

THE BOTANICAL SOCIETY
AND EXCHANGE CLUB
OF THE BRITISH ISLES.

REPORT FOR 1931

(WITH BALANCE-SHEET FOR 1930),

BY THE

LATE SECRETARY,

G. C. DRUCE, D.Sc., LL.D., F.R.S.,

HON. FELLOW, BOTANICAL SOCIETY, EDINBURGH.

VICE-PRES. BRITISH ASSOCIATION.

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

VOL. IX. PART V.

PUBLISHED BY

T. BUNCLE & CO., MARKET PLACE, ARBROATH.

September 1932.

PRICE 10s.

Report of the Fifth International Botanical Congress

REPORT OF THE PROCEEDINGS

edited for the Executive Committee by F. T. BROOKS and
T. F. CHIPP

Demy 8vo. With a Frontispiece and One Plate.

21s. net

The Congress was held at Cambridge, August 16-23, 1930

CAMBRIDGE UNIVERSITY PRESS

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(VOL. IX. PART V.).

Victoria Regina.



Floreat flora.

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

(Completed for the Press by W. H. Pearsall.)

Subscriptions (12/6 per annum) and Non-Contributing Member's Subscription of 10/- per annum should be paid to the Assistant Secretary, Mr JOHN CHAPPLE, Yardley Lodge, 9 Crick Road, Oxford, on or before January 1, 1933.

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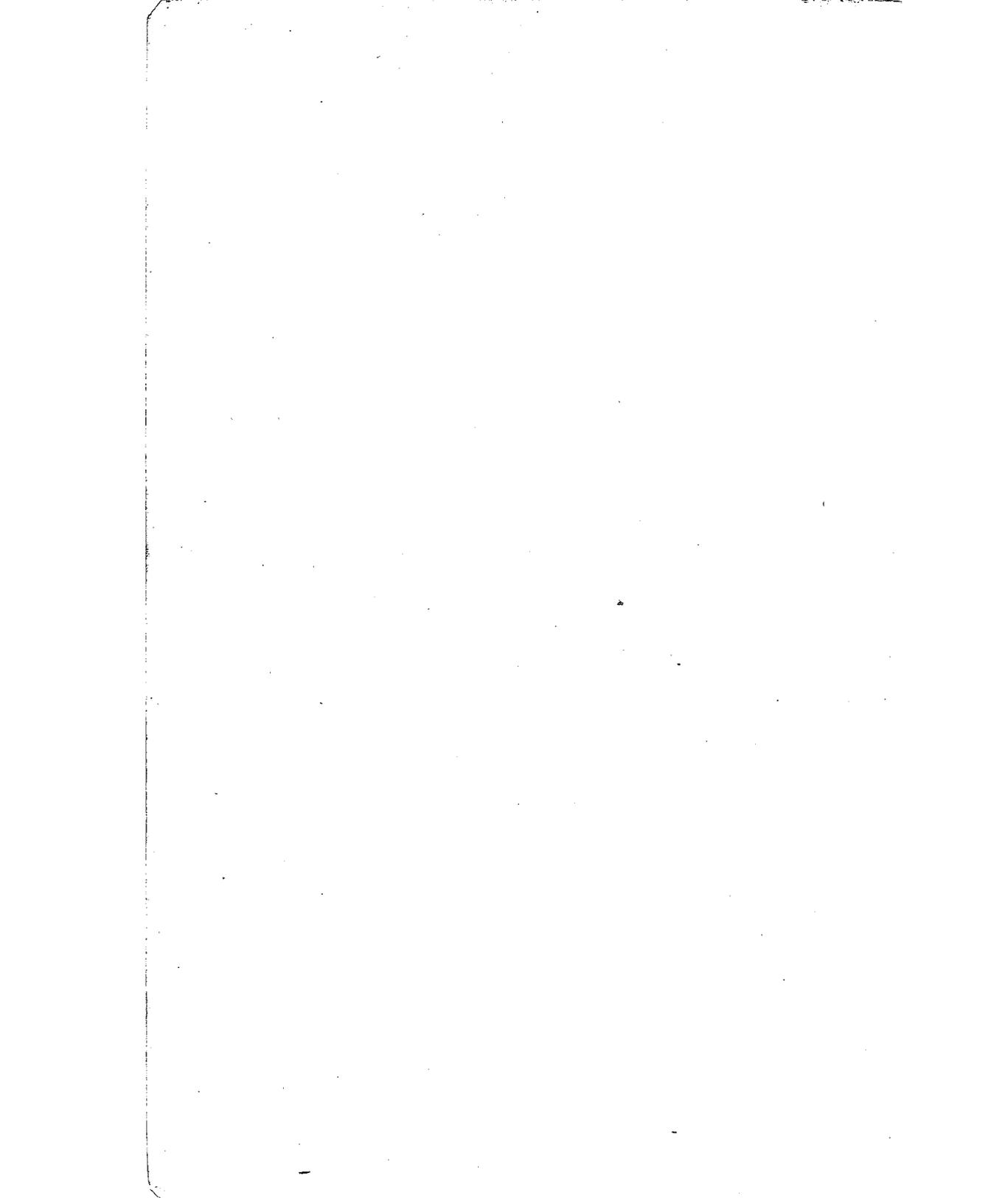
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Printed by T. BUNCLE & CO., Arbroath.
September 1932.

PRICE 10s.

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THE
BOTANICAL SOCIETY & EXCHANGE CLUB
OF THE BRITISH ISLES.

THE REPORT OF THE SECRETARY & TREASURER,
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FOR 1931.

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Balance from 1929, - - £146 16 11 Balance from General A/c. above, - - - 60 0 0 Donation from Mr W. J. Patey for Comital Flora Map, - - - 35 0 0 Sales of Flora Northants, Payments in advance for Comital Flora, - - 45 14 0	Binding Fl. of Northants, £5 7 6 Binding Reports, etc., - 4 0 0 Comital Flora—Typing, - 10 0 0 Map and Printing, - - 35 0 0 Shelves, - - - 2 2 6 Balance to Printing of Comital Flora, - - 298 11 5
£355 1 5	£355 1 5

BALANCES OF FUNDS IN HAND.

Life Members' Fund, £109 1s 0d. Miss Trower's Fund, £16 7s 11d.
 Benevolent Fund—£41 3s 6d.

Examined and found correct.—(Signed) F. A. BELLAMY, F.R.A.S., 8th
 January 1932.

The year 1931 was, all things considered, one of the most disastrous years known in Britain. The Rake's Progress was arrested, it is true, but not until after Britain had been brought down to an unbelievably low scale in commercial and industrial prosperity. The weather was disastrous and did much to accentuate the position—day after day of sunless or wet days added to the prevailing gloom. The calamitous conditions seemed to have little affected economists and pseudo-philanthropists, who seemed as fertile as ever in suggesting methods of evading the consequences of their own actions, only none of their suggestions were worthy of consideration. Our chief industry has been brought to its knees, and a succession of badly cultivated or empty fields shows the tracks of the Rake's Progress, but not of the plough and harrow.

My own existence for six months was precarious, angina, chronic bronchitis and renal mischief having me in their bonds, so that I was for six months confined to my house. My excellent doctors pulled me through, though sadly maimed. This enforced rest was utilised in taking the *Comital Flora* through the press, and I trust that members will find it useful.

The year witnessed the completion of our late respected and beloved member's (Mr C. E. Salmon's) *Flora of Surrey*, which he did not live to see completed. It passed through the hands of W. H. Beeby, Arthur Bennett, C. E. Salmon, and was eventually completed by Mr W. H. Pearsall. Mr W. T. Boydon-Ridge has also issued his *Flora of North Staffordshire*; now we want to see him complete a *Flora* of the whole county.

Lt.-Col. A. H. Wolley-Dod has promised to complete a *Flora* of Sussex, and our own experience of him is that what he undertakes he loses no time in performing, so it may not be long before one of the richest, if not the richest county, has a *Flora* worthy of its riches and of its history. It is to be hoped too that Mr A. R. Horwood will soon have his *Flora* of Leicestershire and Rutland ready. We regret to see that but small support has been given to Colonel Godfery for the publication of his work on the British Orchids. Members should make an effort to purchase this book for it will rank side by side with George Maw's "*Genus Crocus*."

My own botanising commenced on May 24th, the first day I was allowed a journey by car, when I went to Goring to see *Orchis Simia* in good flower and quantity on a gloriously hot day. A few days later I went to Stoke Goldington in Northamptonshire to see the Lily-of-the-Valley, and was distressed to find that it had suffered badly from the ravages of tourists, we being able to find only one flowering spike. In early June I stayed with the Hon. Mrs Guy Baring at Forbury, and she showed me on the Downs at Facombe clumps of *Cytisus scoparius* twelve feet high—a magnificent spectacle. At Bucklebury we saw *Myosotis versicolor*, var. *Balbisiana*, which is not rare in South Berks, and *Cerastium erectum*. Miss A. M. Neild kindly directed us to a nice clump of *Scrophularia vernalis* on Bucklebury Common, and here, too, a new locality for the county, was *Capnoides (Corydalis) claviculata*. At Vernham's

Dean, N. Hants, we were able to add *Poa Chaixii* to the county, although it has probably been introduced there with Cherry Laurels. *Bromus interruptus*, of which little has been seen for some years, has occurred in several places, and we got it on the county border of Oxon near Taynton. At Loudwater, Bucks, when my Secretary went to find *Dentaria*, which grows in the woods nearby, I waited in the car and got talking to a small boy. He told me he collected postage-stamps, and I promised I would send him some. A few days afterwards I received a letter from him—an example of neatness—thanking me for the stamps, and saying that a schoolfellow had gathered a specimen of the Lizard Orchis on the border of a wood close to Loudwater. We immediately went over and I was given the specimen—the second *Orchis hircina* from Bucks. On one of these journeys we gathered on Dashwood Hill, Bucks, the beautiful Caucasian Poppy, *Papaver umbrosum* Hort, which, however, may have been intentionally sown there. In the middle of June, on the Berkshire Downs at Ashdown, there was a great quantity of a new form of *Valeriana officinalis* which I have named *dentatifolia*. The close inflorescences were deep rose-pink coloured and were in character nearly a half-way house between *officinalis* and *sambucifolia*. *Ophrys Trollii* again appeared in good condition at Pool Bottom, Oxon, growing with typical *apifera*, and no intermediates were observed. At Compton Wood, Berks, *Orchis Fuchsii* grew to a height of over three feet. *Ornithogalum pyrenaicum* was also noticed. On Greenham Common we failed to find *Campanula persicifolia*, but were rewarded with the magnificent blossoming of *Rubus Rogersii*, and a new hybrid, *R. corylifolius*, var. *sublustris* × *polyanthemus*, which Mr Watson has not seen before, was also gathered here. In late June we motored to Ledbury and found Mr Bickham and his wonderful garden in excellent trim. By the Wye at Erwood, *Allium Schoenoprasum* was in abundance, and at Crickhowell we noticed *Ulmus Plotii*. On Minchinhampton Common, Gloucester, we found the hybrid Thyme, × *T. Lansdowneiae*.

An Umbellifer sent to me in 1930 by the Rev. W. Wright Mason from Rock, Cornwall, was named by a critic, to whom I had sent the plant for examination, as the alien, *Cnidium*, but the specimens were very inadequate. So I thought it would be well to search the locality, the exact place being kindly given me by the finder. Also, our member, Mr Bolton King, had been to Budleigh Salterton early in the Spring and sent me from there immature specimens of a *Scirpus*. One could not identify them, being so young, but they suggested *S. triqueter* or *S. americanus*, neither known from that area. With these two objects in mind we left Oxford in the first week of July, going via Bristol. There we were delayed by a heavy thunderstorm, but managed to reach Wells that night. The next day, in drenching rain, we left Wells and went through Taunton to Uffculme, where we enjoyed the hospitality of our member, Dr Laidlaw, and his wife, thence to see Mr D'Urban at Countess Wear with his beautiful wooded grounds, Dr Vines at Exmouth, and to sleep at Budleigh Salterton. Next day, with Major Orme, we searched the marshy ditches for the *Scirpus*, but in vain; only *S. mari-*

timus, in various forms, was seen. *Mathiola incana* is naturalised on the sea-cliffs, as is *Senecio Cineraria* and its hybrid with *Jacobaea*, and the Chicory-blue flowered *Malva sylvestris* which we also noted at Marazion, Hayle and Newquay, Cornwall. *Impatiens glandulifera* is naturalised in wet places. Major Orme kindly took us to the headland where *Campanula persicifolia* appears to be a native, and showed us the New Zealand adventive, *Acaena anserinifolia* Dr., well naturalised.

