

2787. F. OVINA L., var. FIRMULA (Hackel). Plemont, Jersey, DRUCE.

2787 (2). F. TENUIFOLIA Sibth. Moor in Staffordshire, Sir R. CURTIS & DRUCE.

†2794. BROMUS RIGENS L. Hayling Camp, Norfolk, A. B. COBBE; Ware, Hertford, GRAVESON; Daglingworth, Gloster, GREENWOOD.

†2797. B. TECTORUM L. St Ouen's, Jersey, 1900, PIQUET.

†2798. B. MADRITENSIS L. Glasgow, GRIERSON; St Anne's Port, Jersey (the type), *Hb. Piquet.*

†2803. B. UNIOLOIDES H. B. K. Thetford Heath, W. Suffolk; Thetford Bridge, W. Norfolk, A. B. COBBE.

†2806. B. SECALINUS L. A pretty form with short, few-flowered spikelets, Chichester, Sussex, DRUCE.

2809. B. ARVENSIS L. Rondham, Norfolk, A. B. COBBE; Grouville, Jersey, 1856, as *erectus*, PIQUET.

†2812. B. INTERRUPTUS Druce. Rendcombe Aerodrome, Gloster, GREENWOOD.

*2819. BRACHYPODIUM PINNATUM Beauv. Portumna, Galway; Curragh, Dublin, PHILLIPS, in *Irish Nat.* 1920.

†2821. LOLIUM TEMULENTUM L. Thetford, W. Norfolk; Felixstowe, E. Suffolk, A. B. COBBE.

†2823. L. MULTIFLORUM Lam. (sub-sp. BOUCHEANUM), var. COMPOSITUM (Thuill.). Very luxuriant specimens in a field at Pyrford, Surrey, Lady DAVY & DRUCE.

2827. AGROPYRON JUNCEUM Beauv. Birsay, Orkney, DRUCE.

2827. A. JUNCEUM × REPENS = × A. HACKELII Druce. St Clement's Bay, Jersey, 1851, as *junceum*, PIQUET.

*2828. A. PUNGENS R. & S. Near Chepstow, Monmouth, *Fl. Chepstow.*

2830. A. REPENS Beauv., var. TRICHORACHIS Rohl. Near Hitchin, Herts, LITTLE. Var. GLAUCUM Doell. Jersey, as *litorale*, PIQUET.

†2842. TRITICUM CYLINDRICUM C. P. G. Brislington Tips, N. Somerset, 1921, Miss ROPER.

†2845. LEPTURUS FILIFORMIS Trin. In the Churchyard of Stansfield, W. Suffolk, two plants only. Unusual in an inland situation, LITTLE.

†2850. HORDEUM MARINUM Huds. Woodside, Cheshire, 1818, H. SHEPHERD. Doubtless alien.

†2850 (2). H. VIOLACEUM Boiss. & Hohen. Hayling Island, S. Hants, Miss HILLARD.

†2851. H. JUBATUM L. Hayling Island, S. Hants, Miss HILLARD; Ware, Herts, GRAVESON.

2858. ELYMUS ARENARIUS L. On the shores of the tempestuous Burrafirth, Unst, plants were growing on a detached rock, 30-40 feet above sea-level, DRUCE; *St Aubin's, Jersey, 1911, PIQUET. Probably planted.

2867. × EQUISETUM LITORALE Kühl. In abundance on the canal side near Woking, Surrey, Lady DAVY, an excellent discovery. The Rev. E. A. Woodruffe-Peacock says he found *litorale* × *arvense* at Holton-le-Moor and *E. fluviatile* × *arvense* in an estuarine ditch at Barton and in a sandy clay-pit (Kimmeridge Clay) at Holton, Lincoln. On the edge of the railway near Ballymena, Co. Antrim, PRAEGER, in *Irish Nat.* 1920.

2868. E. SYLVATICUM L., var. CAPILLARE Hoffm. Wilton Brails Wood, N. Wilts, HURST.

2877. ADIANTUM CAPILLUS-VENERIS L. Morecombe Bay, about 20 years since, STANSFIELD.

2881. ASPLENIUM TRICHOMANES L., var. FURCATUM. Panshanger garden wall, Herts, and A. foliis eleganter incisis (Dill.), Rant Clough, near Burnley, Lancs., *Hb. Ansell.*

*2887. A. GERMANICUM Weiss. Near Kirkby Lonsdale, Westmoreland, STANSFIELD; Iona, Miss GODMAN. This may possibly be the *pseudo-germanicum* of *Ruta-muraria*. I have not seen a specimen.

2892. POLYSTICHUM SETIFERUM Woyn., var. MULTIFIDUM. St Saviour, Jersey, PIQUET.

2893. P. LOBATUM Huds., var. LONCHITIOIDES. Einon Gon Fall, Brecon, BLACKBURN.

2894. P. LONCHITIS Roth. Still at Blaenau, Merioneth, JONES.

*2903. DRYOPTERIS THELYPTERIS Underw. South side of Ballymoney Lough, Louth, BRUNKER.

2904. CYSTOPTERIS MONTANA Desv. In *Journ. Bot.* 24, 1920, Mr C. E. Salmon draws attention to a record of the plant from Benrinnes, Banff, in Smiles' *Life of Thomas Edward*, and says that he is unable to find it in *Top. Bot.*; but Watson states that Roy says the Banffshire record was an error. Does Roy here refer to Edward's statement?

2919. BOTRYCHIUM LUNARIA Sw. Balta, Burrafirth, Shetland; Stenness, Orkney, DRUCE.

2920. OPHIOGLOSSUM VULGATUM L. Summer Isles, W. Ross, Miss BUXTON. Unfortunately the specimen was not preserved, so one is unable to say if type or var. *polyphyllum* Braun was found. The variety is at Morfa, Harlech, where Mr D. A. Jones kindly showed it to me.

*2929. LYCOPODIUM CLAVATUM L. Brecon Beacons, etc., WEBB.

2930. L. INUNDATUM L. Cwm Bychan, Merioneth, JONES. Previously found by W. PAMPLIN.

2931. L. SELAGO L. The earliest evidence for Fife is at Saline, 1857, BELL, in *Hb. Druce*. Spontaneously in the garden at Bar Hill, Madeley, Stafford, DALTRY. Mr Daltry had previously collected the plant in Wales and he suggests that the seedlings may have come from spores brought home inadvertently.

2934. NITELLA OPACA Ag. As an extraordinarily robust plant, Tingwall, Asta and Bardister Lochs, Shetland, DRUCE.

2941 (2). TOLYPELLA NIDIFICA Leonh. In some quantity and over a considerable area of the Loch of Stenness, Orkney. Found in company of Prebendary Burdon, Col. H. H. Johnston and T. Churchill in August 1920. An interesting extension of its range and a new plant to Britain. Its previous British history rested on a too advanced specimen found in 1896 by the Rev. E. S. Marshall in a lagoon north of Wexford Harbour. His specimen was too imperfect to be figured.

*2944. T. INTRICATA Braun. Brickhill, Bucks, DRUCE.

*2948. CHARA CANESCENS Lois. Loch of Stenness, Orkney, 1920, DRUCE. New to Scotland.

*2950. C. CONTRARIA Braun, forma. Lough Mullaghderg, Donegal, BULLOCK-WEBSTER, in *Irish Nat.* 1920.

2955. C. ASPERA Willd. Kirbister, Orkney; Loch Leven, Kinross, DRUCE.

2955 (2). C. DESMACANTHA Groves. Asta Loch, Loch of Fleet, Bardister, Tingwall, Shetland; Kirbister, Loch of Harray, Stenness, Orkney, DRUCE.

2958. C. DELICATULA Braun. Strathpeffer, E. Ross; Tingwall, Bardister, Shetland, DRUCE.

BRITISH FORMS OF CENTAUREA JACEA L.

BY C. E. BRITTON.

The early notices of *Centaurea Jacea* that appear in our floras record it as occurring in England and the north of Ireland at solitary localities, in which it curiously appears not to have been found by later observers. As to the Irish record, I have been so fortunate as to interest in the matter Miss M. C. Knowles, of the Botanical Department, National Museum, Dublin, who has, on my behalf, kindly

examined the *Centaurea* specimens contained in the large Irish herbarium of the institution with which she is connected, without finding any Irish-gathered specimen of *C. Jacea*. Miss Knowles has also been unsuccessful in searching for a reliable record of the species occurrence in Ireland. It does not find a place in the *Hand List of Irish Flowering Plants and Ferns*, 1913, which includes alien and casual plants, and no recent notice of the plant's occurrence in Ireland is known. The records mentioned in *Cybele Hibernica*, 1866, are referred to *C. nigra*, var. *radiata*, and concerning the Kerry record of the *Flora Hibernica*, 1836, Mr Reginald Scully in his *Flora of County Kerry*, 1916, is of opinion that the radiant form of *C. nigra* was the plant observed. For the foregoing I am indebted to my correspondent, who also directs my attention to the notice of *C. Jacea* in the *Flora of the North-East of Ireland* by Messrs S. A. Stewart and T. H. Corry, 1888, p. 295: "*C. Jacea* L. — In a field near Drumbridge; Templeton. Gravelly bank at Enagh Lough (Moore); *Flor. Hib.* Templeton's plant, which has been quoted in *Flora Hibernica*, *Flora Belfastiensis*, and *Flora of Ulster*, was probably the form *C. nigra* with large ray-flowers. Dr Moore corrected the name of his Derry plant and placed it as a variety under *C. nigra*." Rather strangely, the authors of the *Flora of the North-East of Ireland* appear to have overlooked the fact that Templeton's plant was also quoted by Sir J. E. Smith in the *English Flora* iii, p. 465, where we read, "Sent from Ireland in 1796, by Mr Templeton." Fortunately, the plant is preserved in Smith's herbarium, and by the courtesy of Dr B. Daydon Jackson, the secretary of the Linnean Society, I have had an opportunity of inspecting it and find that it is unquestionably a form of *C. Jacea*, almost identical with plants found in various parts of England. This confirmation of Templeton's record should prove of interest to Irish botanists and, I hope, lead to the plant's re-discovery.

In other British herbaria consulted by me, no Centaureas from Ireland have been seen which could be placed to *C. Jacea*. The first English record rests upon Borrer's Henfield plant, which, it seems, was found in very limited quantity, as existing specimens in herbaria are from cultivated plants. Besides Henfield, *C. Jacea* has been recorded from several other Sussex localities, stretching thence eastward to the Kent border. Arnold, in his *Flora of Sussex* enume-

rates localities near Plumpton, Fletching, Fairlight and Guestling, and two other records are supplied by Mr C. E. Salmon in his notes on the county flora that have appeared in the *Journal of Botany* from the neighbourhood of Hassocks and Cuckfield. Adverting to the status of *C. Jacea* in Britain, whether it is an introduced species wherever it occurs or is native at some of its recorded localities, the evidence seems in favour of the latter view, and a modern survey of its distribution in Sussex, the conditions under which it grows, and its relative abundance, would go far to settle this point. Plants very diverse in their aggregate characters have been included within the limits of *C. Jacea*, and a study of the Sussex plants recorded as this species shows that they are by no means identical, and can readily be arranged under at least three forms, none being typical *C. Jacea* as understood by continental authors. So far, herbarium examples from five of the seven recorded Sussex localities have come under my notice, and a small-headed, narrow-leaved form that is represented at four different places is most likely that to be met with elsewhere as a native plant. During the past year it was found in Surrey, and I anticipate it being met with in other of the southern counties. That but few plants were seen at the Surrey locality is no real objection to regarding it as a native there; indeed, the presence of somewhat similar plants, distinguished by the extent to which the phyllary-appendages were fimbriate, probably explains the reason why *Jacea* was not seen in quantity—by crossing with *C. nigra* it is being absorbed into that dominant form of *Centaurea*. Elsewhere, *C. Jacea* is accompanied by similar supposed hybrids with *C. nigra*, which are described further on.

An endeavour has been made to identify the forms of *C. Jacea* occurring in Britain with authentic examples of named continental plants, and where success has not attended such efforts our plants have been arranged in accordance with the system of Gugler. As this botanist's work ("Die Centaureen des ungarischen National Museums" in *Annal. Hist. Nat. Musei nation. Hung.* vi., p. 219, 1908) on *Centaurea* is practically unknown to British botanists, a few explanatory words may be of interest. In the section *Jacea*, Gugler recognised three species only, viz., *C. Jacea*, *C. nigra*, and *C. nigrescens*. The first of these is again divided into three sub-species—*eu-Jacea*, *jungens*, and *angustifolia*. Each sub-species in-

cluded three homologous varieties, based upon the character of the phyllary-appendages—whether more or less entire or progressively pectinate-fimbriate. A further sub-division was made into parallel series of forms. Gugler's views were of a synthetical nature, as he did not hesitate to refer to the same low grade of form diverse plants which have been regarded by other botanists as distinct species. The distinctions of the three sub-species of *C. Jacea* are founded chiefly on habit, *eu-Jacea* having fairly broad leaves and stems with rather short flowering branches; *angustifolia* with longer, sometimes virgate, branches and narrow leaves, and *jungens* with characters intermediate.