Leaving Budleigh Salterton we motored through Exeter, Okehampton and Launceston, where there are good examples of the Cornish Elm (*U. minor* Miller), to Rock, the locality of "*Cnidium*." It proved to be only a form of *Carum Petroselinum*. Here we found *Rosa rugosa* and *Tamarix gallica* naturalised on the dunes. We made a search at the classic place near Wadebridge for *Ranunculus tripartitus* without success, for the place had dried up. We slept at Newquay and saw Dr Vigurs, whose name is always connected in one's mind with *Fumaria occidentalis*, although he was not its first discoverer in Cornwall. We were glad to see it in several places about Newquay. On a waste place outside the town the beautiful Chilian *Oxalis rosea* was naturalised. Hayle still continues very rich in its adventives, which originally came in with mule provender during the war. Permanently naturalised here are *Anchusa azurea*, *A. officinalis*, *Verbascum Lychnitis*, *Sagina subulata* and *Salvia verticillata*, which now makes a brave show, but the choice plant is *Ajuga genevensis*, of which over a hundred fruiting specimens were seen. Native plants we found here include a rare variety, *gruta*, of *Mentha gentilis*, which has only been noticed before from Westmorland, *Bursa laevigata*, several varieties of *Centaurium* and *Viola agrestis*. On the newly made-up road margins near Marazion *Papaver hybridum* and *P. somniferum* grew. The Land's End was visited, but the wretched weather drove us to Housel Bay, where we were literally imprisoned for two days on account of the heavy rain. On the steep roadside near Ruan Minor, *Trifolium Bocconeii* was this year in luxuriant growth. Leaving the Lizard we went to Lostwithiel to see Mr Thurston, having tea on our way at Fowey with Mr Allchin and Sir Arthur Quiller-Couch. At Pentewan there were quantities of the hybrid *Mentha niliaca* (Jacq.). At Slapton we were too early for *Corrigiola* but we found a *Euphrasia*, which to me had much of the aspect of *salisburgensis*, and to this Mr Pearsall and Dr Drabble refer it. It is an interesting addition to the flora of southern Britain. Our next drive took us to Berry Head, where *Geranium Robertianum*, var. *hispidum*, was plentiful. *Orobanche amethystina* and the hybrid Thyme, $\times T.$ *Lansdowneiae*, were also gathered. Driving through Torquay and Exeter we stayed at Barnstaple, and from here worked Woody Bay to be again disappointed in not finding *Cucubalus*. The plants we gathered here include *Sedum Forsterianum*, *Saxifraga umbrosa*, *Cotoneaster microphylla*, and a form of *Teucrium Scorodonia* with very large thin leaves and cleistogamous flowers. On waste ground near Bideford, *Iberis umbellata*, *Calceolaria scabiosifolia*, *Delphinium Ajacis* and *Veronica lobelioides* grew. At Ilfracombe we were fortunate enough to meet with

a beautiful and distinct-looking *Rubus* which Mr. Watson names as a new species, *R. crudelis*. Braunton Burrows were conspicuous for the most profuse flowering of *Helleborine palustris*—in countless thousands. Quantities of *Equisetum palustre* (var. nov. *simulans* Dr.) mimicking *variegatum*, and many forms of *Centaurium* were features. *Teucrium Scordium* was not flowering quite so freely, or I was too early for it. Coming from Barnstaple to Oxford in the day, we broke our journey at Potterne to see the treasures of Mr Marsden-Jones's experimental gardens, where much valuable work is being done in testing the constancy of "forms" of our British flora.

Miss Vera Smith, whilst looking for Orchids in a wood near Peppard, found an Orchid-like plant, which was unknown to her, growing in the trunk of a decayed tree. It was identified for her by the house-surgeon at Peppard Sanatorium as *Epipogium*, and was immediately sent to the Reading Natural History Museum, where it is preserved in spirit—a large plant with four flowers. I was taken to the locality by Miss Smith. It is about five miles from the wood in which it was last seen in Oxfordshire but, as is usual with this plant, it was growing solitarily and no more were to be found. It is a very interesting discovery and gives rise to one's hopes that it may well be found in any of the woods in that area.

In early August we went to Bagshot to see *Erica vagans* quite naturalised, the locality of which was kindly given me by Major Orme, its discoverer there, and to Burnham Beeches to see *Juncus macer* and *Lythrum hyssopifolia* near Farnham Royal, both discovered by Mr Basden, the latter plant not having been found in the county for fifty years.

On August 6th we took the night train from Rugby, reaching Pitlochry at about seven next morning. There we were met by Mr Corstorphine, who motored us to Inverness the same night. Stopping at Killiecrankie on our way, we failed to find *Lathyrus niger*, which now seems to be an extinct Scottish plant.

At Dalnaspidal we gathered *Thymus Drucei* and *Taraxacum faerense*. At Inverness, following Mrs Wedgwood's directions, we saw *Pyrus latifolia* and *P. intermedia* by the Ness. Going on by Beaully to Kinlochewe, we gathered at Strath Orrin *Rhamnus Frangula*, a rare plant in the north, *Gentiana campestris*, and *Mentha aquatica*, var. *major* Sole. All our repeated searches for *Eriophorum alpinum* were unsuccessful—it was too late in the season. *Malaxis* and *Pinguicula lusitanica* were abundant, so too were *Scirpus pauciflorus* and *caespitosus*, and *Carex limosa* sparingly. On the lower slopes of Ben Eay we found *Schoenus nigricans*, *Carex Sadleri*, and a handsome Hawkweed which Dr Zahn names *H. triviale* Nörrl. Driving one glorious afternoon through Flowerdale to Gairloch, and back—a drive which I place among the most beautiful in Britain—we gathered *Sparganium angustifolium*.

From Kinlochewe, where *Spiraea Douglasii* is planted near fences, we motored by Dingwall and Bonar Bridge to Golspie, and near the Mound a splendid lot of *Moneses* in flower, with small plants of *Caltha*

radicans, were seen. On waste ground at Golspie, *Bursa turoniensis* was gathered. Leaving Mr Corstorphine at Golspie we continued by train to Thurso, whence we went with the Hon. Mrs Guy Baring and party as her guests to Rysa Lodge, Hoy, having to tranship into a small motor-boat in the midst of the stormy Pentland. Rysa is a delightful Lodge which, during the war, was the Headquarters of the Admiral commanding Scapa Flow, over which, from the Lodge, one has a splendid view. It is situated only two miles from Lyness, where are the salvage works for raising the sunken German Warships. The oatfields in places are a magnificent purple with masses of *Viola Lejeunei*, and with it *Spergula sativa*, whose valerianaceous odour is very powerful on warm dewy evenings, but of these we had practically none. For nearly six weeks there had been little or no rain, and the cold winds, with a temperature only a little over 50°, had a bad effect upon the vegetation, which withered up under its influence. Other cornfield weeds were *Gnaphalium uliginosum* and *Chrysanthemum segetum*. Naturalised near the Lodge was *Mentha spicata*, and nearby at Melsetter, *M. longifolia*, which is used as a culinary mint. *Euphrasia borealis* was abundant and beautiful in the pastures. At Lyness Miss Olivia Baring found *Centaurea Cyanus* now a diminishing and rare species, and *Lychnis Githago*. Here, too, was a very large flowered *Vicia sativa* and forms of *Galeopsis Tetrahit*. At the mouth of Mill Burn, the Hon. Mrs Baring discovered a clump of the Magellan *Senecio Smithii*, obviously introduced with seed. At Melsetter the bay was fringed with a coppice growth containing two forms of *Ulmus montana*, *Pyrus intermedia*, *Salix purpurea*, etc., mostly, if not all, planted. The roadside was bordered with large *Alchemilla olpestris* and its var. *vegeta*, and *A. pratensis* as a new form—forma *truncata* Jaquet. Along the way to Aith Head *Silene maritima* in great variety was seen, and on the headland itself beautiful *Primula scotica* and *Ligusticum scoticum* were shown to us by Col. H. H. Johnston. About Melsetter *Impatiens glandulifera* has become naturalised. At the mouth of Pegal Burn, *Drosera anglica*, *Listera cordata* and *Sagina subulata* grew, while several unique Hieracia, discovered by Col. Johnston and his young friend, Mr James Sinclair, are to be found round the cliffs of Pegal Bay. The Dwarfie Stone was visited more than once and the Ward Hill and the Knap of Trowieglan, which afforded *Loiseleuria*, were climbed by the Hon. Mrs Baring and the younger members of the party.

Arctostaphylos alpina is abundant on the Ward Hill, with *A. Uva-Ursi*, var. *angustifolia*, conspicuous on its lower slopes. The picturesque bay of Rackwick afforded *Radiola* in plenty, *Carex incurva* and *lepidocarpa*. Colonel Johnston came with us on several expeditions and either showed or directed us to the localities of the rarer plants. His Orkney herbarium is probably the most complete in existence of that or any area.

We paid several visits to the mainland adding a new adventive to the Orkney Flora at Maeshowe—*Caucalis latifolia*, and noticing also *Viola canina* × *Riviniana* and *Bursa abscissa*. A long motor-boat jour-

ney was made to South Ronaldshay on a none too calm sea in order to see *Pneumaria (Mertensia)*, which was abundant and beautiful around a little sandy bay. Splendid *Arctium nemorosum* was frequent and a dunal form of *Ranunculus Friesianus* was gathered.

Leaving Stromness on September 10th, our homeward journey was from Thurso to Inverness, thence to Edinburgh and Thirsk, where we were the guests for a few days of Mr and Mrs Foggitt. Little did we then think of the very severe illness which our valued member had to undergo and from which, thank God, he has emerged safely. On the whole the results of our visit to the north were meagre. Severe handicaps in the shape of weather, and illness personally, curtailed one's work materially.

In September I was at the British Association Meeting hearing General Smuts' Presidential address. I was present at the Royal Society's Soirée, also at that given in the Guild Hall by the City of London and by the Government in the Natural History Museum, Cromwell Road.

Mr W. D. Miller, whose illness we so greatly deplore, came to Oxford in October and discovered *Euphorbia platyphyllos* in Oxon, a plant which I had never seen in the county. We visited the spot to which he kindly directed us and after a long search were able to find one plant. It was pleasing, too, to see the re-occurrence of *Stachya germanica* in one of its old haunts after an absence of over twenty years. The seeds in a thick undergrowth must have been dormant during that time and, when the growth was cut down two years ago, the light and air induced them to germinate. The plant, being a biennial, flowered for the first time last year in some quantity and luxuriance, being quite four feet high in a few cases.

Miss Leake found a new habitat for *Cirsium tuberosum* near Rowde, N. Wilts. Taken there by Miss Leake and the Misses Bartholomew we saw it growing in large quantity, with a few heads still in flower, although it was as late as October 17th.

To the authorities of the Royal Botanic Gardens at Kew and Edinburgh, and of the Natural History Museum at Cromwell Road, we are indebted for help. Among foreign botanists we are grateful to Prof. O. E. Schulz for naming the Cruciferae, Dr Ronniger the Thymes, Dr Almqvist the Shepherd's Purses, Dr P. Aellen the Chenopods, Dr R. Danser the Polygonaceae, Dr Dahlstedt the Dandelions, Dr F. Jaquet the Alchemillas, Dr Probst the Adventives, Dr K. Zahn the Hawkweeds, Dr H. Schinz the Adventives, Dr Kükenthal the Carices, and Prof. J. Holmboe.

To Dr S. Howard Vines, F.R.S., the Rev. F. Bennett, Mr T. Gambier-Perry, and Mr R. H. Corstorphine we are indebted for literary help; and for critical examinations of British species we are very grateful for the kindness shown by Mr J. Fraser, Dr E. Drabble, Mr C. E. Britton, Mr W. H. Pearsall, Col. A. H. Wolley-Dod, Mr W. Watson, Mr D. Lumb, Mr A. E. Wade, Mr R. W. Butcher, Mr I. A. Williams, Mr W. O. Howarth, Mr J. E. Little, and Mr P. M. Hall.

The outstanding event since the foregoing Introduction was written by our esteemed Secretary, Dr G. Claridge Druce, was his passing, on 29th February 1932, after nearly 30 years' continuous and strenuous service on behalf of the Society. Generous tributes to the value and extent of his scientific work and to the varied services he rendered in other directions appeared in the press at the time, and a more detailed account of these may be found in the separate obituary notice in this Report. To the writer it will always be a pleasing recollection that Dr Druce was full of gratitude both to Mr John Chapple and himself for their efforts to lighten the load of his last years and was spared any anxiety as to the carrying on of the work of the Society.

A meeting of the Advisory Committee he had appointed to act in case of necessity was held on March 15th at Burlington House, Piccadilly—by kind permission of the Linnean Society—and the whole position was reviewed. It was unanimously agreed to convene a General Meeting of the members of the Society for May 9th, for the consideration of the following recommendations:—

1. That the aim of the Society shall be to continue its work broadly on the lines laid down by the late Dr G. C. Druce.
(Suggestions for increasing its scope or value to be considered later.)
2. That the Society be organised on a constitutional basis by the Election of Officers and Committee.
3. That the Treasurers be Mr and Mrs T. J. Foggitt, and the Secretary be Mr W. H. Pearsall.

The Linnean Society having generously placed a large room at our disposal, this meeting was duly held and the Rt. Hon. Harold T. Baker was voted to the chair. In proposing the adoption of recommendation No. 1, Mr Pearsall stated that in the opinion of the Advisory Committee their aim should continue to be "To study the characters and distribution of the Flowering Plants and Ferns of the British Isles, and to afford facilities for the adequate discussion of definite plants."

It might, perhaps, be well to say that No. 1 did not commit them to the adoption of any particular nomenclature. In this matter we shall—in common with all other British and Foreign botanists—conform to the rulings of the International Botanical Congress of 1930. This proposition was seconded by Mr T. B. Blow and carried *nem. con.* With regard to the question of increasing the value of the Society's work, many suggestions had been received and others would be welcomed. These would all be considered by the Committee at a later date, but the main business of the present meeting was to reconstitute the Society on a permanent basis and to provide the necessary machinery for carrying on its work.

Recommendation No. 2 was formally moved by Sir Roger Curtis, seconded by Mr P. M. Hall, and carried unanimously.

The Election of Officers (No. 3) was the next business. On the motion of Dr A. H. Evans, seconded by Miss E. Vachell, Mr and Mrs T. J.

Foggitt were unanimously elected Treasurers, and the Society is to be congratulated on their acceptance of the office.

Before proceeding to the Election of Secretary, Mr Pearsall said that while he very greatly appreciated the nomination of the late Dr Druce and the recommendation of the Advisory Committee, he desired to make it unequivocally clear that the meeting was perfectly free to elect whomsoever it chose. If another were elected he should not take umbrage nor diminish in any degree the work he had been doing for the Society. He then retired, and in his absence it was moved by Mr R. W. Butcher and seconded by Mr E. B. Bishop, "That Mr W. H. Pearsall be invited to become Secretary of the Society, and that he be given an adequate allowance to be determined by the Committee." This was carried unanimously.

Upon being informed of the decision of the meeting, Mr Pearsall cordially thanked the members for his election and assured them that he should spare no effort to justify the confidence they had reposed in him.

In proposing that Mr John Chapple be Assistant Secretary to the Society, Mr Pearsall paid high tribute to the strenuous and efficient services Mr Chapple had rendered to the Society both before and after the death of Dr Druce. This was duly seconded, and carried *nem. con.*

The Officers having been elected, the members proceeded to the Election of the General Committee.

It was resolved, "That the General Committee consist of 21 members—with power to co-opt." The Secretary intimated that the members of the Advisory Committee had willingly agreed to offer themselves for re-election to the General Committee, and wished to see every branch of systematic botanical study represented on the Committee. He had that morning received a suggestion from Mr H. A. Hyde—Keeper of the Department of Botany, National Museum of Wales—that a capable geneticist should be one of the members of the Committee and hoped the meeting would keep this in mind.

The following is a complete list of the Officers and Committee elected:—

General Committee (with power to co-opt).—J. Ramsbottom, O.B.E., M.A., F.L.S., and A. J. Wilmott, M.A. (Camb.), F.L.S., representing the British Museum (Natural History), South Kensington; J. S. L. Gilmour, B.A., F.L.S., and Dr W. B. Turrill, representing the Royal Botanic Gardens, Kew; Dr W. A. Sledge; R. W. Butcher, B.Sc., F.L.S.; A. E. Wade, F.L.S.; Dr E. Drabble; Lt.-Col. A. H. Wolley-Dod; C. E. Britton; Rt. Hon. Harold T. Baker; Hon. Mrs G. Baring; Sir Roger Curtis, Bart.; Lady Davy; Mr and Mrs T. J. Foggitt; Miss E. Vachell, F.L.S.; R. H. Corstorphine, B.Sc.; P. M. Hall; Mrs M. L. Wedgwood; W. Harrison Pearsall. Treasurers—Mr and Mrs T. J. Foggitt, Stoneybrough, Thirsk. Secretary—W. H. Pearsall, Matfield, Kent. Assistant Secretary—J. Chapple, Yardley Lodge, Oxford.

Under "Any other business," Mr A. J. Wilmott proposed "That in view of the opinion held by many field botanists, the Committee of the Botanical Society and Exchange Club be asked to explore the possibilities of an understanding being come to with the Watson Botanical Exchange Club by which matters of common interest could be discussed." This was carried, *nem. con.*

The meeting closed with cordial votes of thanks to the Chairman for presiding, and to the Linnean Society for their courtesy in again granting us the use of their room. So ended a memorable occasion marked by the utmost goodwill, the most pleasant renewal of former acquaintances, and the best of good wishes for the future success of our work. The Secretary desires to acknowledge with the deepest gratitude the valuable assistance he has received from botanists generally—without exception—and to assure members that any assistance he can render is always at their service.

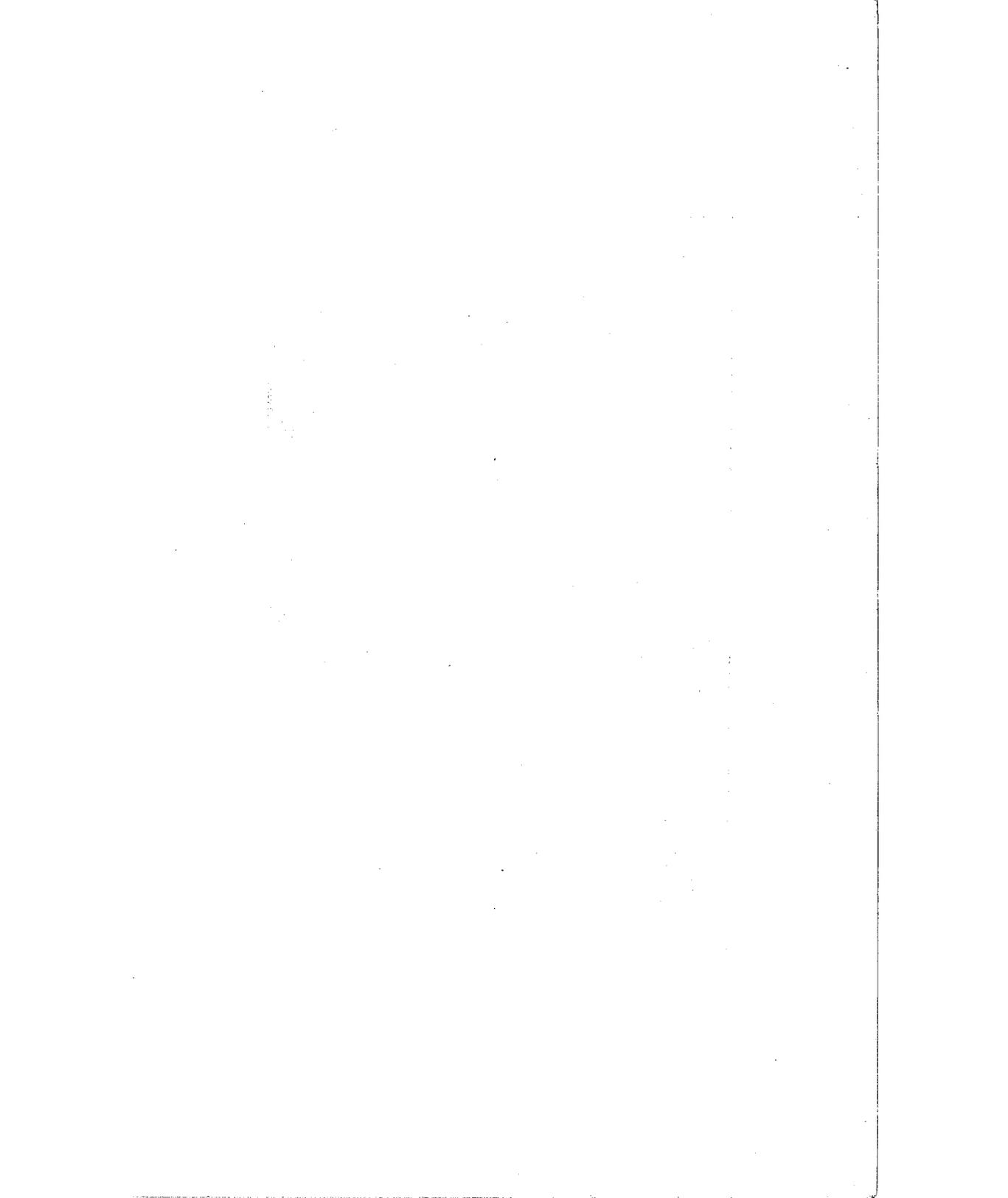
Subscriptions should continue to be sent to the Assistant Secretary, Mr John Chapple, Yardley Lodge, 9 Crick Road, Oxford. Critical alien plants intended for submission to referees should be received by him before October 1st.

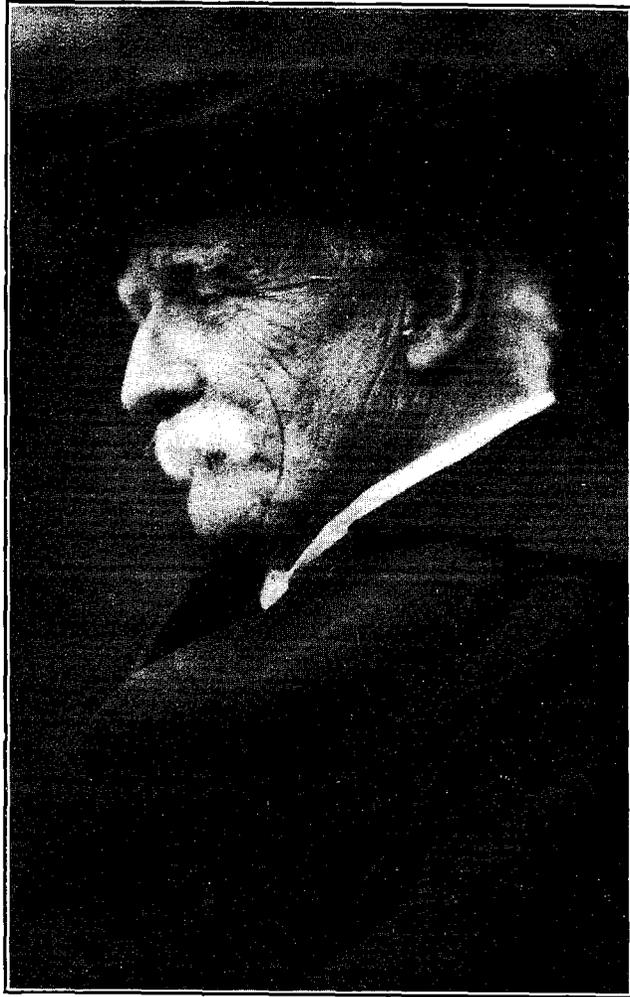
Exchange Club Parcels for 1932 should be sent on or before 1st December 1932, to Dr W. A. Sledge, Department of Botany, The University, Leeds.

British plants—or articles, papers, records or questions relating thereto—should be sent to the Secretary, Mr W. H. Pearsall, Green Gable, Matfield, Kent. He invites the collaboration of members in a list of "Amended Descriptions." Most field botanists have at times found existing book descriptions faulty or inadequate and their correction is much to be desired.

NEW MEMBERS.

Mr E. B. Basden; Mr P. G. Beak (1932); Mr Lewis A. W. Burder; Mr R. C. L. Burges, M.B.; Lady Alethea Buxton; The Botany Dept., Cambridge University; Mr J. Chapple; Mr E. S. Eedes, M.A. (1932); Mrs A. Fraser (1932); The Rev. Hilderic Friend; The Director, Board of Greenkeeping Research; Sir Richard Gregory, Bart., D.Sc., LL.D.; Mr J. Donald Grose; Mr J. Jacob (1932); Miss P. A. Leake; Dr Andrew C. McCandlish; Mr Alex. Macgregor, M.A. (1932); Mr Latimer McInnes; Mr C. Pearson (1932); Mr G. Richardson (1932); Mrs M. M. St. Smith (1932); Miss E. M. Thomas (1932); Mr Edward Thompson (1932); Mr H. J. Wilkinson (Life-Member); Mr N. Woodhead, M.Sc.; City of York Public Library; Mr Edward Yuill.





GEORGE CLARIDGE DRUCE,

DOCTOR GEORGE CLARIDGE DRUCE.

The news of the passing of Dr Druce came as a great shock to all of us, although it was obvious during the preceding twelve months that his powers were rapidly failing. He soon became tired, there were frequent lapses of memory and he appeared to be losing confidence in his own judgment. Notwithstanding these evidences of weakness he showed great courage and went on with his work to the last. On Saturday morning, February 27, he had a sudden relapse and remained more or less in a state of coma until the end came on Monday, February 29. We are glad to think that he was spared another long and painful illness, and died—as he wished—“in harness.” This is no mere form of words, for his latest publication, “The Comital Flora of the British Isles,” was sent out from the Press during the same week, and only three days before his death he was in his accustomed place on the City Council.

He was born at Potter's Pury, Northamptonshire, on May 23, 1850, and spent the first five years of his life on the banks of the Ouse at Old Stratford. Death deprived him early of paternal care, and for a time he was placed in straitened circumstances. His love for flowers soon became apparent and his arm always bore a 2 inch scar caused by a hawthorn when gathering his first handful of *Geranium pratense*. Short visits were made to the parish of Woughton-on-the-Green, where, in attempting to gather a flower, he fell into the canal and received his botanical “baptism.” Subsequently he went to Yardley Gobion, ten miles from Buckingham, where his limited education began, but the neighbouring woods opened out to him the fascinating study of entomology, and by the time he finally left school he had collected a very representative series of local lepidoptera.

Notwithstanding his love of nature, his desire was to become a chemist, and when he was fifteen years old, through the generosity of an aunt, he was duly apprenticed to that business in Northampton. He worked for twelve hours every week-day and on every third Sunday as well. This temporarily interfered with his field work, but he was enabled to learn enough Latin to pass his preliminary examination. Later, without tutorial assistance, he passed his first examination for a chemist, and subsequently his second examination with honours, receiving as a prize Sowerby's Plants of Britain, Carpenter's Microscope, and other books. At the end of his apprenticeship his employers gave him a £20 microscope which revealed to him beauties of nature hitherto hidden and unsuspected.

His Herbarium was started in 1873 as an aid to preparation for his pharmaceutical examination, and now contains nearly a quarter of a million plants. By the time he was 29 he had saved enough to buy a business of his own and, having once visited Oxford and the Thames valley in search of *Orchis militaris*, the county so attracted him that in

1879 he purchased a pharmacy in High Street, Oxford. His mother resided with him, and much of his subsequent success he attributed to her. Every moment that could be spared from an ever-increasing and varied business was devoted to the local flora.