Gugler's classification has been adopted by certain continental botanists, notably Schinz and Keller (*Fl. der Schweiz*) and Vollmann (*Fl. von Bayern*), the latter giving a most useful summary of the different forms.

CENTAUREA JACEA L., sub-sp. C. EU-JACEA Gugl.—" Stem with rather short branches, seldom simple or with secondary branches. Peduncles usually inflated beneath the capituli; phyllary-appendages light to blackish-brown, seldom white. Leaves elliptic-lanceolate to lanceolate, never linear-lanceolate or linear, the upper leaves always proportionately broad, basal and lower leaves short, more or less lingulate. Peduncles with few spreading and scattered leaves. More or less glabrous or quite glabrous, rarely felted or tomentose. Stature medium (seldom more than 30 centim. high), shade-grown plants taller and those of barren places sometimes diminutive."

Var. TYPICA Gugl.—Phyllary-appendages entire, or more or less irregularly torn, never distinctly pectinate.—v.-c. 17, Surrey, Warlingham, in a meadow 1905; Epsom Downs, 1917 (Ref. No. 1832). Probably adventive, as solitary plants only were seen in these localities. A specimen in *Herb. Brit. Mus.* labelled *C. Jacea*, var. *crispo-fimbriata* Koch, gathered on the site of the Exhibition of 1862, is a small-headed form of sub-sp. *eu-Jacea*. The phyllary-appendages are not sufficiently cut up nor wavy enough for it to be the plant that it is named.

Vars. SEMIPECTINATA Gugl. and FIMBRIATA Gugl. are characterised by the extent to which the appendages are regularly fimbriate. No British plants have been seen that are referable to these varieties.

CENTAUREA JACEA L., sub-sp. C. JUNGENS Gugl.—" Branches of moderate length, the upper sometimes short. Upper leaves broadly lanceolate. Peduncles always clearly inflated beneath the capituli and with rather few leaves. Tall plants intermediate in habit between the preceding sub-species and sub-sp. *angustifolia.*"

Var. FIMBRIATISQUAMA Gugl.—Is characterised by the phyllary appendages being nearly all regularly pectinate-fringed; the innermost (upper) series, however, always more or less entire, the next uppermost series less regularly laciniated.—v.-c. 17, Surrey, Woldingham, 1919; v.-c. 20, Herts., north of the Welwyn tunnel, 1913; coll. J. E. Little and distributed through the Botanical Exchange Club, (see *Report* 1913, p. 476). Other plants from various localities in the southern counties are very probably referable here.

CENTAUREA JACEA L., sub-sp. C. ANGUSTIFOLIA Gugl.—" Stem seldom simple, usually with elongated branches, which are again divided. Peduncles slender, many-leaved, not inflated, or very slightly so, beneath the capituli. Leaves lanceolate to linear, the upper smaller, and usually erect on the flowering branches. Stem and leaves more or less tomentose, seldom quite glabrous. Involucre as conspicuous as in *C. eu-Jacea.* Tall plants seldom less than 30 centim. in height, often much taller, but plants growing in barren situations usually much smaller."

Var. INTEGRA Gugl.—Has the phyllary-appendages similar in character to those of sub.-sp. *eu-Jacea*, var. *typica.* Under this variety of the sub-species, *C. angustifolia* Gugl., may be placed Templeton's Irish plant and also most of the plants recorded as *C. Jacea* from all the English localities in which it is established, either native or naturalised. Collectively, they present the following features:—Pubescent or arachnoid. Basal leaves oblanceolate, serrate, long-stalked, reaching a length of 36 centim. Stem 35 to 45 centim. or more in height, branches few or many, erect-ascending, the lower 12 to 20 centim. long. Cauline leaves usually entire, pubescence appressed, ranging from linear-oblanceolate to linear, mid-stem leaves elongated (sometimes attaining to 80 mm. by 8 mm.), the upper smaller, the ultimate involucrate equalling or exceeding the capituli. Heads globose, medium, appendages light to dark brown, glistening, the lowest at times whitish, the basal very small

and pectinate, remainder entire or somewhat lacerate, sometimes denticulate, but not pectinate. Outer florets rayed or not.

V.-c. 13, West Sussex, Henfield, Borrer.—Cultivated examples are in the herbaria at Kew, South Kensington, and in that of the Linnean Society. I am not aware that the plant has been found by any botanist other than Borrer. Abundant in a paddock between Hassocks and Hurstpierpoint (doubtfully native), 1900, T. Hilton, (C. E. Salmon in *Journ. Bot.* 1901, p. 414). Under the name of *C. Jacea* specimens were distributed by Mr Hilton through the Watson Exchange Club. It is probable that more than one form was included, as besides the plant placed here (specimens in *Herb. South London Botanical Institute*, under the date of Sept. 1905) Mr Hilton's gatherings also included the plant identified as *C. subjacea* Hayek (specimen in *Herb. C. E. Salmon*) and that (*Herb. South London Botanical Institute*) referred to the hybrid *C. angustifolia* × *nemoralis*.

V.-c. 14, East Sussex, Plumpton Cross-ways, 1872, Unwin, (Arnold *Fl. Sussex*).—In *Herb. C. E. Salmon* are two scrappy portions of plants collected in Aug. 1905, at Plumpton, by the late T. Hilton and the Rev. E. Ellman. The label is noted "All we could find; Mr Ellman thinks this is the place given by Arnold as near Plumpton Cross-ways." The specimens are named *C. Jacea* and represent two dissimilar forms, one being sub-sp. *angustifolia*, var. *integra*, the other probably a hybrid between this and *nigra*. Fairlight, July 7, 1883 (Rev. E. N. Bloomfield in *Herb. Brit. Mus.*).—In two interesting notes in *Journ. Bot.* 1884, pp. 149-248, the Rev. E. N. Bloomfield, who detected it at two localities, rightly pointed out that it is extremely liable to be overlooked for the common *C. nigra*, especially when not in flower and growing amongst tall grass. I can confirm this observation, having precisely a similar experience on Epsom Downs, Surrey. As at the Plumpton locality, *angustifolia* is at Fairlight accompanied by forms (specimens in *Herb. C. E. Salmon*) which may be considered as derived from crossing with *C. nigra*. These plants are sparingly branched, branches elongated, leaves mostly linear-lanceolate, heads globose, phyllary-appendages dark brown, closely imbricate, the lower regularly pectinate, the median fimbriate, uppermost more or less entire. Guestling.—At this

locality the plant was first observed by Rev. E. N. Bloomfield about the year 1864 (specimen in *Herb. Kew*) and was seen twelve years later in a neighbouring station.

V.-c. 17, Surrey, Epsom Downs, Aug. 1920 (Ref. No. 2269), in small quantity but apparently native, and with the heads rayless. In 1910 and 1911 a variation with light-coloured phyllary-appendages, rather irregularly lacerate, occurred at the golf links near Byfleet; specimens are in various private herbaria and at Kew and the British Museum. The specimens at the latter establishment include a scrap of what is very probably sub-sp. *jungens*, var. *fimbriatisquama*.

V.-c. 21, Middlesex. Formerly at Twickenham, in a situation now built over. The authors of the *Flora of Middlesex* recorded it as being in considerable plenty, thoroughly established, and having the appearance of a native plant. The presence, however, of certain plants in the vicinity that were formerly cultivated is mentioned, but, as *C. Jacea* is not to my knowledge a plant of garden culture, I am unable to support the implied inference. Examples of the Twickenham plant are frequent in herbaria.

V.-c. 22, Berks. At Wellington College (*Journ. Bot.* 1919, p. 340), where it is naturalised. At this locality occur plants indistinguishable from the Sussex and Middlesex form, as well as several allies.

V.-c. 69, N. Lancs., Cark, 4 Aug. 1870; coll. W. M. Hind (specimen in *Herb. Brit. Mus.*).

Ireland.—Templeton's plant before referred to as being in the possession of the Linnean Society is presumably from the recorded station at Drumbridge. It is a portion of a plant measuring about 25 centim. in length. One detached lower leaf is oblanceolate, pinnatifid, but the upper leaves are linear-lanceolate entire. The heads are pale-coloured, about 2.5 centim. by 3 centim., the phyllary-appendages mostly irregularly torn, and outer florets radiant. On the sheet in Smith's handwriting is the name "*C. Jacea* Eng. Bot. t. 1678" and the note "Ireland: Mr Templeton, 1796."

Channel Isles.—Near Don Bridge, Jersey, July 1898; coll. J. W. Hurst (as *C. nigra* L., var. *decipiens* Thuill. in *Herb. Druce*); meadow in Valley des Vaux, Jersey, Aug. 1876, Dr Bull (*Herb. Druce*

as "*Centaurea serrotina* Borr." (*sic*). The first of these plants is almost identical with plants from the golf links, Byfleet, 1911.

A frequent Wellington College form, also the plants from Guestling and Fairlight (some), have great affinities with *C. bracteata* Scop. and with *C. pannonica* Heuff., but are not either of these exactly. On the other hand, the plants from Hassocks, Epsom Downs, Byfleet, Drumbridge and Don Bridge are closer in characters to *C. amara* L. as described by French authors. Gugler, however, did not recognise *C. amara* L. and placed plants referred to that species under his sub-sp. *C. angustifolia*.

Var. SEMIFIMBRIATA Gugler.—Outer phyllaries, to about the middle of the head, with regularly pectinate-fringed appendages. There are 1-2 series of appendages transitional between lower appendages and the entire upper series.—v.-c. 22 Berks., Wellington College, 1919 (Ref. No. 2157).

Besides the British plants referred to the foregoing sub-species and varieties, other forms occur which appear identical with the following species:—

C. SUBJACEA Hayek. A specimen in *Herb. C. E. Salmon* received through the Watson Exchange Club, under the name *C. Jacea* Linn., gathered by the late T. Hilton in a paddock at Hassocks, E. Sussex, v.-c. 13, June, 1900, is identical with the plant distributed by Dr A. V. Hayek as No. 594 of his *Flora stiriaca exsiccata*, and described in full in *Die Centaurea-arten Oesterreich-Ungarns*, where its wide distribution in the territories of the former Austro-Hungarian Empire is indicated, and a long list of synonyms given. Elsewhere in Sussex the same form has been collected by Dr G. C. Druce at Lewes, v.-c. 14, and was found in Surrey, v.-c. 17, in a meadow at West Molesey by H. C. Watson in 1880 (specimen in *Herb. Kew* as "*C. nigra*, var.") Mr Hilton's observations on the plants recorded by him as *C. Jacea* were that they were naturalised only, though occurring abundantly. His estimate of this status deserves further study, and, now that attention has been drawn to *C. subjacea*, it may possibly be recognised elsewhere. It is a medium-sized plant, reaching about 2 feet in height, stems erect, branches few, leaves green, sparingly hairy, lower stalked, ovate-lanceolate, entire or sinuate-dentate, the middle and upper leaves obovate-oblong or oblanceolate. Capituli solitary, ovoid-globose, about 14 mm. long, phyllary-

appendages dark-brown, scarious, the innermost series roundish, more or less entire, succeeding series lacerate, lowest series triangular, pectinate. Flowers described as clear-crimson, the outer rayed. Fruit pubescent, without pappus.

C. NEMOPHILA Jord. MS. Two not quite identical plants have received this name: (1) that distributed by Billot (No. 3628), which was a cultivated plant grown from seeds received from Jordan, and (2) that distributed by Hayek as *C. Jacea*, sub-sp. *nemophila* (Jord.), which is chiefly distinguished from the first by its markedly virgate habit and less fimbriated appendages. As, however, the plants representing Hayek's sub-species were gathered in France, it is probable that the extent to which they differ from Billot's No. 3628 is due to the latter being a cultivated plant. Hayek's plant is slightly arachnoid, leaves linear, acute, reaching 7 centim. in length, the lowest visible leaves provided with two linear acute lobes at base. Heads globose, outer florets rayed; appendages with dark-brown centres and paler margins. At Wellington College, Berks., v.-c. 22, plants occur which cannot be kept apart from *C. nemophila* Jord. They exhibit closer agreement with Hayek's plant than with Billot's, but, no doubt all three are mere variations of one form. Most likely, similar plants will be detected elsewhere, as I have gathered it as a slender form (Ref. No. 2040) in a pasture at Lower Morden, Surrey, v.-c. 17. Gugler referred *C. nemophila* to his *C. angustifolia*, var. *pseudofimbriata*, and Rouy placed it to *C. Ruscinonensis* Boiss., which, in his arrangement of the "formes" or races of *C. Jacea*, follows *C. decipiens* Thuill.