Dr Druce was first elected to the Oxford City Council in November 1892. He became Sheriff of Oxford in 1897, and was elected Mayor in 1900. During his term of office as chief magistrate he was specially invited as the guest of the Lord Provost of Glasgow, on the occasion of the State visit of the Lord Mayor of London, to the Glasgow Exhibition. It also fell to his lot to announce the succession to the throne of King Edward VII., and with eight other members of the Corporation he went to St James' Palace to convey the congratulations of the City of Oxford to His Majesty. Of the fifty years he had lived in Oxford no fewer than forty were spent in continuous service on the City Council.

The University of Oxford conferred upon him the honorary degree of Master of Arts in 1886. Subsequently he received by decree the degree of D.Sc. from Oxford and the honorary LL.D. from St Andrews. In 1927 he was elected F.R.S., a distinction not often conferred on men with no academic training.

His world-wide fame as a botanist is common knowledge, but, perhaps, his greatness as a man is less generally realised. There are many who, from personal experience, can gladly endorse the testimony of an old friend (given in the "Times" of 5th March) that "in addition to his great intellect and marvellous memory he had one of the most lovable, grateful, generous, unselfish and unassuming characters." His kindness to others—even to beginners and strangers—was, indeed, exceptional, and he spared no effort to help any who needed his assistance. His unbounded enthusiasm for the study of plants and his tireless energy in their quest were very infectious, and it was not only a great joy but a liberal education to botanise in his company. He was always full of gratitude for any small and kindly office paid to himself and there was a peculiar charm in the grace of his expressed appreciation of it.

We cannot more aptly conclude this brief note than by quoting from the address given at the funeral of Dr Druce by the Rev. W. Mansell Merry, M.A.:—"Again and again it has fallen to most of us to mourn in this place the passing of those who by virtue of high character and distinguished usefulness in the councils of this City have merited well enough the last tribute accorded to their memory by their colleagues who survive them. But there is a certain uniqueness attaching to the present occasion which derives inevitably from the uniqueness of the man himself. No matter from what angle one may look back over the long career of Dr Druce: no matter by what criterion one may examine and appraise its story, there is no denying the fact that throughout its course and in every relation, it was that of an exceptional man; exceptional in personality, in vision, in intellectual endowment, in insatiable passionateness of interest, in heroic independence of circumstance, in manifold and outstanding achievement. '*Nihil tetigit quod non ornavit*'—he left everything he touched the better for the contact."

One may well quote that phrase as a true summing up of the signal success which marked Dr Druce's practical relationship with all that a busy life held for him of duty and of effort. Unique, again, surely, in such a connection as this was his unspoilable simplicity of heart. There are very few literally 'self-made' men who do not carry about with them signs—to old friends and to new acquaintances, distressing signs—of a felt superiority. They have fought and issued triumphant, where others fell. But their victory has cost them morally more than they can afford. My brethren, Oxford is vastly poorer to-day for the loss from its midst of one who, in spite of all the honours heaped upon him; in spite of the reputation gained by him in the scientific circles of the world, remained at the end of his days just the same man in unaffected, unselfconscious modesty of spirit as he was when I first knew him at the beginning of his work in this City some half-century ago. Thus he passes from us, 'full of years and of cares and of neither weary'; a generous and patriotic citizen; a profound and tireless student of Nature; respected and admired by all who knew him; to his intimates 'a man greatly beloved,' a sincere and humble Christian gentleman."

PLANT NOTES, ETC., FOR 1931.

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

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

†21/2(2). PAPAVER UMBROSUM Hort. See *Gardeners' Chronicle* (1876), ii., 16; xxii., 49 (1884), fig., and Nicholson's *Illust. Dict. of Gardening*, Div. v., p. 21. Alien, Caucasus. A beautiful, dazzling, dark red-flowered species with a black blotch at the base of each petal, the blotch often fringed with an ash-grey border. Appressed hairs on the upper part of the stems. Growing in some quantity (? intentionally sown) on newly turned ground made in road alterations at Dashwood Hill, Bucks. Specimens are distributed this year. G. C. DRUCE.

39/5. CARDAMINE HIRSUTA L., var. EXIGUA O. E. Schulz (teste Schulz). Binevenagh Cliffs, Co. Londonderry, September 1924, C. G. TRAPNELL.

44/2. EROPHILA BOERHAAVII (Van Hall) Dumortier, var. FRASERI O. E. Schulz, nov. var. Scapi usque ad inflorescentiae axim (incl.) pilosi, pedicelli pilosuli. Entspricht der var. *obconica* (De Bary) O. E. Schulz von *E. verna*. Sawley, near Clitheroe, N.W. Yorks, April 1924, C. G. TRAPNELL. Strictly speaking, this has no connection with our expert, Mr J. Fraser.

45/2. COCHLEARIA OFFICINALIS L. This is a variable plant on mountains, up which it extends to 3000 feet. On Loch an Larige, M. Perth, a form with smaller and less angled leaves occurred, on which Prof. O. E. Schulz says, "*C. officinalis* L., ad *C. groenlandicam* L. spectans." A similar form from Kentmine, Westmorland.

†52/2. CAMELINA ALYSSUM (Mill.) Thell., var. (forma) BRACHYCARPA (Thell.) (teste Schulz). Alien, Welwyn, Herts, 1930, H. PHILLIPS.

54/2. *BRASSICA NAPUS* L., var. *SYNTOMOCARPA* O. E. Schulz (teste Schulz). Launcells, E. Cornwall, 1930, Rev. W. W. MASON.

54/14. *B. ARVENSIS* Kuntze, var. *MEDIA* Aclouque (teste Schulz). Cliffs, Kingsdown, E. Kent, 1879, CASTALIA, COUNTESS ~~de~~ GRANVILLE.

Var. *ORIENTALIS* (L.) Koch et Zig., sub-var. *STRICTA* Celak. (teste Schulz). Holmbury, Surrey, 1882, CASTALIA, COUNTESS ~~de~~ GRANVILLE.

54/15. *B. ALBA* (L.) Boiss., var. *PHAEOSPERMA* Finlayson, nov. var. Differs from the type by having brown-skinned seeds. Found among seeds of the typical plant at Cambridge by R. C. FINLAYSON.

54/22. *B. INCANA* (L.) F. Schultz, forma *GLABRESCENS* (Cosson) O. E. Schulz = *HIRSCHFELDIA INCANA* (L.) Lagreze-Fossat. Burton-on-Trent, Staffs, 1930, G. C. DRUCE. Det. O. E. SCHULZ.

55/2. *DIPLOTAXIS MURALIS* (L.) DC., var. *INTERMEDIA* Schur Enum. Pl. Transsilv., p. 60. Plant tall, much branched, large leaved and large flowered, and the pedicels often much longer than the flowers. Waste ground by Bampton Railway Station, Oxon, 1931, P. G. BEAK. Det. E. DRABBLE.

+56/2. *ERUCA ERUCA* (L.) Dr., var. *ERIOCARPA* (Boiss.) (teste O. E. Schulz). Burton-on-Trent, Staffs, 1929, G. C. DRUCE.

59/25(2). *BURSA SUBLAEVIGATA* (E. At.). A handsome form with regularly cut leaves, Letchworth gravel pit, Herts; Yarmouth, E. Norfolk, 1931, H. PHILLIPS. Det. E. ALMQUIST.

+61/27(2). *LEPIDIUM LASIOCARPUM* Nuttall, sub-sp. *GEORGINUM* (Rydb.) Thell. Burton-on-Trent, Staffs, 1930, G. C. DRUCE. Det. O. E. SCHULZ.

+76/3. *RAPISTRUM RUGOSUM* (L.) All., var. *VENOSUM* (Pers.) DC. (teste Schulz). Annual. Lower leaves small, slightly cut, apex sub-obtuse, the upper joint majore venoso rugoso, rugis sinuatis et sulcis profundis. Alien, Burton-on-Trent, Staffs, 1930, G. C. DRUCE.

+80/3. *RAPHANUS LANDRA* Moretti, forma *PARVIFLORUS* Murr. Burton-on-Trent, Staffs, 1930, G. C. DRUCE. Det. O. E. SCHULZ.

+88/13(3). *VIOLA BIFLORA* L. Alien, Pyren., Delph., Juras, Helv., Ital. bor., Dalm., Monten., Croat., Transs., Serb., Bosn., Hung., Austr., Germ., Scand., Sibir., India, Kamptschatka, America, etc. Damp places about springs in mountain ranges. A pretty, small, bright, yellow-flowered plant with brown lines. This ought to be found in Yorkshire, etc., but we have no evidence of it in Britain except as an alien. Found growing on damp soil among Goutweed near Sutton, Pulborough, W. Sussex, 1931, by a child, ex S. E. PARSONS.

†96/20(2). *SILENE CORDIFOLIA* All. Alien. Alpine and sub-alpine regions of the French and Italian Maritime Alps. Perennial. A rose-coloured form of the species. Hortal, waste-heap, Welwyn, Herts, 1931, H. PHILLIPS. Det. J. FRASER.

100/5. *CERASTIUM VULGATUM* L., var. *PRATENSE* Rouy Fl. Fr., iii., 207. Native. Plentiful on Coombe Hill, Berks, 900 ft., 1931, G. C. DRUCE.

117/2. *MALVA SYLVESTRIS* L., var. *vel forma CAERULESCENS* mihi. Growing with the type at Budleigh Salterton, S. Devon; Hayle and Newquay, W. Cornwall, 1931. It differs from the type by having in the fresh state a corolla of chicory-blue, but on drying the flowers become a darker purple, and it is difficult to believe that they could have been so light in colour. G. C. DRUCE.

†132/11. *OXALIS ROSEA* Jacq. Alien, Chile. Hortal. Waste ground near Newquay, W. Cornwall, 1931, G. C. DRUCE. A pretty and favoured garden species. Det. J. FRASER.

†147/3(2). *GENISTA ELATIOR* Koch Syn., ed. 2, 150. *Truncis erectis, superne ramosis ramis aequaliter striatis, superne sub-angustatis inermibus glabris apicem versus pubescentibus. G. elatior* Koch, l.c., 131 = *G. tinctoria* L., var. *elatior* (Koch) Schulz Hb. Norm. No. 633; Rouy Fl. France, iv., 235, 1897. *G. tinctoria* L., sub-sp. *elatior* Koch (teste Kew). [Ref. C.33.] Alien. Roadside, Orpington, W. Kent, July 1930, J. E. LOUSLEY.

151/2. *ONONIS REPENS* L., var. *MARITIMA* Gren. & Godr. Det. Dr SCHINZ. It grows on the extensive sand-dunes of Lady's Island Lake, Co. Wexford, 1928, G. C. DRUCE. This was named by M. Patrice Riencourt de Longpré *O. spinosa*, forma *mitis caduca*, var. *pseudo-arvensis* Rienc. Mr Horwood named it *oligophylla* Ten. of S. Italy and Sardinia.

154/3. *MELILOTUS ARVENSIS* Wallr., var. *UNGUICULATA*. Waste ground, Newport, Isle of Wight, August 1930, J. W. LONG. A similar monstrosity to the one which occurs in *M. alba* and *altissima*, *Medicago lupulina*, etc., G. C. DRUCE.

176/11. *VICIA LAEVIGATA* Sm. Eng. Bot., t. 483, 1798. *V. LUTEA* L., sub-sp. *LAEVIGATA* (Sm.) Syme E.B., iii., 94. "*V. hybrida* in pratis et pascuis circa Weymouth in agro Dorsetsiensi."—*Huds. Fl. Ang.*, ed. 2, 320, 1778, not of L. "Gathered on the beach at Weymouth by the Rev. Mr Baker in August 1792."—*Sm. Eng. Bot.*, n. 483. "Authentic specimens prove this to be Mr Hudson's *hybrida*."—*Sm. Eng. Fl.*, iii., 286. "About Weymouth, Portland Isle, Chesil Bank, etc."—*With. Nat. Arr.*, ed. 7, iii., 846, 1830. "Now extinct."—*Cyb. Brit.*, 319. "Ambiguity."—*Comp. Cyb.*, 500. "Portland Island, among the shingles near Chesil Bank and even flowering under the stones, some depth, Sir T. G. Cullum;

Lodmoor (specimen ex Pulteney in Hb. Brit. Mus. where the locality is more definitely given as 'a little beyond the turnpike gate near the sea shore') near Weymouth."—*Huds. Bot. Guide*, 228, 1805. "I explored all the localities given in the Botanist's Guide and in the English Flora, a field half-way between Weymouth and Portland Ferry near the sea, without success."—G. S. Gibson in *Phyt.*, 737, 1843. "There is no dubiousness about the occurrence of this plant. A specimen exists in Herb. Smith in the Linnean Society and also in Herb. Banks. As to its grade there seems a possibility that it was a hybrid of *V. lutea* and *V. angustifolia* or a mutant. Close search along the coast may yet be successful in rediscovering it, a most desirable thing as it is unknown elsewhere."—G. C. Druce, *The Extinct and Dubious Plants of Britain in Suppl. Rep. B.E.C.* for 1919. Recently I have gathered on the rubbish-heaps of Burton-on-Trent, Staffs, a form of *V. lutea* with glabrous pods which Continental botanists have named var. *laevigata* Boissier, but this is, as Mr E. G. Baker agrees, a different plant, and not the much-to-be-desired *V. laevigata* Sm. Boissier (*Voy. Bot. Espr.*, 194) had a var. *laevigata* which he wrongly thought was Smith's plant. Leaves and pods completely glabrous, which is probably my Burton plant, and as such has been identified by M. Patrice Riencourt de Longpré and Dr H. Schinz.

176/9. *V. LUTEA* L., var. *GLABRESCENS* Druce, nov. comb. = var. *LAEVIGATA* Boiss., non Sm. The plant from Burton-on-Trent with glabrous leaves and pods was named var. *laevigata* Sm. by Riencourt and Schinz but Smith's plant had glabrous, five-seeded pods, calyx teeth more equal, flowers pale blue or whitish, seldom yellowish. The Burton plant has glabrous pods and foliage, stipules green, flowers pale yellowish, calyx with open sinus, some teeth longer than others; quite unlike the figure 483 in *Eng. Bot.* of *laevigata* Sm. Bentham's suggestion as to its being under *sativa* is wildly wrong. G. C. DRUCE.

178/3. *LATHYRUS TUBEROSUS* L. I first became acquainted with this plant some twenty years ago when some seeds were given me by the schoolmaster at Fyfield, Essex. These were sown in a pot of lightish soil, and in due course two or three germinated and subsequently produced tubers. At that time I was living at Hale End, near Chingford, Essex, and had a small bank in my garden (on the London Clay), which I called my chalk-down, as I made it mainly of chalk with a "subsoil" of chalk nodules for the purpose of growing calciphilous plants. I planted out the *Lathyrus* tubers on the bank, thinking they would probably prefer it to the stiff and sticky clay. They did. In the course of a year or two they grew so well that I used to place cylinders of 3 ft. galvanised netting round a clump of the shoots, and the latter would grow so vigorously that they overtopped the netting by about the end of July and had to be supported by another story of netting. The plants used to flower very well and for some months there were always some flowers open; but they did not seed as well as they flowered, possibly because the soil was not good enough for seeds. Their one drawback was

the strong tendency of the shoots to come up all over the place in the spring, when they used to stand up straight out of the ground to the height of six or seven inches before collapsing with their own weight. When we moved to Cornwall in 1928 I delved for some of the tubers, and after going down a foot or eighteen inches in likely spots found four of various sizes, the largest being about two inches by one inch and the smallest about half the size each way. They were dark brown like those of *Conopodium majus*, which they much resembled in substance, but were roughly spindle shaped with one end decidedly the more pointed. The new shoots always came from the blunter end and sometimes penetrated a foot or two of earth before reaching the surface, the subterranean part of the shoot being white and suggesting the corresponding part of *Convolvulus arvensis*. The soil here is a stiffish yellow clayey loam. Two of the tubers were planted in what was thought to be a suitable spot and the three foot stump of a small holly tree was fixed between them and branches stuck in the ground firmly round it, the whole being tied with string to keep it together and provide suitable support for the shoots, some of which appeared in the spring of 1929 and duly flowered and seeded as well as could be expected. In 1930 there was an obvious deterioration, for only two shoots appeared and did not grow, or seed so well as before. In 1931 nothing came up at all, and I conclude that either the hot dry season of 1929 or the soil or the rainfall was too much for their comfort and they gave up the struggle. I have now received some more tubers, all small, from Mr R. L. Smith, who recorded the plant's colony at Barry Dock (*Rep. B.E.C.*, 342, 1930), and intend to try again to establish the plant in the garden here. Although I lived in Essex for 26 years I never saw the plant at Fyfield, but I did see it, I think, in August 1916, flourishing in the grounds of the Hotels on Canvey Island, in what seemed to be nearly black alluvial soil.—C. NICHOLSON, Tresillian, Cornwall.

190/2. *ALCHEMILLA PRATENSIS* Schmidt, forma TRUNCATA Jaquet. Pitlochry, E. Perth, 1931, G. C. DRUCE.

Forma VEGETA Jaquet. A luxuriant state. Melsetter, Hoy, Orkney, 1931, G. C. DRUCE.

196/1. *CRATAEGUS MONOGYNA* Jacq., var. vel monstr. In this instance the well-formed haws retain their petals permanently until the fruits begin to change colour, so at a short distance it suggests that the plant is flowering. Torberry Hill, South Harting, W. Sussex, July 1931, E. B. BISHOP and W. BIDDISCOMBE. A most interesting state.

196/1. *CRATAEGO-MESPILUS GRANDIFLORA* (Smith) = *CRATAEGUS MONOGYNA* × *MESPILUS GERMANICA*. (*MESPILUS SMITHII* DC.; *M. GRANDIFLORA* Sm.; *PYRUS LOBATA* Nicholson). Foot of Cader Idris, Tal-y-llyn, Merioneth, v.-c. 48, August 1931, Miss IDA M. ROPER. It is a supposed hybrid between the above two named parents, and was first found in France. As the fruits are sterile it is always a planted tree in

Britain, and must be so in this case. I have seen many trees of it in S.E. Surrey, and elsewhere in gardens, etc.—J. FRASER.

256/1. *CONOPODIUM MAJUS* (Gouan) L. & B. Captain A. H. BATTEN POOLL sent me from Rode, N. Somerset, a curious form of this which is not represented in the Kew Herbarium. It is a fragile plant, the fruits having their edges turned in unlike the *Orthospermae*. In Stoke Wood, Mendips, S. Somerset, a form with similar fruits occurs, the nut in this case being the ordinary pig-nut of the common species. In Devon plants occur with similar fruits but with a tap-root four inches long.

265/3. *OENANTHE CROCATATA* L., forma *ROSEA* Druce, forma nov. Found by Mr C. P. HURST at Pillaton, E. Cornwall, 1931, G. C. DRUCE.

301/1. *VALERIANA OFFICINALIS* L. In Britain this is a variable species but readily admits of being separated into two well marked forms. Linnaeus in the *Species Plantarum* had one species, *officinalis*, which in the main refers to the shop Valerian. Smith (*Eng. Fl.*, i., 43, 1824) also has one species, but with a subordinate variety, *V. sylvestris major montana* of Bauhin and Dillenius, which is often muddled by Smith as the type of Linnaeus. W. H. Beeby (*Journ. Bot.*, 314, 378, 1888) studied the British Valerians with some care and found he could readily separate them. Boswell Syme (*Eng. Bot.*, ed. 3, iv., 236, 1877) named them badly, since he chose *Mikanii* for the true *officinalis*, there being already a Guatemalan *V. Mikanei*. Syme defined the two varieties briefly as: *Mikanii*—rootstock with elongated stolons, leaves with 6-10 pairs of leaflets; *sambucifolia*—rootstock with elongated stolons, leaves with 4-6 pairs of leaflets. Gibson (*Fl. Essex*, 154, 1862) says the fruits differ, but was unable to see any constant differences; the true medicinal plant was acknowledged as true *officinalis*. Sir W. Hooker (*Student's Flora*, 190) quotes Syme's leaf-description, while Babington (*Manual*, 190, 1894) distinguishes *officinalis* and *sambucifolia*. F. N. Williams (*Prod. Fl. Brit.*, 202) keeps these distinct as two species—*officinalis* with two varieties, (i) *tenuifolia* Vahl; (ii) *latifolia* Vahl (which he says = *V. exaltata* Mill.)—the latter a stronger plant with suckers rather than stolons, leaflets much broader, and *sambucifolia*, leaflets 3-5 pairs, cymes large, diffuse (?), flowers often larger. Beeby says there is no great difference in size, but *officinalis* is of a beautiful bright clear green, like *Cardamine amara*, while *sambucifolia* is dark, opaque, bluish-green. *C. officinalis* is more divaricate—it has an almost scorpioid cyme when fruiting. In *sambucifolia* the cyme is more compact, while the branches are simply erect. The ripe fruit of *sambucifolia* is larger, considerably broader at the base, in proportion to the apex; the seed does not fill the cell cavity in *officinalis*. Arnold Lees (*Fl. N.W. Yorks*, 274) maintains that *V. officinalis* is a dry-soil state of the far commoner *V. sambucifolia*, but this seems unlikely. Beeby says that many of these woodland plants (but not *officinalis*) are states of *sambucifolia*. A difference noticed in

the cultivation of the two species by Beeby is that *officinalis* has the lower leaves lying flat on the ground whereas in *sambucifolia* the leaves are erect. British botanists are now, I believe, willing to accept the validity and distinctiveness of the two species. Recently I have made the acquaintance of a very striking form which is in some ways an intermediate. This I have distributed through the B.E.C. this year (1931).

V. OFFICINALIS L., var. (or sub-sp.) DENTATIFOLIA Druce. It grows in some quantity on the Berkshire Downs at Ashdown, and was conspicuous from its erect growth (robust, not slender), and compact (trifid) cyme of bright rose-pink colour. This seems to be a good intermediate, having the numerous pairs of leaflets (7-9) of *officinalis*, but the dentations (strongly toothed on both sides of the leaflets) nearer *sambucifolia*, as were the compact cymes. Flowers nearly sessile, strongly scented of Valerian; stoloniferous growth. A similar form but with broader leaflets occurred at Great Marlow, Bucks; Cransley Wood, Northants; Wychwood, Oxon (a more slender plant); Burcot, Berks.

Rouy (Fl. Fr., viii., 83) has *V. officinalis* L. "Souche odorante, avec ou sans stolons hypogés. Plante ± velue à la base. Tige de 4-12 décim., dressée, fistuleuse, sillonnée. Feuilles pubescentes, toutes pinnatiséquées, à segments dentés ou entiers. Fleurs rougeâtres, rarement blanches, disposées en corymbe trichotome ample; bractéoles lancéolées-linéaires, scarieuses et ciliées aux bords. Stigmate trifide. Fruit glabre, ellipsoïde-allongé, comprimé. It has four varieties.

a. *genuina* nob. = *V. pratensis* Dierb. Feuilles à 11-15 segments oblongs-lancéolés, le terminal ± denté plus large que les latéraux souvent entiers; tiges de 4-8 décim., ordinairement solitaires et stolonifères.

b. *altissima* Flisch. et Lind. = *exaltata* Mikan, *V. altissima* Bess., *V. multiceps* Wallr. Feuilles à 13-21 segments ± elliptiques-lancéolés, longuement atténués au sommet, denté (au moins sur le bord inférieur), le terminal plus large que la dernière paire; tiges de 6-12 décim., ordinairement non solitaires et non stolonifères.

c. *latifolia* Vahl = var. *major* Koch = *V. procurrens* Wallr. Feuilles à 11-15 segments elliptiques-aigus ou elliptiques-lancéolés, lâchement dentés, le terminal plus large et plus long que les latéraux; tiges de 6-8 décim., ordinairement solitaires et non stolonifères.

d. *minor* Koch = *V. angustifolia* Tausch non L.; *V. collina* Wallr., var. *tenuifolia* Vahl. Feuilles à 13-21 segments étroitement lancéolés ou sublinéaires, entiers ou ceux des feuilles inférieures lâchement dentés, le terminal de même forme et à peu près de même grandeur que les latéraux; tiges plus grêles, de 4-7 décim., ordinairement solitaires et souvent stolonifères.

Sub-species *V. excelsa* Poir. = *sambucifolia* Mikan is given as British by Rouy. Souche ± munie de stolons terminés par une rosette appauvrie de feuilles à 3-5 segments larges, suborbiculaires (et non à segments nombreux et étroits); tige robuste et élevée, ordinairement munie à la base de rameaux florifères grêles, allongés, nus; feuilles à folioles moins

nombreuses (5-9), plus fortement dentées, fleurs en cymes plus denses; fruit ovoïde-oblong, plus comprimé.

The second sub-species, *V. hispidula* Boiss. is Pyrenean.

Koch (Syn. Fl. Germ., ed. 3, 1857), treats them under three species.

1. *V. exaltata* Mikan. Leaves all pinnate, leaflets 7-10, lanceolate, dentate-serrate, thick, sulcate; roots many stemmed without stolons=*altissima* Hornem.

2. *V. officinalis* L. Leaves all pinnate, 7-10 paired, leaflets lanceolate, dentate-serrate or entire, stems sulcate, root one stalked, stoloniferous. a. *major* Koch = *procurrens* Wahl., var. *media* Koch, ed. i. Stem tall, leaves all dentate. b. *minor* Koch = *V. angustifolia* Tausch; *V. collina* Wallr. Leaflets entire or feebly dentate. Cultivated it often emits many stolons.

3. *V. sambucifolia* Mikan. Leaves all pinnate, 4-5 pairs of leaflets, oblong-lanceolate, dentate-serrate. Stem sulcate. Root one-stemmed, stoloniferous.

Var. *platyphylla* Druce. The broad-leaved form, upper leaflet oftentimes entire.

Var. *stenophylla* Druce. Leaflets narrow.

(Dr K. H. Zahn has kindly determined the following Hawkweeds.)

419/1. *H. PILOSELLA* L., var. *ANGUSTIUS* (N. P.) i, (1885) 157. Llyn Coron, Anglesey, 1930, G. C. DRUCE.

Var. *HIRSUTUM* N. P. Beaumaris, Anglesey, 1930, G. C. DRUCE.