C. VIRETORUM Jord. As distributed by Billot in *Pl. Gall. et Germ.*, No. 3629, this was also a cultivated plant raised from seed received from Jordan. Apparently a large plant, green, much-branched, leaves linear-lanceolate, acute, usually entire except for a pair of linear basal lobes. Capituli globose, appendages mostly pale-brown (biscuit-coloured), the lower with darker centres, upper dentate, lower pectinate or fimbrillate, divisions wide. Flowers bright-pink, outer radiate. At Woldingham, Surrey, v.-c. 17, plants (Nos. 2109 and 2130) have been collected which come under Jordan's name, only differing by being smaller, less branched, leaves less acute, and the lower appendages more finely fringed. Although I have seen but few plants, I was assured by my friend, Mr A. Beadell of

Warlingham (to whom I am much indebted for assistance in the field), that this form was plentiful at Woldingham in 1919, flowering rather late.

By Rouy *C. viretorum* is referred to *C. amara* L., sub-var. *Loiseleurii* characterised by the appendages being more or less whitish, whilst Gugler placed it as a synonym of his *C. angustifolia*, var. *integra*, sub-var. *pannonica*.

The occurrence, side by side with typical forms of *C. Jacea*, of related plants showing much laciniated phyllary-appendages, is an interesting feature. Such plants are well-known on the Continent, where they are usually regarded as of hybrid origin. Similar plants occurring in this country are described in the following latin diagnosis (based upon my notes), which I owe to the kindness of Mr C. E. Salmon :—

C. Jacea L., sub-sp. *C. angustifolia* Gugl. × *C. nemoralis* Jord. = × *C. Monktonii* mihi.

Plant arachnoid or slightly pubescent. Stem erect or decumbent. Lower cauline leaves oblanceolate, sometimes pinnatifid, lobes few, oblong, obtuse, or acute; margin entire or irregularly serrate; upper leaves linear-lanceolate, entire. Capituli small to medium, often arachnoid at base; phyllary-appendages light-brown to dark-brown, more or less imbricate, the lowest often whitish, teeth especially so.

The appendages are either elongate-triangular or roundish, regularly or irregularly pectinate as far as the centre of anthode, succeeding appendages lacerate, the uppermost more or less entire. Florets rose-purple, the outer radiant or not.

Planta tela arachnoida vestita vel leviter pubescens. Caulis erectus vel decumbens. Folia caulina inferiora oblanceolata, interdum pinnatifida, lobis paucis oblongis obtusis vel acutis, margine integra vel inaequali ter serrata; folia superiora integra linearilanceolata. Capitula parva vel mediocria, saepe basi arachnoidea; squamarum appendices dilute vel saturate brunneae, plus minusve imbricatae, imfimae praesertim ad dentes albescentes. Appendices inferiores elongato-triangulares vel rotundulatae, aequaliter vel inaequaliter pectinatae; appendices superiores laceratae, supremae plus minus integrae. Corollae roseo-purpurae, extimae ligulatae vel omnes tubulosae.

The plants referred to this hybrid are so variable in character that measurements of the organs have been omitted as valueless. Occurs in the company of the reputed parents at Epsom Downs, Surrey, v.-c. 17 (Ref. Nos. 2268 and 2270); at Hassocks, W. Sussex, v.-c. 13, collected by the late T. Hilton (as "*C. Jacea*," one specimen in *Herb. South London Botanical Institute*), and is, in part (specimens in *Herb. C. E. Salmon*), the *C. nigra* L., var. *decipiens* (Thuill.) of Mr H. W. Monkton's *Flora of the Bagshot District*. I have seen other examples from Mr H. W. Monkton's herbarium collected at Wellington College, Berks, v.-c. 22, where I also have collected it. It resembles *C. Gerstlaueri* Dörfler (*C. Jacea* × *nigra*), but exhibits obvious differences due to its parentage.

The preceding notes have been compiled with a view of drawing renewed attention to a small group of very interesting but highly critical plants. In the opinion of the writer, much work in the field and herbarium yet remains to be accomplished before the materials can be acquired necessary for an adequate knowledge and arrangement of the various allied plants that may be placed under the aggregate name of *Centaurea Jacea* Linn. It is a pleasurable duty to acknowledge the great encouragement and assistance received from Dr G. Claridge Druce and Mr C. E. Salmon, F.L.S., both of whom have placed their herbaria at my disposal. To the late Rev. E. S. Marshall, Mr W. C. Barton, F.L.S., and various other correspondents grateful acknowledgments are also due, and it is hardly necessary to say that little progress could have been made without recourse to the libraries and collections at Kew and South Kensington, from whose custodians, notably Messrs A. J. Wilmott and E. G. Baker, much valuable assistance has been received. The collections and library of the South London Botanical Institute have also proved very useful.

A summary of the forms of *C. Jacea* claimed as British is appended:—*C. Jacea*, sub-sp. *C. eu-Jacea* Gugl.; *C. Jacea*, sub-sp. *C. jungens* Gugl., var. *fimbriatisquama* Gugl.; *C. Jacea*, sub-sp. *C. angustifolia* Gugl., vars. *integra* Gugl. and *semifimbriata* Gugl.; *C. subjacea* Hayek; *C. nemophila* Jord.; *C. viretorum* Jord.; and × *C. Moncktonii* mihi. It is intended to place a representative set of specimens in the National Herbarium at South Kensington.

VIOLET NOTES IN 1920.

E. S. Gregory.

The Violet Season of 1920 has been the most prolific for many years. My residence at Weston-super-Mare, during winter and early spring, gave me opportunities of studying in the field the many species, varieties and forms that abound in the neighbourhood.

The var. *praecox* of *V. odorata* was in flower long before Christmas 1919, and I gathered the last flower of the season during the third week in February, just as *V. odorata*, var. *violacea* was in early bloom. I have examined the plants carefully at intervals all through the season, and have not detected a single capsule either from open or cleistogamous flowers. My belief is that it, alone of violets, increases simply by vegetative reproduction. This it accomplishes most effectually.

A new colour-form of *V. odorata* attracted my attention in a hedge-row near Banwell, Somerset, late in February. It corresponds with the var. *variegata* of *V. hirta*, excepting that the combined colours give the general impression of a sky-blue flower. The name *caerulea* suggested itself to me. On examination under the lens the corolla proved to be white, with streaks and blotches of palish purple.

Another form of *V. odorata*, from the same locality, differs from type by having the long narrow leaves of *V. hirta*.

Miss Peck sent me two interesting forms of *V. hirta* × *odorata* from an orchard in South Devon.

One of the forms had :—*Leaves*—(spring) small, glabrescent, with hairy petioles; (summer) on elongated hairy petioles (8-10 cm.); lamina (3-4 by 3-4 cm.), dark green. *Flowers*—paler colour than those of ordinary *V. hirta* (2½ by 2 cm.); *upper petals* greatly recurved on the peduncle, narrow; *lateral* slightly bearded; *sepals* orbicular; *spur* short, scarcely exceeding sepaline appendages; *anther-spurs* very short. Miss Peck sent this form as a "new *hirta*." The direction of hairs points, however, to a × or variation of *V. hirta* × *odorata*.

The second form, from the same habitat, had :—*Leaves*—broad (5½ by 5 cm.); *petioles* with the characteristic hairs of *V. hirta* ×

odorata hybrids (midway between patent and depressed). *Flowers*—pure white, large (3 by 2½ cm.); *sepals* oblong; *petals* narrow, devoid of scent; *spur* pale-coloured, mottled (not nearly so deep-coloured as in *V. dumetorum*), revolute, with a little 2 mm. tail on the apex, evidently a ×, mutation, or variation of *V. hirta* × *odorata*.

Another interesting little plant, which has been sent to me from various localities during the last three years, I have named tentatively *V. rupestris*, var. *glabrescens*. It is a minute plant with tiny, dark-coloured leaves, and it bears small lilac flowers, which have long narrow petals. The profile of the flower is extraordinarily long and narrow, but perhaps its most striking character is displayed by the stipules, quite unlike those of the *sylvatica* group, to which at first sight the plant appears to belong. The stipules of this plant suggest affinity with *V. rupestris*: they are broad enough and have processes rather than teeth, a character which also appertains to all *canina* forms. The smallness of the plant, the smallness of its dark foliage, the shape of its individual leaves, accord with the same characters in our north country var. *arenaria* of *V. rupestris*, but the shape of the flower, especially of its long narrow profile, does *not* accord with var. *arenaria*.

Further investigation is required before we can give the plant a permanent name. Meanwhile, I commend it to the study of botanists, more particularly to violet students. It keeps going in my violet patch in the Cambridge Botanical Gardens retaining its characters intact. Dried examples may be seen in my collection in the Natural History Museum, at South Kensington.

MISCELLANEOUS NOTES.

It is with the good wishes of the members that Mr Charles Bailey, who acted as Secretary from 1879 to 1902, is chosen to fill the vacancy as the only British Honorary Member, caused by the death of Mr J. G. Baker, a former Secretary. The Rev. F. Alston is still at his old address, Scrivelsby Rectory, Lincolnshire. Hearty congratulations are offered to Prof. I. Bayley Balfour on being created K.C.B.E., to Professor F. W. Keeble, F.R.S., on his filling the chair

as Sherardian Professor at Oxford, and to Dr A. H. Church on his being made a Fellow of the Royal Society. Lieut.-Colonel A. H. Wolley-Dod is spending the year in San Francisco.

GILBERT WHITE. At the bicentennial celebration of the birth of this great naturalist, an address was given by Dr Gilbert White, a great-grandnephew, in which he stated that with the exception of the Bible and the Pilgrim's Progress there had been a greater number of editions of the Natural History of Selborne than any other book.

A SHAKESPEARIAN GARDEN. The Stratford-on-Avon Trustees are endeavouring to fill the Great Garden attached to New Place with old-fashioned flowers so as to make it an Elizabethan garden. They would be glad of plants mentioned by Shakespeare. Plants may be sent to Mr F. C. Wellstood, New Place, Stratford-on-Avon.

PROFESSOR TRAIL bequeathed to the Aberdeen University Library about 2000 books and pamphlets. A list of these, it is to be hoped, will be published in one of the ensuing bulletins of that Library. Professor Trail had a most carefully compiled catalogue of the plant records for the Scottish counties.

COLOURING MATTER OF PLANTS. An important article appears in the ably edited periodical, Nature, for April 1, 1920. It treats of sap-pigments, which are divided into two main classes:—(i) derivatives of flavone or flavinol (anthoxanthines); and (ii) anthocyanins. The former are very widely distributed, occurring in such diverse material as is afforded by heather, clover flowers, onion skins, violas, parsley, &c. The latter, the purples, reds, and blues of plant-life, are noticeable when existing even in very small quantity—one per cent. Indeed the dried flowers of *Centaurea Cyanus* yield only about $\frac{3}{4}$ per cent of the blue pigment, cyanin, whereas the yellow pansy affords 25 per cent. of a yellow sap-pigment. Yet this large quantity is completely masked by the presence of a one per cent. of a plastid carotin. Chemical investigation shows that the blue cornflower owes its colour to the same pigment as that of the red rose. The question is asked—does it raise hopes of success in the endeavour to produce a blue rose? In the rose the colour is red because the sap is acid, in the cornflower the cell-sap can take up enough alkali

to form a blue alkali salt. In one of our Floras the flower was actually painted with the coloured sap and is fairly permanent. Reference is also made to dye-pigments. In a couple of pages a mass of highly valuable material has been excellently condensed.

HERBARIUM OF J. MONTGOMERIE BELL. The recent death of our old member, Mr A. M. Bell, whose obituary notice will be seen on p. 100 recalls the fact that he presented the writer with an Herbarium of about a thousand sheets, which were collected by his brother, John Montogomerie Bell, Writer to the Signet, when he belonged to Prof. J. H. Balfour's Class, 1857-8. Mr J. Bell was born in Edinburgh in 1837 and died there in 1910. The Herbarium contained a few new county-records, which will be found in the *Report*.

HERBARIUM OF JOHN PIQUET. An obituary notice of this octogenarian Jersey Botanist is in the *Report* for 1912, p. 205, and there I alluded to his chief Herbarium being in the possession of his son. In the spring of 1920 I called on Mr Fred Piquet, who was carrying on the pharmacy which once belonged to his father, and to my sorrow found he had just received his death-warrant, as his physician had declared he had malignant disease of the stomach. From this he died a few months after. He wished me to have his father's plants, so I purchased them and found that they included several not mentioned in Mr Lester-Garland's *Flora of Jersey*, as well as a very large number of earlier date than those in the possession of the Société Jersiaise, from which Mr Garland drew much of his material. It also includes a good Moss collection, as well as many of Larbalestier's Lichens.

CORRECTIONS.

Report 1917.

p. 38. Line 23. For "LAPPULA STIPITATA" read "ECHINOSPERMUM STIPITATUM (Greene as ALLOCARYA)."

p. 97. Line 17. For "THALSPI" read "THLASPI."

p. 98. Line 22. For "IMBERIS" read "IMBERBIS."

p. 142. Line 5. For "RADCLIFFE" read "RANDOLPH."

p. 253. Line 2. For "Broadfield" read "Bradfield."

Report 1918.

p. 480. Line 28. Insert "*Cystopteris fragilis* Beauv. Finchampstead, *Cope*, 1911; Bray, *Riddelsdell*, 1920."

Report 1919.

p. 554. Line 18. Delete the Polperro locality; the plant proves to be robust *angustissimus*.

p. 573. Line 15. Add "specimen gathered there by A. Grugeon in 1873."

p. 630. Line 20. For "1919" read "1879."

p. 636. Line 11. For "E. Lothian" read "Mid Lothian."

Line 16. For "London" read "Landon."

Line 20. For "Black Loch, Fife," read "Cleish, Kinross."

Line 23. For "with the foregoing" read "Black Loch, Dunfermline."

p. 641. Line 26. For "Bexhill" read "Castle Hill, Hastings."

p. 646. Line 2. For "Cotton" read "Potton."

p. 648. Line 8. For "Haddington" read "Headington."

p. 653. Line 14. For "Lanark" read "Edinburgh."

p. 663. Line 12 et seq. For "Bexhill, Kent," read "Bexhill, Sussex."

p. 666. Line 26. For "Near Bexhill" read "Between Coodens and Norman's Bay, Sussex."

p. 676. Line 13. For "Aberdeen" read "Aberdour, Fife."

p. 681. Line 18. For "T. GREEN" read "H. L. GREEN."

p. 689. Line 17. For "Burntisland" read "Craig Buckley."

p. 689. Line 18. For "Craig Buckley" read "Burntisland."

p. 719. Line 21. For "*paniculatum*" read "*auricomiforme*."

p. 797. Line 24. The correct name is "*Botrychium multifidum* (Gmel.) Rupr. Beitr. xi., 40, 1859."

SUPPLEMENT TO REPORT OF BOTANICAL SOCIETY AND EXCHANGE CLUB FOR 1920.

BURSA PASTORIS WEBER

(With 9 Photographs in the text).

STUDIES BY

ERNST ALMQUIST, M.D. (STOCKHOLM),

WITH AN INTRODUCTION BY

G. CLARIDGE DRUCE, M.A., LL.D.

INTRODUCTION.

Among the many weeds which followed or were brought by man into Britain we may probably include the Shepherd's Purse, but we possess no information as to the date of its arrival, since as yet no seeds of it have been discovered either in deposits of the neolithic or even in the remains of the Roman period. Our earliest knowledge of it in Britain is to be found in Turner's *Names of Herbs* of 1548, where *Bursa pastoris* is said " to grow by highways almost in every place," and he wrongly says, " whereof is no mention in any olde ancient wryter." Under this name Gerard (*Herbal* 214, 1597), repeats practically the same description of its place of growth, and inserts a wood-block, which already has done duty in Dodoens' *Herbal*.

Its botanical history, however, goes much further back. It is well figured as a cut-leaved plant, the sinuses not reaching to the midrib, the silicles deeply notched with rounded lobes, their sides curved inwards, in the Oxford copy of Dioscorides from the *Codex*

Anicia Juliana,* which dates from the sixth century. A photograph from a collotype copy of the original brush drawing is appended. It is there called *Thlaspi*. Theodericus Dorstenius (*Botanicon* 1540) uses the name *Bursa Pastoris*, Fuchs (*De Historia Stirpium* 611, 1542) calls it *Pastoria bursa*: folia initio exeunt oblongo marginibus profundis incisa, Tragus (*De Stirpium* ed. Kyber 1552) calls it *Bursa pastoris*, as did Matthioli (*Comp.* 1571) and Lobel (*Obs.* 110, 1576), while Dodoens (*Pemptades* 1588) employs *Pastoria Bursa* and his wood block for it was afterwards used by Gerard. In the seventeenth century Caspar Bauhin (*Pinax* 1623) names it *Bursa pastoria*. Tournefort (*Institutes* 216, 1700) keeps the genera *Nasturtium* (*Lepidium*), *Thlaspi*, and *Bursa pastoris* distinct, putting five species under the latter, of which two only are forms of *Bursa pastoris*. Haller (*Stirp. Helv.* i., 217, 1768) unites many Cruciferous genera, including *Bursa*, under *Nasturtium*. Linnaeus unfortunately broke away from old traditions and placed *Bursa* in his genus *Thlaspi*, which included also species of *Aethionema* and *Lepidium*, retaining *Bursa pastoris* as the specific name for the Shepherd's Purse. Hill (*British Herbal* 260, 1756), with his usual acumen, restores the Shepherd's Purse to a distinct genus, and chooses the name in general use, *Bursa pastoris*, which, as he says, "Linnaeus does not keep in a distinct genus, but makes it a species of *Thlaspi*. The seed vessels of the *Thlaspi* are indeed parted by a nick at the end, but they have not the peculiar form of those in this plant which from their resemblance to a pouch or wallet have obtained the herb a name peculiar to itself, and preserved it through most writers," and, as he says, "Bauhin is wrong

*So named from Anicia Juliana, daughter of the Emperor Flavius Anicius Olyber, circa 512 A.D. The drawings were obtained by Angier Guisland de Busbecq, ambassador at Constantinople about 1560, by whom they were taken to Vienna, where he became tutor to the sons of the second Maximilian. There they were preserved until in 1763-1773 Marie Therese had copper-plate copies made by the librarian, Gerhard Sweiten. Four copies were struck off, and the plates were then destroyed. There are two copies at Vienna, one at Oxford with the plant names written in by Jacquin, and a third, an imperfect copy which once belonged to Linnaeus, at the Linnean Library, London. This has only 142 plates; the Oxford copy has 409. The numbers 1—383 are from the somewhat later Codex Neapolitanus of the 7th century. In 1906 a facsimile copy of the drawings in collotype was made bearing the following title, "Dioscorides. Codex Aniciae Julianae picturis illustratus nunc Vindobonensis Med. Gr. photypice editus. Moderante Josepho de Karabaceck . . . . Lugd. Bat. 1906." It is from this that our photograph is taken.

in making the whitlow grass a species of this genus." Smith (*English Flora* iii., 174, 1824), with Linnaeus and Robert Brown, treats it as a species of *Thlaspi*, a name he says given it by

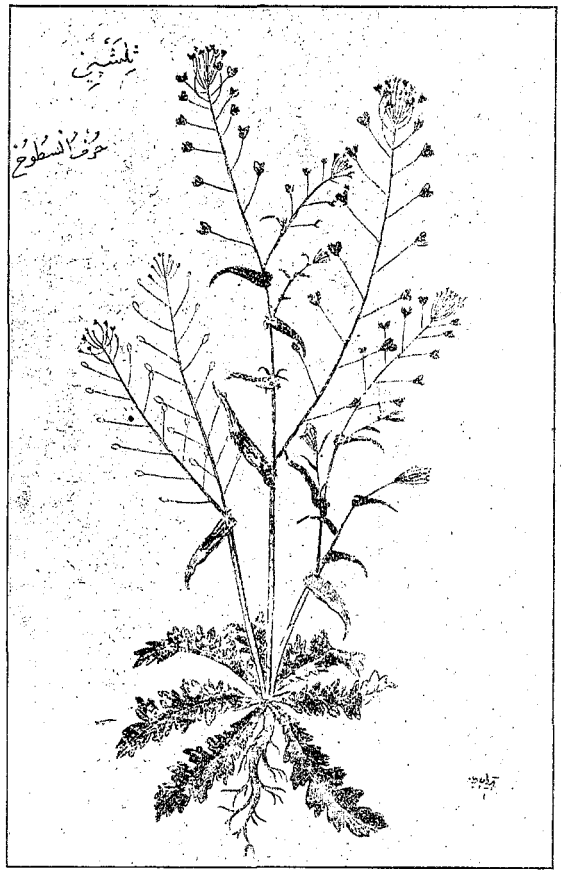


Plate 1.

"Dioscorides, Pliny, and every succeeding writer, though Caesalpinus, book 8, chapters 74, 76 (not book 2) mentions *Capsella* as one of the synonyms in Dioscorides, of which I find no trace. The word indeed is bad Latin synonymous with capsula." Hill's generic name, being of two words, is considered invalid. Weber, however,

in Wigger's *Prim. Fl. Hols.* 47, 1780, following Boehmer, established the genus as *Bursa* 503 *Bursa pastoris* = *Thlaspi* L., with the species *pastoris*. He says the Bursas agree with the Thlaspis in having the silicule many seeded, emarginate (and) divided by the style and septum. But the Bursas have the valves boat-shaped (and) naked, while the Thlaspis have the valves winged. (This last is a) good character which ought not to have been disturbed. *Bursa* is very closely allied to *Lepidium*, and might remain with it.

We therefore see that from early times the plant was known as *Bursa pastoris*, that, admitting its claim to generic distinction, Hill was the first post-Linnean authority to put it in a distinct genus, that his compound name being invalid it was definitely established by Weber in 1780, who properly diagnosed it and put a species under the generic name. Therefore when Medicus (*Pflanzeng.* i., 85, 1792) described the genus under the name *Capsella* it was a still-born name, and also had the disadvantage of being, as Smith says, synonymous with capsula. It must have been ignorance or perversity which induced the Congress at Vienna to insert *Capsella* in the list of nomina conservanda, especially as at that time very few species had been described. The name to be used surely is *Bursa pastoris* Weber.

The Shepherd's Purse is, as Hooker says, to be found wherever cultivation extends (*Gard. Chron.* 677, 1875). It is a most prolific seeder and is extremely variable. Caspar Bauhin has three varieties which Dillenius (Ray *Syn.* 306, 1724) says are also found in Britain. These are Bursa pastoris major folio non sinuato C.B.; Bursa pastoris media C.B.; Bursa pastoris eleganti folio instar Coronopi repentis Cam. Hist. 32. Hudson (*Flora Anglica* 247, 1762) adds var. b. B. pastoris minor foliis integris Cels. Upsala 13. Stokes (With. *Nat. Arr.* iii., 707, 1787) notes that it varies in a barren chalky soil, with all the leaves and the stem simple as represented in the last figure of Petiver (*Herb. Brit.* t. 49).

Gray (*Nat. Arr.* ii., 692, 1821) under the name, *Thlaspi cuneatum*, says "varies much in size according to the soil." De Candolle (*Systema* ii., 383, 21) gives the three varieties already mentioned by Dillenius, *i.e.*, *minor*, *integrifolia* and *coronopifolia*. The latter, the plant of Tournefort's *Inst.* 216, is described at length and is represented in Vaillant's Herbarium. Koch (*Syn.*

Fl. Germ. 73, 1837) cites Medikus as the authority for the genus, and gives five varieties:—*integrifolia*, fol. integra; *sinuata*, fol. sinuato-dentata; *pinnatifida*, fol. pinnatifida; *coronopifolia* DC., fol. pinnatifida, laciniis antice incisis; and *apetala*, flores apetali. Babington (*Man.* 31, 1847) attributes the authority for *Capsella* to Ventenat, and says "it varies greatly in the form and divisions of the leaves"; while Hooker and Arnott (*Brit. Fl.* 37, 1855) cite the name as *Capsella* DC.

In 1869 there appeared "A Note on the Forms of the Genus *Capsella*" by Charles P. Hobkirk in *Bulletin Soc. Bot. Belgique* viii., 457, 1869 which, not being of easy access, is here translated with slight abridgment.

For several years my attention has been directed to the differences, which are sometimes very characteristic, presented by the various forms of the *Thlaspi Bursa-pastoris* L., the species which has served to establish the genus *Capsella*. These differences do not appear to be due to such circumstances as the moisture or dryness of the soil, or exposure, because I have noticed these variations in plants growing mixed up together under the same conditions. Having studied very closely the various forms of *Capsella Bursa-pastoris*, I think I am doing a useful thing giving a description of them. The majority of authors have scarcely done more than note the variations in the leaves of the rosette, and, with the single exception of Professor Crépin, not one of them has paid any attention to the formation of the silicle.