419/13(2). *H. KALSOENSE* Dahlst. (= *MOUGEOTII-SUBRAMOSUM* Zahn), sub-sp. *BURNENSE* Druce et Zahn. Caulis 25-30 cm. subtenuis, breviter subpilosus, (sursum densius) floccosus, 4-7(-10)-cephalus, acladio 3-5 mm., rarius 3(-4), inferioribus 1-2 valde remotis, anthela cana, pilis glandulisque basin versus atris, incrassatisque, modice numerosis subbrevibus obsita. Involucra 7-8.5 mm., crasse cylindrico-ovata sat parva similiter vel paulo magis pilosa, minus glandulosa, squamis latiusculis obtusis vel acutiusculis, partim ± virescenti-marginatis apicem versus subfloccosis subbarbulatis, externis basi densius floccosis. Ligulae magnae, sublatae, subaureae. Styli fusco-brunnei. Folia ubique breviter, margine costâque dorsali et in petiolo subbrevisubangusto subdensius pilosula, denticulata tantum, basalia elliptica vel elliptico-lanceolata, obtusiuscula vel subacuminata, basi subulo vel sensim attenuata; caulinae 1-2, inferius lanceolatum longe acuminatum longe in petiolum ± alatum leviter amplactantam attamatum similiter denticulatum et pilosulum, secundum plerumque reductum. In consortio sub-sp. *anglici*. South Burn, near Rackwick, Hoy, Orkney, 1931, G. C. DRUCE.

419/14(2). *H. OLIVACEUM* Gr. et Godr. (= *CERINTHOIDES* < *MURORUM* (vel *FRACCOX*)), sub-sp. *PSEUDOLANGWELLEENSE* Zahn (= *ANGLICUM-MURORUM*). Folia basalia ovato-oblonga v. elliptica obtusa vel oblongo—et angustius—lanceolata sub-vel longe-acuminata, omnia breviter vel longe in petiolum tenuens, ± dense pilosum, brevius vel longius attenuata, margine parvissime glanduloso costâque dorsali ± dense floccosa breviter pilosa, breviter subobtusa vel interiora basin versus usque in petiolum

sublongius acutius dentata; caulina 1(-2) parva floccosa. Caulis parvissime pilosus apice parce glandulosus 2-7-cephalus, acladio c. 2 cm., ramis 3 remotis (inferioribus saepe abortis), pedicellis gracilibus, pilis obscuris setosis paucis, glandulisque brevioribus longioribus permixtis crassiusculis obsitis, dense floccosis atriusculis. Involucra 10-11 mm. lata, atra, modice glandulosa et modice nigropilosa, pilis inferne incrassatis, squamis latiusculis subobtusis vel acutiusculis, intimis acutis vix floccosis. Ligulae luteae, apice vix subciliolatae, stylis obscuris. Loch an Larige, M. Perth, 1930, G. C. Druce.

419/16(2). *H. OLIVACEUM* Gr. et Godr. (= *CERINTHOIDES* < *MURORUM* (vel *PRÆCOX*)), sub-sp. *LLYNENSE* Zahn. Caulis ad 3 dm., glaber, 3-cephalus, acladio 2-4 cm., ramo furcato—2-cephalo, apice cum pedicellis vix disperse, brevissime pilosus sed ± floccosus, pedicelli obscuri, dense tantum floccosi, brevissime, apice vix modice glandulosi et bracteolis 2-3 angustis obsiti. Involucra 10-12 mm., obscura vix modice breviter subobscurae pilosa, parce minute glandulosa, squamis e basi sublatuscula, longissime attenuatis, ± acutis vel partim longissime subulatis, externis margine basin versus parce floccosis, internis anguste dilutius marginatis. Ligulae magnae perlatae. Styli sublutei, fusciscentes. Folia rigida, supra glabra, ceterum brevissime, in petiolo brevi vel longo subtenui basi latissime vaginante sublongius subdensiuscule molliter pilosa, *partim levissime submaculata*, ovata vel ovato-oblonga vel ovato-vel elliptico-lanceolata, basi rotundata vel ± cito contracta, obtusiuscula vel breviter acuminata mucronato-pluria denticula in costa dorsali ± floccosa; caulinum 0-1, brevissime petiolatum ovato-lanceolatum sat parvum, distincte denticulatum subtus floccosum vel ± reductum. Slopes above Llyn-y-fan Fach, Carmarthen Van, c. 2000 ft., Carmarthen, 1922, H. SALTER.

419/95(2). *H. LEPISTOIDES* K. Johanns. ex Dahlst. Bidr. ii, (1893) 92. Boughrood, Radnor, 1931; Woodchester, Gloster, 1931, G. C. DRUCE.

Var. *BIFOLIUM* Dahlst. H. Sc. iii, (1892) n. 53. Monmouth, 1931, G. C. DRUCE.

419/95(3). *H. SILVULARUM* Jord. ex Bor. Fl. Centre, ed. 3, ii, (1857) 418, pro sp. (Zahn in Engler, p. 314, fig. 28 D). Cliffs beyond Kingsdown, Walmer, E. Kent, September 1882, CASTALIA, COUNTESS & GRANVILLE.

419/124. *H. ALFVINGRENTI* Dahlst. H. Sc. x. (1896), n. 59, var. *PLURIFOLIUM* Zahn. A typo foliis caulinis 5-6 (breviter dentatis), involucri saepe epilosis differt. Near Callington, Cornwall, 1927, H. WISE.

Var. *GROSSIDENS* Zahn. A typo differt foliis caulinis inferioribus 2-3, magnis late ovato-lanceolatis, grosse 3-4 dentatis, reliquis 2 oblongo-lanceolatis infra medium grosse longe dentatis, summo angusto. Arthog, Merioneth, 1923, Mrs WEDGWOOD, as *H. paucifoliatum*, det. J. ROFFEY.

419/126. *H. CHLOROPHYLLUM* Jord., var. *CALVESCENS* Zahn in Engler, p. 363. Ludlow Wall, Shropshire, 1930, Miss TODD; Outershaw, Yorks, 1930, G. C. DRUCE.

Hieracium

419/128. *H. PINNATIFIDUM* Lönnr., var. *GENUINUM* Dahlst. Boughrood, Radnor, 1931, G. C. DRUCE.

419/145. *H. TRIVIALE* Nörtl. (See Druce Br. Pl. List, ed. ii., p. 69, where it is queried). Ben Eay, W. Ross, 1931, R. H. CORSTORPHINE and J. CHAPPLE.

419/184(7). *H. MACULATUM* Sm., sub-sp. *ASPERATUM* Jord. pro sp. in Bor. Fl. Cent. Fr., ed. 3, ii. (1857), 406; Zahn in Engler, p. 514, forma *IMMACULATUM* Zahn—foliis immaculatis a typo differt. Near Ross, Hereford, 1931, G. C. DRUCE.

419/184(8). *H. MACULATUM* Sm., sub-sp. *POLLICHAÆ* Sch.-Bip. pro sp. in O. B. Wochenbl., iii. (1853), 247; Zahn in Engler, p. 516, sub-var. *NORMALE*, a verum Zahn. Boughrood, Radnor, 1931, G. C. DRUCE.

419/197(2). *H. EUCHRYSTYLUM* Zahn in Engler, p. 814. Near Aith Head, S. Walls, Orkney, 1931, G. C. DRUCE.

419/207. *H. TRIDENTATUM* Fr., var. *POLYPHYLLUM* Zahn in Engler, p. 866, fig. 60 Gi, sub-var. *ANGUSTIFOLIUM* Uechtr. in sched., forma *SUBPILOSICEPS* Zahn, l.c., p. 867. Bracknell, Berks, 1931, G. C. DRUCE.

419/229(2). *H. LEVIGATUM* Willd. Sp. Pl., iii., 3 (1800), p. 1590, sub-sp. *BICHLOROPHYLLUM* Druce et Zahn. Caulis 25-60 cm., usque supra accladium breviter hirsutus, tenuis vel gracilis, paniculato-cymosus, accladio pedicellisque 25-50 mm. longis, floccosis tantum (raro pilis valde solitariis obsitis) superne angustissime bracteolatis et leviter incrassatis, oligo-vel pleiocephalus. Involucra 8-9.5 mm., brevia lata, viridiatra ± effloccosa, glandulis pilisque minutis solitariis vel subnullis obsita, squamis latiusculis obtusis vel (intimis) ± acutiusculis, externis subnumeris brevibus laxis. Ligulae subangustae. Styli lutei. Folia caulina 15-30, sensim decrescentia, ima emarcida, inferiora late oblongo-lanceolata, obtusiuscula, sequentia sensim angustiora acutiora, magis magisque lanceolata vel summa linearia, denticulata tantum, nigra dilute gramineo-viridia et pilosa, subtus albido-glaucoviridia et praesertim in costâ margineque breviter pilosula, simul ± floccosa, omnia in basin (in inferioribus petioliformen) attenuata. Sub-sp. *perrigidum* Zahn in Engler Consp., 891, affine. Molland, N. Devon, 1930, G. C. DRUCE.

419/241. *H. UMBELLATUM* L., var. *TRACHYPHYES* Zahn in Engler, p. 912, sub-var. *NORMALE* Zahn, l.c., f. *VERUM* Zahn, l.c. Middleton-in-Teesdale, Durham, 1930, G. C. DRUCE.

419/245. *H. CROCATUM* Fr., var. *NORMALE* Zahn in Engler, p. 923. Pegal Bay, Hoy, Orkney, 1931, G. C. DRUCE.

419/245(2). *H. AESTIVUM* Fr. (= *UMBELLATUM-PRENANTHOIDES* Grex *H. CROCATUM* Zahn), sub-sp. *HEMITRACHYS* Druce et Zahn, sub-sp. *CROCATO* Fr. affine. Caulis tenuis, 3-7 dm. altus, usque in summa tertia parte

subbreviter, hirsutus, superne haud vel disperse subdilute setulosus, 1-3(-4)-cephalus, acladio c. 25 mm., ramis 1-2(-3) subremotis tenuibus, cephalis saepe abortis, subcanofloccosis tantum vel vix disperse subdilute setulosus eglandulosus. Involucra 9-11 mm., crassa, subatra, vix vel \pm disperse setulosa vix vel parce sublonge glandulosa, squamis triangulariter lanceolatis, obtusis vel obtusiusculis, interioribus obscure viridimarginatis, externis margine basin versus parce floccosis. Ligulae subangustae, sublonge dentatae, dentibus vix subpapillosis. Styli lutei. Folia c. 15, sensim minor, lanceolata, rigida subtus, vel in costâ margineque subdensius, breviter setulosa; superiora minus pilosa; summa glabrescentia; omnia subtus parce, superiora densius floccosa; media basi subattenuata vel lata sessilia subamplectentia. Pegal Bay, Hoy, Orkney, August 1931, G. C. DRUCE.

419/250. *H. DUMOSUM* Jord., var. *GENUINUM* Zahn, sub-var. *SEMIPILOSUM* Zahn. Burnham Beeches, Bucks, 1931, G. C. DRUCE.

419/256(2). *H. SUBLACTUCACEUM* Zahn in Koch Syn., ed. 3, iii. (1901), 1917; et in Engler, p. 954, var. *RADNORICUM* Druce et Zahn. Folia dilute, subtus albido-viridia, margine subtusque tantum brevissime pilosula, breviter dentata, sensim decrecentia. Caulis subpilosus. Involucra atra, parvissime floccosa, pilis glandulisque solitariis obsita, squamis obtusis. Styli subobscuri. Boughrood, Radnor, 1931, G. C. DRUCE.

423/43(2). *TARAXACUM AUROSULUM* Lindb. f., forma. Near Goring, Oxon, 1931, G. C. DRUCE.

423/54(2). *T. EKMANII* Dahlst., forma. Near Goring, Oxon, 1931, G. C. DRUCE.

(New British Species of *TARAXACA*. We are greatly indebted to Dr Dahlstedt for the following descriptions.)

423/65(2). *TARAXACUM LACERIOLOBUM* Dahlst., n. sp. Folia sat laete viridia, lineari-lanceolata—lanceolata, lobis plurimis approximatis—sat distantibus, a basi lata margine superiore \pm convexo subito in apicem longum, integrum, supra medium \pm dilatatum obtusiusculum—breviter acutum protractis, in margine superiore vulgo etiam in inferiore dentibus \pm longis, \pm subulatis parvulis—porrectis praeditis, lobo terminali parvo triangulari, \pm longe dentato, in foliis interioribus majore parce inciso; petiolis leviter violascentibus, nervo mediano pallido. Scapi plures, longe folia superantes. Involucrum crassiusculum, \pm atroviride. Squamae exteriores anguste lanceolatae, \pm longae in apicem longum angustum protractae, \pm recurvatae—reflexae. Calathium 40-45 mm. diametro. Ligulae obscure luteae, marginales extus striâ atrovioleaceâ notatae. Antherae replete polliniferae. Stylus cum stigmatibus \pm fusco-virescens. Achenium c. 3 mm. longum, 1 mm. latum, \pm fusco-stramineum, superne \pm spinulosum, inferne \pm tuberculatum, in pyramiden c. 1 mm. longam, conice-cylindricam sat abrupte abiens. Rostrum

10-11 mm. longum. Owing to the deeply incised and long subulate dentate lobes, this species has a highly distinct appearance. The lobes taper from a broad gibbous base with long dentations on the upper margins into a more or less enlarged, blunt, or short-acute apex entire above the middle. The outer phyllaries are very narrow and very elongated. This species has a very great resemblance in its leaves to some Swedish species, but it does not seem to be allied to them. Wilbury Hill, Herts; Ivinghoe Beacon, Bucks, H. PHILLIPS.