With regard to the radical leaves, their shape varies so much even on the same plant that one cannot make use of them; moreover, as these leaves often dry up before the complete development of the silicles, it becomes impossible to examine them on fruit-bearing specimens. But it is not so with the silicle, which always presents fairly well-defined characters that vary only within narrow limits.

Before entering upon the systematic portion of this paper I shall take a glance at what the principal authors have said concerning the varieties, variations or species of the genus *Capsella*.

Many writers notify certain varieties or variations, but not one of them has attempted to define them clearly or to establish their rank.

Jordan (*Diagnoses* 339-342, 1864) is of opinion that *Capsella Bursa-pastoris* is an aggregate type of plant, in which he has been able to recognise five species, *viz.*, *C. agrestis*, *C. virgata*, *C. ruderalis*, *C. sabulosa*, and *C. praecox*.

C. agrestis of Jordan is distinguished by the silicles (pouches) being green, rather narrow, and regularly cuneiform, ending in a moderately open and shallow notch which is not exceeded by the style. The calyx is usually green, slightly edged with white, and the leaves are bright green or sometimes rather greyish.

C. virgata is distinguished by its bright green leaves, its slender habit, its

flowers of moderate size, its silicles with a very short and very obtuse notch, which is always exceeded by the style. It is rather late in flowering.

C. ruderalis has deep green leaves, rather small flowers with a green or somewhat brownish calyx, short and broad silicles, in which the notch is scarcely equalled by the style.

C. sabulosa is distinguished by being, under similar conditions, of much smaller size than its congeners, and having smaller leaves. The silicles have a deep notch with oval lobes, rather wide open at the top, but yet much less so than in *C. rubella* Reut. in which the silicle has the lobes of the notch much shorter and not so long as broad.

C. praecox is remarkable by its rather dense fruiting spikes, which lengthen out much less than in the majority of the allied species. The silicles, as well as the stem, often assume a darker hue, the former are triangular with a moderately deep notch, style very short, leaves often but slightly indented, sometimes almost entire, with acute teeth. Stem very leafy. Very early in flowering.

To these remarks Jordan adds ;—"These five species which I have been able to observe and cultivate for several years are not the only ones which are to be found at Lyons, without speaking of *C. rubella* Reut. which is common there. . . . . *C. gracilis*, recorded by M. Grenier, is not a species, in my opinion, but a peculiar state of different species, which is met with more frequently in certain years than in others, and in which the silicles are abortive."

Crépin (*Notes fasc.* i., ii.,) in his own words say :—

"Up to the present time the varieties of this Crucifer have only been founded on the differences in the leaves and on the absence of petals. I am now going to propose three varieties established on the form of the fruit.

Var. *α genuina*. Silicle *narrowly triangular*, its width at the apex *exceeding two-thirds of the height of the dissepiment* ; notch of medium depth, style reaching one-third the height of the lobes.

Var. *β stenocarpa*. Silicle *narrow*, swollen, its greatest width *equalling two-thirds of the height of the dissepiment* ; silicle broader than in the other varieties ; notch shallow, style *usually equalling the summit of the lobes* ; seeds more numerous than in the vars. *α* and *γ*.

Var. *γ bifida*. Silicle *exactly triangular* ; notch very deep with the style concealed at the base.

These varieties are met with casually at Rochefort in gardens and cultivated places."

I have made a close study of a large number of forms growing in England, and I have examined those contained in the collections at Kew. None of these forms can be exactly referred to the diagnoses of M. Jordan. This fact, combined with my own observations in nature, leads me to believe that the species defined by M. Jordan are not what are understood under the name of good species, but are merely remarkable forms, sub-species derived from one common type.

It is therefore under the title of sub-species that I am about to describe the various forms of *C. Bursa-pastoris*. As will be seen, I have mainly founded my distinctions on the form of the silicle, and I have almost disregarded the radical leaves.

CAPSELLA BURSA-PASTORIS Mönch.

Sub-species.

1. C. BURSA PASTORIS Mönch (VERA). *C. Bursa-pastoris*, var. *a genuina* Crép.

Sepals ovate-lanceolate, obtuse, green beneath, whitish above, edges widely membranous. Petals white, once again as long as the sepals. Silicle forming an isosceles triangle with straight sides, green on both sides ; notch of medium size, style reaching the lower third of the lobes. Pedicels spreading at right angles, once or twice as long as the silicles. Hab. : Common everywhere.

2. C. RUBELLA Reut. Soc. Hall. 18, 1854. Billot *Annot.* 124.

Sepals ovate-lanceolate, subobtuse, reddish underneath, edges narrowly membranous. Petals white, tinged with pink, one fourth longer than the sepals. Silicle forming an isosceles triangle with incurved sides ; notch very deep, style much shorter than the lobes. Pedicels ascending, once and a half as long as the silicles. . . . . Spec. in Herb. Kew, S. America, Peru (Matthews) ; New Granada, etc. ; Port Adelaide (F. Müller) ; Geneva ; Tyrol.

3. C. GRACILIS Gren.

Sepals ovate-oblong, reddish at the apex and beneath, somewhat reddish above, edges narrowly membranous Petals reddish, nearly twice as long as the sepals. Silicle very small, forming an equilateral triangle, sides incurved from the base to the middle, then straight to the apex ; notch shallow, style exceeding the lobes which are somewhat reddish. Pedicels curved upwards, three times as long as the silicles. Hab. : Centre and west of France with the two preceding forms ; Rhoton (Griffiths) ; Constantinople etc.

Obs. In the Kew Herbarium there is a specimen with this label :—" *Thlaspi Bursa-pastoris*, var. *microcarpa* Godr. Florul. Inven. p. 8. De Port Juvenal près Montpellier, 8 Juin 1859, J. Gay." This specimen belongs to *C. gracilis*, and may be considered as authentic since it was gathered in the locality named by M. Grenier for his type. In the *Billotia*, 114, 1869, M. V. Bavaux records that in 1863 he sowed *C. rubella* in his garden and that this form established itself and preserved all its characters ; only at the end of three years (1866) he found, among plants of *C. rubella* and *C. Bursa-pastoris* growing casually, three specimens of *C. gracilis*. "The appearance of this plant (*C. gracilis*)," he says, "in a locality where it had not shown itself since I possess it (1857), and only when *C. Bursa-pastoris* and *C. rubella* are placed in contact, confirms the opinion expressed by M. Grenier that it is simply a hybrid between these two species." Such also is the gist of the observations made by M. Paillot in the neighbourhood of Besançon. This would explain the frequent atrophy of the seeds of *C. gracilis*.

4. C. STENOCARPA. *C. Bursa-pastoris*, var. *β stenocarpa* Crép. Notes, *l.c.* *C. agrestis* Jord. ?

Sepals ovate-lanceolate, edges narrowly membranous. Petals once and a half as long as the sepals. Silicle forming an isosceles triangle, its greatest width not equalling two-thirds of the height of the dissepiment ; notch shallow, style usually equalling the summit of the lobes ; sides nearly straight. Hab. : Rather common in England and probably also on the Continent.

Obs. This form, of which I have seen only English specimens, is more robust than the others, and has longer and broader radical leaves.

5. C. BIFIDA. *C. Bursa-pastoris*, var. γ *bifida* Crép. Notes, *l.c.* *C. ruderalis* Jord.?

Sepals almost as long as the petals. Silicle slightly longer than wide; notch very deep, lobes usually rounded, style concealed at the base of the notch. Hab.: Rather common in the neighbourhood of Huddersfield and between Kew and Richmond; probably generally distributed on the Continent.

Obs. i. The radical leaves and stem leaves are ovate-lanceolate, entire, very rarely slightly dentate.

Obs. ii. I designate provisionally under the name of var. *macrocarpa*, a specimen preserved in the Kew Herbarium gathered in the valley of Kinchungunga (Thibet) by Mr J. E. Winterbotham in 1847 at an altitude of 7500 feet. The silicles are three times as large as in the type, notch very deep, style almost wanting. Perhaps this unique specimen is merely an accidental form.

6. C. HISPIDA.

Sepals almost equalling the petals. Silicles twice as long as broad, sides concave; notch rather deep, style short, not reaching the summit of the lobes. Pedicels spreading, equalling the silicles. Hab.: Orient.

Obs. i. Plant very small, 2-3 inches high, stem bristling with whitish hairs, very rigid, radical leaves pinnatifid or sublyrate, with stiff white hairs intermixed with stellate ones.

Obs. ii. Two specimens of this form are preserved in the Kew Herbarium. One of them bears the following label:—"Col. Chesney Exped. to the Euphrates. No. 43. Port William, March 1836. On Mesopotamia side." The other specimen is labelled:—"Bagdad, April 1862. Dr Schläfi.

Mott in the *Flora Leicester* 16-18, 1886 (see *Rep. B.E.C.* 317, 1915) gives figures of the fruits, and describes eight varieties. These are *gracilis*, *densifolia*, *stenocarpa-lyrata*, *stenocarpa-coronopifolia*, *brachycarpa*, *rubellaeformis*, *macrophylla*, and *bifida*. He says "they cannot be regarded as more than mere varieties . . . they are all linked together by innumerable intermediates and probably no one of them would come true from seed sown under varying conditions" (*sic*). He goes on to say that "Leicestershire specimens do not agree precisely with the descriptions in Hobkirk's Memoir any more than he found specimens agreeing precisely with Jordan's diagnoses, which he thinks indicates that the forms are of a temporary and uncertain character, much influenced by local conditions."

Rouy & Foucaud (*Fl. Fr.* ii. 94, 1893) give seven varieties based on fruit characters. The following is the clavis:—

1. Silic. sensiblement plus longues que larges au sommet, plus ou moins sensiblement atténuées à la base..... 2
   Silic. aussi larges ou presque aussi larges au sommet que longues 5

2. Silic. profondément échancrées, à lobes dépassant le style..... 3
   Silic. à échancrure peu profonde..... 4

3. Silic. renflées, longuement cunéiformes, étroites, très atténuées à la base ; lobes de l'échancrure oblongs.....var. STENOCARPA Crép.
   Silic. obcordées-cunéiformes, moins longuement atténuées à la base, grandes (7-8 mm. de long sur 5-6 de large) ; lobes de l'échancrure oblongs.....var. MACROCARPA Albert.
   Silic. plus petites, obcordées-cunéiformes, peu atténuées à la base ; lobes de l'échancrure ovales.....var. SABULOSA (Jord.) R. & F.

4. Pétales presque deux fois plus longs que le calice ; style exsert ; silic. relativement larges, obcordées-cunéiformes.....var. RUDERALIS (Jord.) R. & F.
   Pétales dépassant moins longuement le calice ; style inclus ; silic. assez étroites, régulièrement cunéiformes.....var. AGRESTIS (Jord.) R. & F.

5. Silic. un peu plus longues que larges, à échancrure profonde et à lobes ovales dépassant beaucoup le style très court.....var. PRAECOX (Jord.) R. & F.
   Silic. aussi larges que longues, à échancrure très courte et très obtuse ; lobes ovales dépassés par le style ; port effilé.....var. VIRGATA (Jord.) R. & F.

In the text the authors also refer to sub-var *subacaulis*, *canescens*, *coronopifolia* and *apetala*.

In 1897 a plant was found in the market-place at Landau in Germany differing from *Bursa pastoris* in having the silicles elliptical in longitudinal section and circular in cross section instead of flat and obcordate or triangular. It was submitted to Count Solms-Laubach, who was at first inclined to refer it to *Camelina*, and this too was Ascherson's opinion. Cultures, however, soon indicated its relationship to *Bursa pastoris*, and in 1898 several reversions to it were observed. Later Solms-Laubach (*Bot. Zeit.* 58, 167-190, 1900) published the plant as *Capsella Heegeri*. This plant, appearing as it did in so well investigated an area, led De Vries (*Die Mutationstheorie* 477, 1901) to quote it as an instance of mutation. Its original station was soon destroyed owing to the market-place being covered with gravel, but in 1905 Laubert found it along the Dahlem turnpike. Whether this was a second instance of mutation or whether, as more likely, it originated from an unprotected bed where *Bursa Heegeri* was grown at Dahlem several hundreds of metres away is not certain. When *Heegeri* is crossed with *Bursa pastoris* all the offspring resemble the latter, but

in the next generation a number of the individuals are pure *Heegeri*, and there are no intermediates.

Lotsy (*Vorles über Deszendenztheorien* pp. 179-181) in 1906 first publicly recognised that *Bursa pastoris* is a compound species, and he showed that three families bred true.