423/77(2). *T. PANNULATIFORME* Dahlst., n. sp. Folia subobscura viridia lineari-lanceolata—lanceolata, lobis sat approximatis, basi latiuscula, deltoidea, acutis saepe longis in margine superiore, ± denticulatis—dentatis, summis singulis apice saepe rotundatis, lobo terminali parvo—mediocri, hastato—triangulari, ± acuto, integro, lobulis lateralibus acutis v. interdum uno alterove labulo obtuso-rotundato, in fol. interioribus majore basi ± dentato-inciso. Scapi plures folia superantes ± pallidi. Involucrum crassum, sat magnum, ± atroviridi, basi truncata. Squamae exteriores latiusculae ovato-lanceolatae, ± recurvatae. Calathium 45-50 mm. diametro. Ligulae obscure luteae, marginales extus striâ canovioleae notatae. Antherae parce polliniferae. Stylus cum stigmatibus ± fusco-virescens. Achenium fusco-stramineum, c. 3.5 mm. longum, 1 mm. latum, apice brevi spinulosum, caeterum ± tuberculatum in pyramiden, 0.5 mm. longam, ± conicam, sensim abiens. Rostrum 8-10 mm. longum. This species seems to be closely allied to *T. pannulatum* Dahlst. from Scandinavia, but differs from it by its paler petioles and middle nerves, and by its more acute and less dentate, never lacinate, lobes. As in *T. pannulatum*, the upper lobes, and the lobules of the terminal lobe are often rounded at the apex. Clifton, Beds; Icklingham, W. Suffolk; Hitchin, Herts, H. PHILLIPS.

423/77(3). *T. PANNULATUM* Dahlst., modif. Near Goring, Oxon, 1931, G. C. DRUCE.

423/80(2). *T. PORRECTIDENS* Dahlst., n. sp. Folia laete viridia, lobis plurimis mediocribus—longis, ± angustis, patentibus (singulis interdum ± porrectis), apicibus ± longis, acutis, saepe retroversis, in margine superiore dentibus longis—longissimis, acutis—subulatis, saepe ± porrectis, in margine inferiore dentibus saepe retroversis praeditis, lobo terminali mediocri—magno latiusculo—sat lato sagittato—hastato, integro v. in uno alterove latera dente singulo acuto saepe porrecto instructo; in foliis interioribus lobo terminali ± producto, ± dentato; petiolis leviter violascentibus, nervo dorsali magis conspicue violascente. Involucrum mediocre, subobscura virescens v. olivaceo-viride, basi ± truncata. Squamae exteriores ± lanceolatae—anguste ovato-lanceolatae, acuminatae sat conspicue marginatae ± recurvatae. Calathium 35-70 mm. diametro. Ligulae obscure luteae, marginales extus striâ sat obscure violaceâ notatae. Antherae polliniferae. Stylus cum stigmatibus ± fusco-virescens. Achenium ± fusco-stramineum, 3 mm. longum, 0.75

mm. latum, apice \pm spinulosum, caeterum leviter tuberculatum v. laeve, in pyramidem c. 0.75 mm. longam cylindricam abiens. Rostrum 8-9 mm. longum. *T. porrectidens* is mainly characterised by its very narrow, long lobes, with long, very often upward or downward turned entire ends, and with long, very often upward directed acute teeth. Also by its broadly sagittate-hastate endlobes with a sharply upturned tooth on one or the other side, near the base. Wymondley, Hitchin, Herts; Saf-ron Walden, N. Essex, H. PHILLIPS.

423/82(2). *T. PSEUDOHAMATUM* Dahlst., n. sp. Folia sat laete viridia, linearia—lineari-lanceolata, lobis \pm distantibus—sat approximatis, deltoideis—subhamatis, sat acutis, integris v. inferioribus in margine superiore \pm subulato-dentatis, lobo terminali sagittato—subhastato, parvo—mediocri, acuto—acutiusculo integro, marginibus saepius \pm convexis, in fol. interioribus majore minus acuto, petiolis et nervo mediano leviter violascentibus. Scapi folia superantes. Involucrum crassiusculum, \pm atroviride, basi ovato-rotundata. Squamae exteriores lanceolatae—anguste, v. late ovato-lanceolatae, erecto-patentes, v. leviter recurvae. Calathium 40-45 mm. diametro. Ligulae obscure luteae, marginales extus striâ canovioleae notatae. Antherae polliniferae. Stylus cum stigmatibus \pm fusco-virescens. Achenium 2.8-3 mm. longum, 0.8 mm. latum, apice \pm acute spinulosum caeterum tuberculatum, \pm obscure fusco-stramineum, in pyramidem 0.7 mm. longam conico-cylindricam sat abrupte abiens. Rostrum 10-11. longum. This species has some resemblance to *T. hamatum*, according to the leaves and outer phyllaries, but it differs from it by having less hamate, often only deltoid lobes, narrow outer phyllaries, and more feebly coloured petioles. Hitchin, Herts; Ivinghoe, Bucks, H. PHILLIPS.

423/82(4). *T. RECURVILOBUM* Dahlst., n. sp. Folia sat laete viridia, elongata, multilobata, lineari-lanceolata—lanceolata, lobis \pm approximatis—sat distantibus recurvis—valde hamatis, apicibus \pm longis, integris, acutis, saepe valde recurvatis in utroque margine dentibus mediocribus—longis acutis, saepe valde porrectis instructis, lobo terminali valde sagittato, brevi—mediocri integro acuminato, lobulis lateralibus valde retro-curvatis; lobis in fol. interioribus saepe magnis—maximis et lobo terminali magno lato integro v. saepe magis elongato et \pm dentato; folia intima lata, \pm oblongo-lanceolata, basi \pm late lobata v. subintegra \pm dentata, petiolis et nervo mediano \pm violascente. Scapi folia aequantes v. superantes, \pm colorati. Involucrum sat magnum, crassum, obscure olivaceo-viride—sat atroviride. Squamae exteriores longe lineari-lanceolatae, leviter marginatae, \pm retroflexae. Calathium 45-50 mm. diametro. Ligulae obscure luteae, marginales extus striâ obscure violaceâ notatae. Antherae polliniferae. Stylus cum stigmatibus obscure fusco-virescens. Achenium 3-3.5 mm. longum, c. 1 mm. latum, fusco-stramineum, apice \pm spinulosum, caeterum tuberculatum, in pyramidem 1 mm. longam cylindricam sat abrupte abiens. Rostrum c. 10 mm. longum. *T. recurvilobum* is chiefly distinguished by its highly recurved

hamate leaf-lobes with long, very often, upturned teeth. The leaves vary from lanceolate with very distant lobes to broad with more approximate and longer lobes. The endlobe is on the narrower or outer leaves of middle size and acuminate, on the broader leaves ordinarily large, acute, or on the inner, more or less elongated and dentated. Stevenage, Hitchin, Wilbury Hill, Berkhamstead, Herts; Ivinghoe Beacon, Castlethorpe, Bucks; Clifton, Beds, H. PHILLIPS. A form allied to *T. recurvilobum*, and perhaps a grass-form of it from Ivinghoe, Bucks; Hitchin, Herts, H. PHILLIPS. Modif., Clifton, Beds; Hitchin, Wilbury Hill, Berkhamstead, Baldock, Herts; Ivinghoe, Bucks; Mitcheldever, S. Hants, H. PHILLIPS.

423/85(2). *T. SUBMUCRONATUM* Dahlst., n. sp. Folia laete viridia, multilobata, lobis triangularibus—deltoideis, basi ± lata, ± longe acutis in margine superiore, ± subulato-dentatis v. superioribus ± integris; lobo terminali sagittato, parvo—mediocri integro ± longe acuminato; petiolis et nervo mediano ± pallidis. Scapi plures folia ± superantes. Involucrum obscure (atro-) viride, basi ± truncatum. Squamae exteriores ± late lineari-lanceolatae—lanceolatae, ± acuminatae, leviter marginatae, ± patenti-recurvatae, exteriores lineari-lanceolatae, omnes ecorniculatae. Calathium sat obscure luteum, c. 45 mm. diametro. Ligulae ut videtur leviter canaliculatae, marginales extus striâ obscure violaceâ notatae. Antherae polliniferae. Stylus et stigmata ± fusco-virescentes. Achenium ± fusco-stramineum, c. 3 mm. longum, c. 8 mm. latum, superne ± spinulosum, inferne ± tuberculatum, in pyramiden c. 5 mm. longam conico-cylindricam sensim abiens. Rostrum c. 9 mm. longum. This species seems to be closely allied to *T. mucronatum* Lindb. f., from which it differs by more plentifully lobed leaves with more subulate dentate upper margins, paler petioles and middle nerves, and darker involucre with more faintly margined edges to the phyllaries. Icklingham, W. Suffolk; Hitchin, Herts, H. PHILLIPS.

423/92(2). *T. TANYPHYLLUM* Dahlst., n. sp. Folia laete viridia, elongata, multilobata, lobis angustis, longis, distantibus, breviter acutis, cum interlobiis ± longe subulato-dentatis; lobo terminali brevi hastato, apice interdum producto integro, in fol. interioribus latiore et longiore obtusiusculo, marginibus ± convexis in uno alterove latere ad basin ± inciso; petiolis et nervo mediano pallidis. Scapi plures folia superantes, ± pallidi. Involucrum sat magnum, subcrassum, obscure viride—atroviride, basi truncatum. Squamae exteriores ± ovato-lanceolatae, obtusiusculae—breviter acuminatae (? haud) marginatae, ± patentes—patenti-recurvatae. Calathium 45-50 mm. diametro. Ligulae obscure luteae, marginales extus striâ canoviolaceâ notatae. Antherae polliniferae. Stylus cum stigmatibus ± fusco-virescens. Achenium c. 3 mm. longum, ad 1 mm. latum, fusco-stramineum, superne breviter spinulosum, caeterum ± tuberculatum, in pyramiden vix 0.5 mm. longam sensim abiens. This species is well distinguished by its elongated leaves, with more or less long and very narrowly separated partly subulate-dentate lobes,

hastate on the outer leaves, short on the inner ones, and more or less large terminal lobes convex at the base, often with incised margins. The heads are very large, greenish-black, with very broad, more or less prominent to rather recurved, outer phyllaries. Seems to be related to *T. lacinosum* Dahlst. from Sweden. Clifton, Beds; Ivinghoe, Bucks, H PHILLIPS.

Var. *LATIUS* Dahlst., nov. var. This form differs from *T. tanyphyllum* by its broader less separate lobes, and larger terminal lobes, while the outer ones are more acute, the inner ones are larger and more entire. Perhaps this form is only a modification of the species. Hitchin, Herts; Ivinghoe, Bucks; Clifton, Beds, H. PHILLIPS.

428/1-2. *TRAGOPOGON PORRIFOLIUS* × *PRATENSIS* (MINUS Mill.). Further observations on hybrids between these species. See *Rep. B.F.C.*, 1930, 272.

1. Phenology :	First Flowering, 1931.
<i>porrifolius</i>	(in miscellaneous colony at Gt. Yarmouth) May 5. (200 fl. on May 25).
<i>porrifolius</i>	(seeds set July 10, 1930, Gorleston) May 29.
<i>pratensis (minus)</i>	(in miscellaneous colony at Gt. Yarmouth) May 25. (9 fl. on May 28).
<i>pratensis (minus)</i>	(wild, Norwich Castle) June 8.
<i>pratensis (minus)</i>	(seeds set July 10, 1930, Gorleston) June 16.

2. Flowering, Seeding, Germination :

Capitulum opens on three successive days (average).

Seed takes about 21 days to mature (varies with climate).

Germination takes 8-9 days under normal conditions in July, viz.,
July 10 to 18-19, 1930, Gorleston.

The yellow capitulum of *pratensis (majus)* closes earlier and more rapidly than that of any other form as the morning advances. The slowest to close is *Pattersoni*, the dark, reddish-purple *minus* form. The length of time during which the capitula remain open depends largely on the amount of sunshine received: for instance, on some dull days in early June they had not all closed by 2 p.m. (Greenwich mean time), while on the morning of June 21st all but *Pattersoni* were completely closed at 9 a.m., after several hours of sunshine.

3. Reproduction :

Two new types,* and all those previously described, have appeared in the F3 generation.

*(a) A *majus* form of *Barnardae* (3 plants).

*(b) An almost white form of *Hallsi* (8 plants, 4 of them from seed-parent *Hallsi*).

The following results were obtained in the F3 generation, the seed-parents being known in each case :

SEED-PARENT.	PRODUCT.	
<i>porrifolius</i>	<i>porrifolius</i>	27
<i>pratensis minus</i>	<i>pratensis minus</i>	12
<i>pratensis</i>	<i>pratensis</i>	9
	<i>pratensis minus</i>	3
<i>Saintyae</i>	<i>Saintyae</i>	3
	<i>porrifolius</i>	14
	<i>Hallsi</i>	4
	<i>Howardi</i>	1
	<i>Rumbelowi</i>	1
	<i>Barnardae</i>	1
	<i>Taylori</i>	1
<i>Hallsi</i>	<i>Hallsi</i>	14
	<i>porrifolius</i>	13
	<i>pratensis minus</i>	2
	<i>pallidus</i> (new)	4
	<i>Howardi</i>	1
	<i>pratensis majus</i>	1
<i>Brunningi</i>	<i>Brunningi</i>	1
	<i>porrifolius</i>	7
	<i>pratensis minus</i>	1
	<i>Hallsi</i>	6
<i>Barnardae</i>	<i>Barnardae</i>	2
	<i>pratensis minus</i>	1
<i>Pattersoni</i>	<i>Pattersoni</i>	6
<i>Rumbelowi</i>	<i>Barnardae</i>	2
	<i>Hallsi</i> (reddish)	1
<i>Readei</i>	<i>Readei</i>	1
	<i>porrifolius</i>	10
<i>sterilis</i>	<i>porrifolius</i>	3
	<i>Readei</i>	2
	<i>Saintyae</i>	1
	<i>Hallsi</i>	3
	<i>Rumbelowi</i>	1

Self-fertilisation is predominant in *Tragopogon*: the stigma-lobes grow up at a visible rate, sweeping the pollen out of the corolla-tube as the capitulum expands in the morning. There is also a certain amount of cross-pollination effected by bees, particularly some of the smaller solitary species that come for honey and pollen. The latter they scrape off the stigma-lobes with their second pair of legs, packing it on to the hindmost pair. I have noticed that these bees have a curious selective faculty which comes into play when they visit these flowers. The hybrids grow in a patch in my garden, the various kinds close together. The first fact which became clear was that a bee which was collecting pollen from the large purple *porrifolius* was never attracted to a yellow *pratensis* or *pratensis (minus)*, and vice-versa. But one visiting *pratensis* would frequently drop on the yellow centre of the capitulum of one of the hybrids. If it alighted by chance on the bronze or purple outer florets, it usually fiddled for a moment and flew off. Similarly, the outer florets attracted the harvesters of *porrifolius* to *Saintyae*, *Hallsi*, etc.