G. Harrison Shull, in a publication of the Carnegie Institution, Washington, No. 112, 1909, gives an account of *Bursa pastoris*, *B. Heegeri*: Biotypes and Hybrids, the result of his studies. *Bursa pastoris*, he says, has probably been introduced from Europe to North America, but is now completely naturalised and almost universally distributed throughout the North Temperate Zone. (At one time it was cultivated near Philadelphia as a salad.) This species was chosen by Dr Shull for pedigree culture on account of its well-known and strikingly polymorphic character, its hardiness, ease of culture, and the impossibility of its having been subjected to any of the artificial conditions of isolation, crossing, etc., which are usually thought to render plants of economic value unfit to give information regarding the behaviour of plants in nature. The cultures were begun in April 1905 and continued till 1907. In one group plants of the fourth generation and a few of the fifth have been under observation. Dr Shull finds that while certain variations which were selected disappear in the first or second generation, others remain constant, and show easily recognised differentiating marks except in one form, and no transgression of the characteristic features of any other forms studied. These forms are therefore distinct elementary species or biotypes, each characterised by certain constant features and each with its own normal range of fluctuating variability. Dr Shull is content with naming four elementary species whose distinctiveness and permanence he has demonstrated beyond doubt, their hybrid combinations having also been carefully studied. He had under observation twenty pedigreed families, including 26,900 individuals of *Bursa pastoris*, two small families of *B. Heegeri*, and five families representing reciprocal crosses between these two species, and involving over 2,500 individuals. All the cultures were under glass. The seeds, which germinate in five to eight days, were sown in sterilised soil, and grown in three or four inch pots. The flowers are adapted to both cross and self-fertilisation, the latter being most effective.

Less than one per cent. of the plants raised from wild seeds showed evidence of crossing between different biotypes. Of the twenty-one original cultures two proved to be of hybrid origin. Self-fertilisation takes place before the petals spread so it is necessary to remove the stamens about a day before the buds open. The four pure biotypes described are mainly distinguished from each other by the characteristic lobing of the leaves. He names these BURSA PASTORIS HETERIS, TENUIS, RHOMBOIDEA and SIMPLEX. HETERIS has the leaves divided to the midrib, the terminal lobe being usually separated from the nearest lateral lobes by deep, clear-cut incisions. The lateral lobes consist essentially of two features—an elongated attenuate portion, " the primary lobe," and a more or less rounded or angular portion, " the secondary lobe " in the distal axis of the primary lobe. The descriptions are taken from the climax leaves since the young leaves of all the species are unlobed. (See Lubbock on *Seedlings* 1, 166.) TENUIS. In this the sinuses are relatively shallow, rarely extending nearly to the midrib in the strongly developed individuals. The terminal lobe is not separated from the nearest lateral lobes by deep, clear-cut sinuses. All the lateral lobes tend to be more or less slender, elongated and acute. RHOMBOIDEA. Like *heteris* this has the leaves undivided to the midrib and possesses a similar, more or less rhombic, terminal lobe set off by deep sinuses from the nearest lateral lobes. The terminal portion of the lateral lobes has, in well-developed specimens, a nearly rhombic form. SIMPLEX. This resembles *tenuis* in that the sinuses never reach the midrib but differ in having mostly simple, rounded or triangular, acutish, unincised lobes, not attenuate.

Thus we see: (1) That from priority of publication and a consistent usage by the majority of botanists for nearly three centuries the correct generic name is BURSA. This was adopted in N. E. Brown's *Suppl. to English Botany* and by Groves in his edition of Babington's *Manual*, &c. (2) That *Capsella* is of later date and in its formation transgresses a botanical rule. (3) That from early times the variability of the Shepherd's Purse has been observed. Such early writers as Caspar Bauhin and Dillenius had three segregates and their views were followed by De Candolle and Crépin. Jordan describes four species, Hobkirk six sub-species, Mott nine varieties, Rouy & Foucaud seven varieties and four sub-

varieties, and Shull four species. Almquist later names sixty-five elementary species. Hobkirk and Rouy base their characters on the fruit and flower, Shull, on those derived from the leaf, and Mott, on fruit, flower and leaf-characters.

Another variety, *parvula* Beck., is also included in my *List*. Records, too, of *C. gracilis* Gren. and *C. rubella* Reut. have been made for Britain but it is highly probable that in the former case plants with abortive capsules or even hybrids have been mistaken for Grenier's plant which some botanists assert is itself a hybrid of *B. pastoris* and *rubella*, while no authentic evidence exists as to the occurrence of the latter in Britain.

It has been customary to ignore the variations of *Bursa* and statements, often very dogmatic, have been made on the plasticity of these plants which are said to be influenced by soil and exposure. There has been no scientific evidence brought forward to uphold these pronouncements. Soil and exposure, as with other plants, influence the size of the Shepherd's Purse, but we lack precise information as to their influencing the fruit form.* It is quite certain that we have several forms which breed true and recent careful experiments go to prove that these are micro or elementary species at least on the level with many Hieracia, Cochleariae or Euphrasiae.

We are indebted to Dr Ernst Almquist for his most painstaking experiments, the results of which were published in the *Act. Hort. Berg.* for 1907. Here he supplies 65 photographs of as many elementary species which he has cultivated. He grew 206 gatherings from Sweden and 164 from other parts of Europe, 4 being from England. His experiments were conducted in the open air, with the plants unguarded, for usually two to four generations, and he states that after this length of time the cultures had either died out or were no longer pure, owing he thinks to crossing with other elementary species. We are now indebted to him for the following descriptions of the species which he has since cultivated.

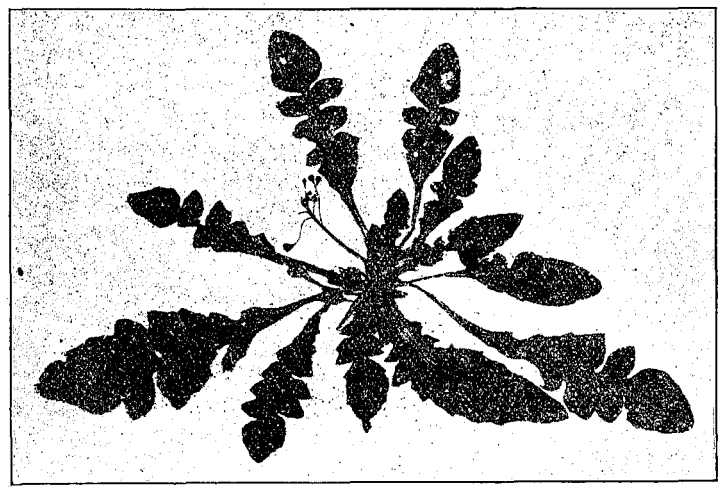
* For instance, Timbal Lagrave (*Gard. Chron.* 379, 1874) alleges that "in particular spots *Bursa* does not vary; elsewhere under climatal conditions the plant beeomes dwarfed." He says "if sufficient heat, light, and moisture are present the stem grows rapidly, flowers produce seed; but if these conditions are deficient and the weather cold, the plant remains apparently stationary. But during the apparent arrest the stems may assume different direction, the seed-pods another form, so that a different habit ensues; also difference of tint is induced by variation in temperature or by alterations of light, moisture, or heat."

THE ENGLISH CAPSELLA BURSA-PASTORIS (L.).

ERNST ALMQUIST, M.D. (Stockholm).

Studies of *Capsella B.-p.* are difficult and demand much time. First it is necessary to enquire whether in the great confusion of varieties constant species really are to be found. This question I have already cleared in 1907. Among 370 races from different countries I was able to find at least 70 species that remained constant in culture during two or three generations. At present I have published descriptions of 200 constant forms.

Then it is quite necessary to find out the series of forms for each species. For this purpose cultures are absolutely essential. Really



Reduced $\frac{1}{2}$.

Plate 2. C. ANGLICA; October; rosette, end lobes cuneatiform.

most of the species pass through a whole series of forms, partly depending on the soil, climate and other exterior relations, as for instance in the size of leaves and fruits, the height of the stem and the number of branches. But most of the differences within a species depend on the inbred qualities. Some species, especially those that

braces almost all Capsellas with straight lateral margins and moderate depth of the notch, whatever is the form of the leaves, &c.

Taking into account both leaves and capsules Mott found " among a considerable number of specimens collected in this county the following extreme forms sufficiently distinguishable, while the rest run in between them with a complexity of cross characters, which defies classification." Mott gives a cut showing 7 forms of capsules and describes 8 varieties (*Flora of Leicestershire* 1886).

Through Professor V. B. Wittrock I have received seeds of Capsellas from some British Botanical gardens. Dr G. C. Druce has several times sent me dried specimens, and Mr C. E. Britton has also sent excellent collections from Surrey. Both gentlemen kindly assisted me with the literature. In this way it has been possible for me to deal with the British Capsellas.

I give here the descriptions of 18 species of *Capsella B.-p.* Two of them are new and 16 were described before in *Acta Horti Bergiani* 1907 and 1921.

I hope that my little study may be well received and may increase the interest in this neglected plant and that it will soon be followed by investigations of all the British forms of *Capsella B.-p.*

METHOD.

For the description of a species I use only one race, but mention the others that are related as " similar forms." They may be identical, but I have not cultivated them long enough to be quite sure. The description of the capsules concerns the ripe fruit (*Rep. B.E.C.* 324, 1915; 490, 1918). I seldom mention if a species has medium size of stem or leaves, if the rosettes do not bud in autumn, if petals exist, and other qualities that as a general rule belong to almost all Capsellas. Lastly I wish to remind the reader that the cultivated and the wild Capsellas are quite the same. For the methods of cultivation I refer to my two former pamphlets.

TERMINOLOGY.

Caulis bifida = stem and branches almost of the same size.
Caulis foliosa = stem uncommonly rich in leaves.

Silicula scoliotica = lateral margins scoliotic, oblique.
Silicula cardiaca = cardiac form of the notch.

Folium cuneatum = the point or terminal lobe cuneatiform (Plate 2).
Folium kyphoticum = the lobes kyphotic, gibbous (Plate 3).
Folium lunulatum = the lobes lunulate (Plate 4).

ABBREVIATIONS.

Sa. = individuals germinating in spring or summer, fructiferous the same year.

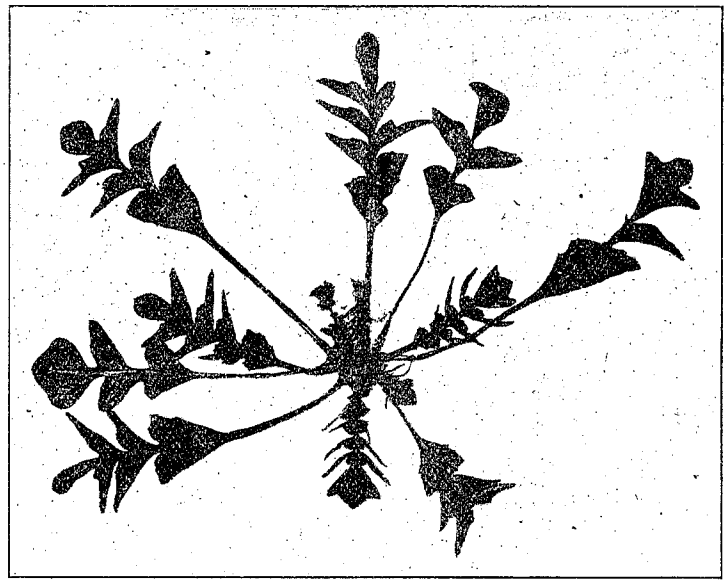


Plate 4. C. RHENANA ; October ; rosette with lunulate lobes, at last kyphotic, filiform.
[This will be described in next year's Report.]

Wa. = individuals germinating in autumn or summer, fructiferous the next year.
Wr. = rosette that remains through the winter.
8 x 6, &c. = capsules 8 mm. long, 6 mm. broad.

H.B. = Hortus Botanicus.
Spont. = spontaneous, not cultivated, wild.
I. and II. = my pamphlets 1907 and 1921, mentioned above.
Classes I.-XII. = the class where the species is inserted in my pamphlet 1921.

Regarding the photographs it may be observed that in the Swedish climate the capsules from June belong to wa., from July and August to sa. They are all, with the exception of Plate 2, which is reduced $\frac{1}{2}$, reproduced in the natural size.

DESCRIPTION OF THE SPECIES.

I. Capsules very convex; notch mostly deep (except *C. laevigata*)

CAPSELLA B.-P. (L.) MEDITERRANEA E. At. (II. p. 87, class XII.). (Plate 5.)

Radical leaves of medium size, sinuate, usually pinnatifid; lobes broad, often kyphotic, not seldom very narrow and acuminate; stem leaves mostly entire, indented; leaves sometimes very hairy; stem firm, branched, foliosa, bifida; capsules 8-9 x 6 or 7-8 x 5-6, the form changing; wr. numerous, in my cultures usually not budding, pinnatifid; lobes broad, soon kyphotic, then very narrow; terminal lobes hardly ever cuneatiform.

In the environs of Cannes, very common. Similar form from Rouen, H.B. and different places in Surrey, C. E. Britton. Jordan previously cultivated at Lyon a species, *C. praecox*, that possesses a great many of the distinguishing features of *C. mediterranea*, even the brown spots on the stem and elsewhere; capsules 7 x 6. It is probably the same form.

CAPSELLA B.-P. (L.) BATAVORUM E. At. (II. p. 88, class XII.). (Plate 5.)

Leaves entire, sinuate, often pinnatifid, with rather triangular lobes; stem low, bifida; stem leaves scarcely indented; capsules 5 by 4, sometimes 7 x 5-6; wr. small, often budding, entire or sinuate, finally pinnatifid with broad lobes, the terminal often cuneatiform.

It differs from *C. mediterranea* in all its parts being smaller, and

in the leaves being much more entire. I have never seen long, thin lobes. In culture both species are constant. I do not know all the forms of them, and am therefore unable to recognise all individuals that belong to this group.

Cultivated from Leyden, Liege and Paris. Similar plants from Zurich, and from London, Surrey, Oxford, and other places.

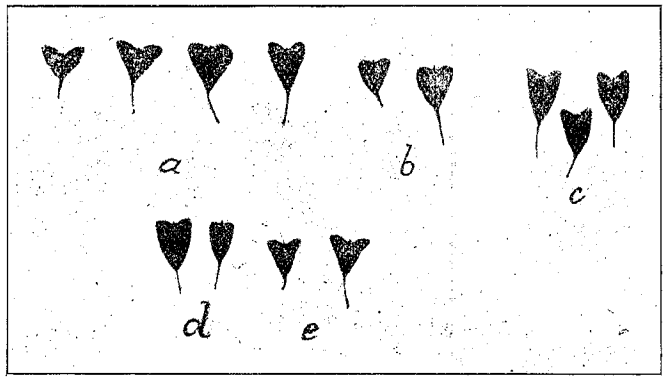


Plate 5. *a*—C. MEDITERRANEA ; January bis spont., June, July.
b—C. BATAVORUM ; July, June.
c—C. BRITTONII ; July, September spont., June spont.
d—C. LAEVIGATA ; August, July.
e—C. SEMIRUBELLA ; August spont. bis.

[St Brelade's, Jersey, 1919, Druce; Bournemouth, S. Hants, 1905, Miss Palmer; near Kingston, Coombe Park, Surrey, Britton (as *brachycarpa*); Coombe Lane, Surrey, Britton (agrees with *agrestis* Jord.); Acton, Middlesex (as *densifolia*); near South Park Road, 1905 [O. 815]; site of aerodrome, Oxford Parks [W. 20], (as *macrocarpa*); Woodstock, Oxon (as *agrestis*), and Steeple Aston (as *bifida*); Hardingstone, Northants, 1873, Druce; Humberstone and Scraptoft, Leicester, Horwood [B. 17] (as *brachycarpa*) and [B. 18] (as *densifolia*), see *Report* 1915; Aberdare, Glamorgan, 1912, Riddelsdell, see *Report* 1912; Millers Dale, Derby, 1907, Druce; Barrow-in-Furness, Lumb, see *Report* 491, 1918; Edinburgh, Arbroath, Forfar, 1915, Druce. A somewhat remarkable point connected with the above is that the O. 815 gathering from the wall near South Parks Road, adjoining the Parks, was made in 1905, that of

W. 20 was from close to the same place in 1919. An aerodrome had been built on the site and after its removal the ground was covered with a mass of Shepherd's Purse of the same form, *batavorum*, which grew close to the spot fourteen years before. It may be added that the Hardingstone specimen was named by Mott as his *brachycarpa*. Mr C. E. Britton also has it from West Barnes [1961]; Cottenham Park, Wimbledon, Surrey, and Hayes Common, W. Kent.]

CAPSELLA B.-P. (L.) LAEVIGATA E. At. (II. p. 81, class X.). (Plate 5.)

Leaves broad and long, entire, sinuate to pinnatifid, with long, broad, triangular lobes, sometimes indented; stem firm, high, foliosa, mostly branched upward; capsules broad, convex, with the lateral margins rather parallel, notch usually shallow, sometimes deeper, with rounded lobes, 7-8 x 5-6 or 6-7 x 7-5.

In all parts larger than the following.

Cultivated from the environs of Stockholm, North Sweden and Finland. C. E. Britton has, as it seems, sent the same beautiful form from Surrey. Similar forms also from Treves and Cannes, but probably not identical.

[New Malden, Surrey [1965], see *Report* 489, 1918; Molesey [573], Merton, Surrey [1947], Britton; Chute, Wilts, Druce; Narborough, Leicester, Horwood.]

CAPSELLA B.-P. (L.) BRITTONII E. At. (II. p. 87, class XI.). (Plate 5.)

Leaves sinuate to pinnatifid; lobes long, broad, acuminate, at the base sometimes incised, but scarcely indented except in autumn; stem rather short, firm; capsules long, very convex, 7-8 x 7-5, notch deep, lobes ± acute.

C. E. Britton sent many individuals from Surrey, and I have cultivated several of them. I have also cultivated similar forms from Riga and Reval, and received specimens from Zurich, Brussels and Cannes.

[Castle Hedingham, N. Essex, 1915 [O. 802], Druce. This struck me at the time as distinct and Britton thought although " allied to *agrestis* it seemed to merit an appropriate name " which it has now received. Chute, S. Wilts, 1915, Druce (as *densifolia*);

Lighthorne, Warwick, Miss Palmer; Banbury, Oxon; Middleham, W. Yorks, 1916, Waterfall; St Cyrus, Kincardine, 1916, Druce; Furness Abbey, 1918, Lumb. The first was thought to be *stenocarpa-lyrata*, the second from Abbey Road, *densifolia*, see *Report* 490, 1918. Haroldswick, Unst, 1865, Tate. Mr C. E. Britton has it from the side of a path, Blue House, Merton, Surrey, 1891, see *Report* 489, 1918, and West Barnes, Surrey. Narborough, Leicester [B. 1], Horwood (as *stenocarpa-coronopifolia*), see *Report* 523, 1915.]

II. Capsules broad, forming an isosceles triangle, lateral margins rather straight.

CAPSELLA B.-P. (L.) DRUCEANA E. At. (II. p. 51, class I.). (Plate 6.)

Radical leaves broad, usually entire, pedicels rather long; stem leaves a little indented; stem firm, bifida, foliosa; capsules short, broad, 7-8 x 6-7, lateral margins tolerably straight, notch deep, lobes divergent. They are before ripening concave, often oblique. Some individuals have the capsules rather convex. Wr. large, budding, leaves broad, entire, elliptic with long pedicels, soon ± deeply incised; end lobes scarcely cuneatiform.

Cultivated from Oxford and Surrey, also from H.B. at Edinburgh, Leyden, Louvain and Hamburg.

The sub-species *C. bifida* of Crépin and Hobkirk has capsules like those of *C. Druceana*, but the leaves are not described. Mott's v. *bifida* seems to be the same form as mine, also the leaves are similar. In my cultures from one individual I observed capsules of different forms, the lateral margins straight or convex, like v. *macrophylla*. I possess forms with broad capsules and straight margins, at the same time with large leaves. The capsules belong to v. *bifida*, the leaves perhaps partly to v. *macrophylla*. I think that *C. Druceana* embraces at least a part of the last form. Also I believe v. *rubellaeformis* may partly belong to *C. Druceana*. *Cf. Rep. B.E.C.* 319, 322, 1915.

My species, *C. cuneifolia*, from Antwerp was cultivated for four years. The wa., that is the wr. and the individuals in spring, seem to be clearly different from *C. Druceana* as the end lobes are cuneate.

the capsules narrower, 7-8 x 5-6, and the lateral margins straight. The sa. seem to be rather conformable to *C. Druceana*. I cannot draw any limits. Perhaps I shall be able to find them in continued cultures. Perhaps also more species exist in this group.

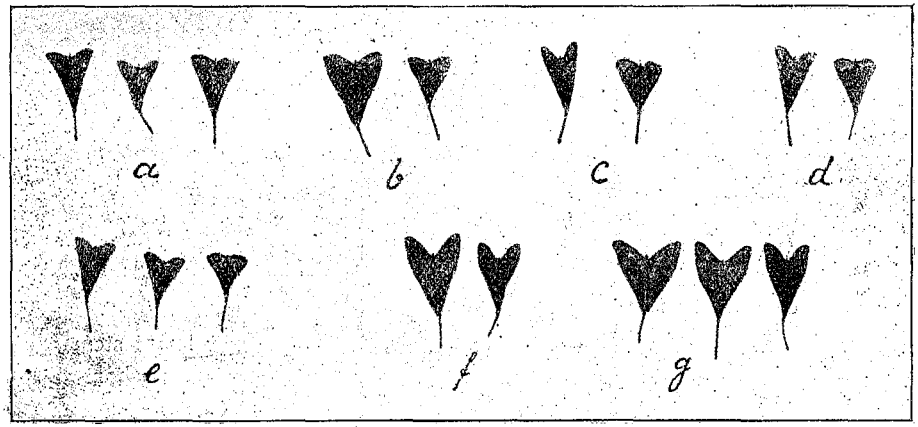


Plate 6. *a*—C. CONCAVA ; September, July, June.
b—C. DRUCEANA ; July, June.
c—C. PROVINCIALIS ; July, June.
d—C. ANGLICA ; August, June.
e—C. RUBELLA ; July, June, March spont.
f—C. PATAGONICA ; July.
g—C. SCOLIO-CASPICA ; July bis, June.

[This is an excellent and very remarkable species, and apparently the most common in Britain. The original specimen sent from Oxford has been cultivated since 1916. It is represented in *Herb. Druce* from Noirmont, Jersey, 1851, Piquet; Castle Hedingham, N. Essex, 1915, Druce; West Barnes, Merton, 1919, Britton (as *macrophylla*); Frogmore, Berks, 1895, Druce; Botley, Oxford Bot. Gard. [933], (as *bifida*), (thought by Mott to be not quite typical *bifida* but approaching *macrophylla*); Steeple Aston, 1897; my own garden at Oxford [O. 951] (as *bifida*) and [O. 801] Oxford Botanic Garden, a macrophyllan form, see *Report* 1915. This has persisted for thirty years. Hailey, Binfield, 1882, Druce; Kings Weston Down, West Gloster, White (as *bifida*), see *Report* 1890; Humberstone [B. 4, B. 14, B. 20] as *rubellaeformis*, [B. 9, B. 19]

as *bifida*, [B. 7] as *brachycarpa*, [B. 18] as *densifolia*, [B. 6] as *stenocarpa-lyrata*, Leicester, Horwood; Leicester (as *rubellaeformis*) [15], Wade; Myton, Warwick, Bromwich (as *integrifolia*); Kirkby, S. Lancs, Wheldon (as *agrestis*), see *Report* 319, 1915; Walton, 1913, Wheldon (as *integrifolia*), see *Report* 452, 1913; garden-weed, Dalton-in-Furness, 1915, Lumb, referred to *bifida* in *Report* 319, 1915; Wigginton, Oxford, Riddelsdell, see *Report* 319, 1915; 588, 1916. Mr C. E. Britton has it from many localities in Surrey, *e.g.*, Merton [1923], Molesey Hurst [571], and West Barnes [1963], see *Report* 489, 1918.]

III. Capsules concave or oblique.

CAPSELLA B.-P. (L.) CONCAVA E. At. (I. p. 12; II. p. 51, class I.). (Plate 6.)

Radical leaves broad or narrow, entire, sinuate, sometimes indented or pinnatifid, lobes often kyphotic; stem firm, usually low, bifida, foliosa; wr. numerous, often budding, the leaves as mentioned, the end lobes often cuneate; capsules 8 x 6, always concave and attenuate at the base, notch moderate, very open.

Cultivated from Portugal, South Italy, California and Parana. Specimens from New Malden, Surrey, gathered in May (Britton), have small but concave capsules. From the seeds I got rather typical *C. concava*.

It is likely that Mott partly describes this species as v. *rubellaeformis*. *Cf. Rep. B.E.C.* 322, 1915.

CAPSELLA B.-P. (L.) REUTERI E. At. (I. p. 19; II. p. 53, class I.).

This species from Besançon, H. B., agrees with the well known *C. rubella* Reuter, but has entire or sinuate leaves and is not spoiled by frost in winter. The form of the capsules, the small petals and small seeds distinguish these species from all other Capsellas. Capsules 6-7 x 5-6; sa. longer; wr. not budding.

G. C. Druce has sent me a few small individuals with similar capsules and leaves, but it seems that the petals are a little longer. They were collected in the cobblestones in front of houses at S. Zeal in Devonshire in August 1919, by the Rev. H. E.

Fox. I also possess a similar form from London, N.W. It is possible that they belong to *C. Reuteri* or to some hybrid of *C. rubella*. If true, it is interesting, so much more as C. E. Britton has not seen any form from Britain that he would refer to Reuter's species (*Report* 322, 1915). In the museums I have seen different forms labelled *C. rubella* that probably are hybrids.

CAPSELLA B.-P. (L.) PATAGONICA E. At. (II. p. 52, class I.). (Plate 6.)

Leaves rather small, pinnatifid, often incised or kyphotic, sometimes sinuate and indented; stem not high, slender; capsules very scoliotic, concave, up to 9-10 x 6-7, notch deep, lobes long; wa. capsules smaller, from 6 x 6 to longer, notch shallower; wr. numerous, not large, seldom budding, leaves pinnatifid, lobes a little rounded, kyphotic, end lobes scarcely cuneate.

Cultivated from Patagonia (Dusén); similar forms also from Cannes and H.B. at Strassburg and Nantes, and in Italy and Portugal. One similar specimen also from Wigginton, Oxon, 1916, H. J. Riddelsdell.

Jordan's species, *C. sabulosa*, cultivated at Lyon, perhaps belongs to *C. patagonica*. The characters agree—capsules 5-6 x 5, in the lower parts being very narrow, lobes oval and leaves small.

C. provincialis E. At., from Cannes, agrees with this species, but the capsules have slight convex or straight lateral margins, 8-10 x 6.

CAPSELLA B.-P. (L.) ANGLICA E. At. (II. p. 52, class I.). (Plate 6.)

Radical leaves rather narrow, sinuate or pinnatifid, incised and indented, with broad, obtuse lobes; pedicels short; stem firm, of medium height, bifida, foliosa; capsules a little concave and scoliotic, up to 10 x 6, wa. 7 x 6, lateral margins almost straight, notch shallow, cardiac, with rounded lobes; wr. large and numerous, often budding, leaves already described, end lobes often cuneate; in the spring pinnatifid with narrow, kyphotic lobes.

Cultivated from H.B. at Cambridge and from Brussels, where I found the same form. Similar forms also cultivated from H.B. at Rouen and Leyden, lastly from Oxford (Druce), and London.

This species I have not found in literature. *C. Druceana* has broader capsules, with deeper notch, not attenuate at the base and

the leaves have a tendency to form rather broad ellipses with rounded ends and long pedicels. *C. anglica* has leaves often elongated to acute, pointed at both ends; capsules a little scoliotic.

[Hailey [O. 995], Botley [O. 817], Hort. Oxon. 1913 (named *bifida* by Mott); Tenby, Pembroke, Druce; Humberstone, Leicester, Horwood (as *cuneata*); Wimbledon Park, Hook, Surrey [193], Britton.]

CAPSELLA B.-P. (L.) TURONIENSIS E. At., n. sp. (class II.). (Plate 7.)

Leaves entire, indented or sinuate, ±incised but seldom pinnatifid, lobes often acute; stem low, slender, somewhat branched; capsules 7-8 x 5-6, lateral margins rather scoliotic, a little concave or convex, with the lobes partly jutting out, notch open and shallow; wa. shorter, perhaps less oblique; wr. very small, sometimes budding; leaves entire, not acuminate, incised, a few partly pinnatifid.

Cultivated from H.B. at Nantes and Tours. Similar form also from Ghent.

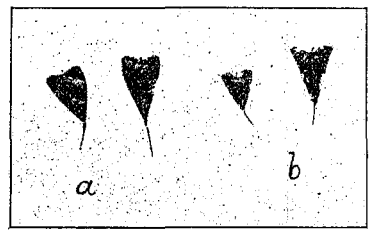


Plate 7. *a*—C. BELGICA; June, July.
b—C. TURONIENSIS; June, August.

The capsules are smaller, the lobes of the notch more acute and the lateral margins more convex as in *C. anglica*. G. C. Druce has sent small specimens from Hertford, Surrey, and Watton, Norfolk, that perhaps belong to *C. turoniensis*, but possibly they are only small forms of *C. anglica*. The leaves are partly pinnatifid, lobes indented and incised. Generally *C. anglica* is much larger.

[Pyrford, Surrey, 1913, Druce; Humberstone, Leicester, 1915 [B. 5], Horwood.]

CAPSELLA B.-P. (L.) BELGICA E. At., n. sp. (class II.). (Plate 7.)

Radical leaves entire and sinuate or pinnatifid; lobes broad, acuminate, denticulate; stem leaves partly broad in both the mentioned forms; stem not high, very branched, bifida, foliosa, a little slender; capsules scoliotic, rather convex downwards, thin, notch shallow, 8-9 x 5; wr. large, numerous, lobes broad, then rather narrow, acuminate, very toothed, partly kyphotic.

This good species I found at Brussels and Treves. It is likely to be found in England.

CAPSELLA B.-P. (L.) SEMIRUBELLA E. At. (II. p. 59, class III.).

Radical leaves pinnatifid, lobes acuminate, kyphotic or lunulate; stem of medium size, weak or firm, low specimens in autumn; wr. numerous, lobes as mentioned; stem leaves toothed; capsules scoliotic and concave, notch shallow, cardiac, 8 x 5-6, in the autumn 6 x 5, notch deeper (Plate 5).

From Moerstrand, on the west coast of Sweden. Similar forms from Bremen and Brussels. Especially in autumn they are similar, but in the other seasons the capsules are 6-7 x 4-5, and the leaves are often lunulate. This should be looked for in England.

IV. Capsules small, narrow, notch shallow or absent, lateral margins rather straight.

CAPSELLA B.-P. (L.) GALLICA E. At. (I. p. 74; II. p. 64, class IV.). (Plate 8.)

Radical leaves pinnatifid, with acuminate lobes, often " short, closely pinnatifid in a dense rosette; " stem leaves rather numerous, incised, pinnatifid or entire; stem usually low, firm, bifida; capsules 6 x 4, notch shallow, cardiac, lateral margins straight or convex; wr. numerous, usually small; lobes broad, then narrow and incised or kyphotic.

Cultivated from Lille, H.B. C. E. Britton has sent from Merton, Surrey, several specimens, partly labelled v. *densifolia*, that belong to *C. gallica*. I have cultivated some of them—sa. capsules 6 x 5, leaves rather entire. Similar forms also from Middleham, W. Yorks, 1916 (Charles Waterfall), and from Hevington (A. R. Horwood).

Mott's v. *densifolia* and v. *brachycarpa* may both, at least partly, belong to *C. gallica*; also Jordan's *C. virgata*—capsules 5 x 5.

[St Helier, Jersey, 1906, Druce; Coverack, Cornwall, 1910, Rev. H. E. Fox (referred by me to *densifolia*, by Marshall to *cuneata*); Ridgeway, Berks, 1895, Druce; Merton, Surrey, Britton (as *gracilis*); Oxford, 1898, Druce; Kibworth, Leicester, Horwood (as

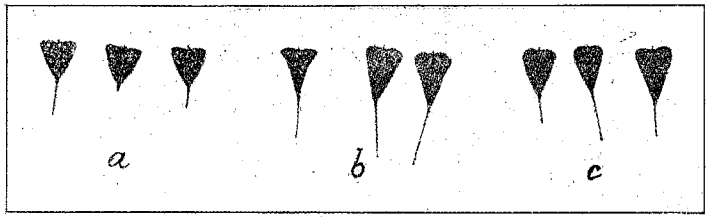


Plate 8. *a*—C. GALLICA; May spont.
b—C. ABSCISSA; October, August, June.
c—C. BREMENSIS; June.

stenocarpa-coronopifolia) and [No. 1924] as *densifolia*; [B. 26, B. 35], Edinburgh, Druce; Middleham, W. Yorks, 1916, Waterfall. Mr C. E. Britton has it from West Barnes, Surrey [1942 A.]; Boxted, N. Essex [1084], G. C. Brown, see *Report* 558, 1916.]

CAPSELLA B.-P. (L.) BREMENSIS E. At. (I. p. 34; II. p. 71, class VI.). (Plate 8.)

Pinnatifid or sinuate; lobes triangular or narrow, incised and kyphotic; stem firm, bifida, branches long; capsules 6-7 x 4-5, notch almost absent, lateral margins rather straight; wr. numerous, leaves as mentioned.

From Bremenhaven cultivated, often apetalous. From Brussels, Treves and Ghent similar forms, with petals. W. H. Pearsall found the same in Dalton-in-Furness, see *Report* 210, 1917, and C. E. Britton in Surrey.

Mott's v. *gracilis* seems related, perhaps also Crépin's v. *stenocarpa* and Jordan's *C. ruderalis* from Rhône—capsules 7 x 5.

[Slapton Sands, S. Devon, 1916, Druce; Stainton, S. Lancs, Pearsall, in *Report* 480, 1918.]

CAPSELLA B.-P. (L.) ABSCISSA E. At. (II. p. 71, class VI.). (Plate 8.)

Pinnatifid, lobes long, acuminate, narrow until almost filiform, kyphotic, sometimes lunulated, in the spring partly entire; stem very branched, partly bifida; capsules 6-7 x 4-5, concave, notch none, often rounded on the top and the lobes jutting out; sa. capsules sometimes longer, cuneiform, notch shallow; wr. numerous, often budding, lobes soon narrow, indented.

From Berlin and from Utrecht, much cultivated. Also from Lille. Charles Waterfall found a similar form in Middleham, Yorks, 1916, and C. E. Britton in Surrey.

CAPSELLA B.-P. (L.) TREVIRORUM E. At. (I. p. 76; II. p. 71, class VII.). (Plate 9.)

Leaves pinnatifid; lobes narrow, acute, kyphotic to lunulate; stem of medium size, long, weak, branched; capsules 7-9 x 4-5, slightly convex, notch shallow, cardiac; wr. few, dying through frost in the Swedish winter.

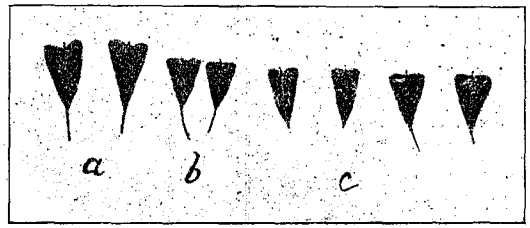


Plate 9. *a*—C. TREVIRORUM : July.
b—C. GERMANICA ; July, June.
c - C. VIMINALIS ; June, July.

Cultivated from Treves and Lorraine. Similar forms from West Barnes, Surrey (C. E. Britton), and other places in England.

[Abingdon, Berks, Druce, see *Report*, 1915, where it was confidently referred to Mott's *densifolia*; Chute, Wilts, 1915 [O. 931], Druce; Slapton Sands, S. Devon, 1916 [P. 1727], Druce.]

Mott's v. *stenocarpa-coronopifolia* may, at least partly, belong to *C. trevirorum*, perhaps also *C. agrestis* Jordan—capsules 7 x 5.

CAPSELLA B.-P. (L.) GERMANICA E. At. (I. p. 76; II. p. 71, class VII.). (Plate 9.)

Leaves and stem as in the preceding; capsules cuneiform with almost straight lateral margins, 5 x 4, notch insignificant; wr. numerous, able to withstand frost; lobes incised, soon narrow, kyphotic to lunulate.

From Bremen and the Rhine, cultivated. C. E. Britton found similar individuals in Surrey.

The leaves have much thinner lobes than *C. bremensis*.

[Near Sonning, Berks, May 1893 (as *densifolia*); Osney, Oxford, 1885 (named *cuneata* by Mott), Druce; Cliftonville, Brighton, Sussex, 1883, E. de Crespigny (sent to the Club as *rubella*), see *Report*; Welwyn, Herts, 1820, Blake; Raynes Park [1925 A.B.C.E.F.] and Hook, Surrey, May 1918 [1932], Britton.]

CAPSELLA B.-P. (L.) VIMINALIS E. At. (I. p. 44; II. p. 72, class VII.). (Plate 9.)

Leaves entire, much indented, often incised; stem firm, with long branches; capsules 6-7 x 4, cuneiform, notch very shallow; wr. numerous, entire, soon incised.

Cultivated from Bremen. Similar form also cultivated from Watton, Norfolk (F. Robinson). *Cf. Rep. B.E.C.* 210, 1917; 490, 1918.