E. A. ELLIS.

435/5. *CAMPANULA ROTUNDFOLIA* L., var. *FISSA* Druce, nov. var.
Plant strict; racemes narrow, elongated; corolla split more than half-

way down. Found on the roadside near Winterburn Skipton, N.W. Yorks, 1931, by Mr A. TURNER, G. C. DRUCE.

435/5. *C. ROTUNDIFOLIA* L., var. *LINEARIFOLIA* (Dum.) Hayek. Outershaw and Coniston Cold, N.Y. Yorks, 1930, G. C. DRUCE.

493. *LAPPULA* Moench is treated by A. BRAND in Das Pflanzenreich, 97 Heft, 1931. Mr Brand divides it into two parts. Our *L. deflexa* Garcke he puts in 493/bis as *Hackelia* Opiz, and 493/1 ter. *H. tenella* Opiz. Here too, he puts *H. deflexa* Lehm. *Lappula minima* (Lehm.) Dr. he puts in the genus 493/3 *Heterocarpium* A. DC. and unites it with 493/5 *L. Szovitsiana* (F. & M.) Dr. The well-known name *Eritrichium nanum* he restores, since Villars used the trivial in 1779, whereas Hacquet's *tergloviense* is more recent.

500. CYTOLOGY OF *ANCHUSA* and its relation to the Taxonomy of the genus. S. G. SMITH, McGill University. Nature, 494, 1932. The results go to show that *sempervirens* is in a distinct genus *Caryolopha*, and *Anchusa myosotidiflora* Lehm. = *Brunnera macrophylla*.

+529/4. *CALCEOLARIA SCABIOSIFOLIA* Sims. Alien, S. America, Peru. Introduced in 1832, Bot. Mag., 1832. Rubbish-dump, near Bideford, N. Devon, 1931, G. C. DRUCE. Det. J. FRASER.

535. *SCROPHULARIA*. The well-known authorities, Dr W. A. Goddijn and Dr Goethart, have gone through my British specimens of *Scrophularia*. They say that practically all my determinations were correct, so in only a few cases had they appended notes. They are sceptical about the hybrid, *S. alata* × *aquatica* = × *S. Hurstii*, from Shalbourne, Wilts and Berks. As to synonymy they use the name *S. Balbisii* (*aquatica*), *S. Neesii* Wirtgen and forma *umbrosa*, which are the least confusing. They remark that the English *S. Ehrharti* Stev. is not the same as *S. umbrosa* Dumort. and (probably) *alata* Gilib., but is really *S. Neesii* Wirtg. Most English botanists think *S. Balbisii* is equivalent to *S. aquatica* L., an opinion shared by M. Dumortier as well as Mr Steven (sic Stevens) based on the Linnean Herbarium specimens. They "do not think this right—as far as a photograph of the Linnean specimen could enlighten us, we are convinced that the specimen is an aberrant shoot of *S. Neesii* (*Ehrharti* Stev.). Quite identical shoots are very common late in the fall in *S. Neesii*, but we never saw such shoots with elongated lanceolate leaf-like bracts in *S. Balbisii* Horn." The supposed hybrid found by Mr Towndrow in his garden, where *Neesii* and *Scorodonia* both grow (*Rep. B.E.C.*, 312, 1927) is considered by these experts to be a teratological form of *S. Neesii*. That possibly may be the origin of ×*S. Hurstii* at Shalbourne, but that plant has some curious characters which make it difficult to decide. One must try to refine it in the fresh state.

Scrophularia Neesii Wirtg. in Verh. Nat. Ver. Rheinl., i., 1844, Fl. Preuss. Rhein., 325. Rouy (*Fl. Fr.*, xi., 92) makes var. *Neesii* Asch. a

variety of *S. alata*. Feuilles plus larges, ovales; staminode à lobes étalés horizontalment, divariqués, faiblement 3-denté au sommet. Nyman *Consp.* 532, puts *S. Balbisii* Horn. as *S. oblongifolia* Lois. *S. aquatica* L. (p.m.p.) = *S. umbrosa* Dum., *S. Ehrharti* Stev. with *S. Neesii* and *S. cinerea* Dum. as subordinate forms.

S. Neesii Wirtgen. (Verhandl. des naturhist. Vereines, i., p. 29). Foliis ovato-oblongis ovatisve glabris inferioribus obtusiusculis crenatis, mediis superioribusque acutis serratis, serraturis inferioribus minoribus, caule petiolisque lato-alatis, panicula terminali, laciniis calycis subrotundis obtusissimis lato-membranaceo-marginatis, appendice staminodii transverse oblonga longitudine sua triplo latiore postice truncata antice leviter et plerumque cum denticulo emarginata. Ad rivos et fluvios (an der Nette dei Neuwied, im Siechhausthal bei Coblenz; bei Dusseldorf, Wirtgen), July-September. "Omnibus pertibus tenerior, rami caulis et paniculae fere rectangule patentes; corolla laetius rubra quam antecedentis et, basi excepta, nunquam colore rubro viridi mixto tincta." Wirtgen, *l.c.* Staminodii appendix latere anteriore saepe leviter emarginata cum denticulo interjecto. Kimbolton, Herefordshire, 1856, W. H. PURCHAS. On this Dr Goethart writes:—"Though the leaves, including those of the middle of the stem, are somewhat serrate and have cuneate bases and rather pointed apices we are convinced that this specimen belongs to *S. Neesii* Wirtg. (*Ehrharti* Stev.!). It has the inflorescence, bracts, fruit form and staminode of *S. Neesii*." Walton, Scoulsby Mere, W. Norfolk, 1904, DRUCE, N.C.R.; Eden, Roxburgh, 1875, A. BROTHERSTON; Whitnash, Warwick, 1867, BROMWICH; Gisburn, Yorks, 1845, J. TATHAM; Little Malvern, Worcester, 1915, A. J. CROSFIELD; River Terne (as *umbrosa*), Bramsford, Worcester, R. F. TOWNDROW; Compton Abdale, E. Gloster, 1919, H. J. RIDDELSDELL, as *alata*; Lyrach Brook, Ludlow, Hereford, 1892, DRUCE (as *umbrosa*); Bringwood Chase, Salop, 1892, DRUCE; Shalbourne, Wilts, N.C.R., 1915, HURST (as *alata*); Pitairlie Den, Angus, shown to me by Mr and Mrs CORSTORPHINE, 1912 and 1915, DRUCE; Whitnash, Warwick, 1903, BRUCE JACKSON (as *umbrosa*), "not *umbrosa* but *Neesii* Wirtg.", GODDLEN and GOETHART, 1931; Medbourne, Leicester, 1916 (as *alata*); Gogar Burn, Edinburgh, 1852, W. BELL.

Scrophularia nodosa (L. Sp. 863). Foliis ovato-oblongis ovatis subcordatisve glabris duplicato-serratis, serraturis inferioribus longioribus acutioribusque, caule argute quadrangulari, petiolis exalatis, panicula terminali, laciniis calycis ovatis obtusis angustissime membranaceo-marginatis, appendice staminodii breviter obovata vel transverse oblonga obsolete emarginata. In sylvis humidis, ad fossas, ripas, pratorum dumeta. June-August. D.fl. 4, p. 404. St.h. 23. Flores triste olivacei, dorso brunnei, raro ubique virentes. Under *S. nodosa* L. they admit my var. *Trachelioides* from Brecon and my var. *bracteata* from Hurst, Berks.

S. Balbisii (Hornem. Hort. Hafn. 2, p. 577). Foliis cordato-oblongis rotundato-obtusis glabris obtuse crenatis ad basin saepe foliolo minuto binisve auriculatis, caule petiolisque lato-alatis, panicula terminali,

calycis laciniis subrotundis obtusissimis lato-membranaceo-marginatis, appendice staminodii subrotunda vel subrotundo-reniformi vix emarginata. In paludosis, locis humidis, ad fossas (bei Aachen häufig Hornung; am Ufer der Mosel v. Moselweiss bis Coblenz, 1-3 Stunden v. Coblenz entfernt, Wirtgen; Karlsruhe, Alex. Braun; im Elsass, Kirschleger). June-July. D.fl. 4, p. 406. *S. aquatica* L. conf. *Bab. Man.*, p. 310. Flores maiores, quam *Scrophulariae Ehrharti*, toti purpureo-fusci, basi tantum virides.

The *S. aquatica* L., var. *angustifolia*, Trent-side, Nottingham, R. BULLEY, they call a teratological form. Var. *cinerea* Dum. is the usual British form, says Linton.

S. Ehrharti (C. A. Steven, conf. *Babington Manual of Brit. Bot.*, p. 310). Foliis ovato-oblongis ovatis subcordatisve glabris acute serratis, serraturis inferioribus minoribus, caule petiolisque lato-alatis, panicula terminali, laciniis calycis subrotundis obtusissimis lato-membranaceo-marginatis, appendice staminodii obcordato-biloba, lobis divaricatis. Ad fluvios, rivos, piscinas fossasque, et in aqua ipsa. July-September. *S. aquatica* Koch Syn., ed. i., p. 515, et omnium auctorum ad nostra tempora. D.fl. 4, p. 405. St.h. 23. Flores dorso purpureo-fusci minus triste colorati quam antecedentis. Rami paniculae angula semirecto patentes. The Latin descriptions are from Koch *Syn. Germ. et Helv.*, 446, 1857.

†543/40. VERONICA LOBELIOIDES Hort = V. ELLIPTICA × SPECIOSA, var. Blue Gem. Hortal. On waste ground, Hayle, W. Cornwall; Bideford, N. Devon, 1931, G. C. DRUCE.

561/10. × THYMUS JACKSONII Ronniger in Rep. B.E.C., 278, 1931 = T. NEGLECTUS × PULEGIOIDES, var. CHAMAEDRYIS. Minchinhampton, Selsley Common, W. Gloster; Chinnor Downs, Oxon, 1931, G. C. DRUCE.

586/1. TEUCRIUM SCORODONIA L. A curious, cleistogamous form, having unusually large, thin leaves, long crenatures, sometimes doubly crenate, or with cuspidate crenatures, occurred on a wooded bank at Woody Bay, N. Devon, 1931. G. C. DRUCE.

588/10. PLANTAGO MAJOR L., var. VULGARIS, forma SCOPULORUM, sub-forma DURA Pilger in Fedde Rep. xviii., 509, 1922. Near *nana* Tratt. Arch. Gerv., 1812, t. 23. Not *intermedia* Gil. I.P.E., 1911, Silverdale, v.-c. 69, G. C. DRUCE.

Var. VULGARIS, f. INTERMEDIA (Gilib.) Pilg., sub-forma MINOR (Gilib.) = P. NANA Tratt. [Ref. No. 325]. Countesbury Common, N. Devon, 1917, W. C. BARTON.

600/1. CHENOPODIUM RUBRUM L., var. vel forma RIGIDULUM. Liverpool, S. Lancs, J. W. Lewis; Ross Links, Northumberland, Rev. H. E. Fox; Dallington, Northants, G. C. DRUCE.

Var. vel forma KOCHILFORME Murr. Bedminster, W. Gloster, C. & N. SANDWICH; Iver, Slough, Bucks, G. C. DRUCE.

Var. *vel* forma *PSEUDO-BOTRYODES* Watson. Kisthorn Loch, Fife, 1870, BOSWELL SYME; Ditton, Surrey, 1868, H. C. WATSON; Highton, S. Lancs, J. A. WHELDON; Hurst, Berks; Holy Isle, Northumberland, G. C. DRUCE.

Var. *BELFOIDES* Ley. Treludderow, St Newlyn East, W. Cornwall, 1909, C. C. VIGURS, as *C. urbicum*, var. *intermedium*.

608/8. *C. VARIABILIS* Aellen, var. *MURRII* Aellen in Fedde Rep. Avonmouth, W. Gloster, C. SANDWICH and J. W. WHITE.

600/8. *C. ALBUM* L., var. *OVATUM* Aellen as sub-sp. Avonmouth, W. Gloster, C. SANDWICH and J. W. WHITE.

†600/28(2). *C. HOLOPTERUM* (Thell.) Thell. & Aell. Alien, Galashiels, 1914, G. C. DRUCE and Miss I. M. HAYWARD.

631(2). *SEIDELIA* Baill. Etud. Euph. 465, t. 9, 1858.

†631(2)1. *S. MERCURIALIS* Baill., *l.c.*, 466. Alien, S. Africa. A monotypic genus. Cinder heap, Tower Hamlets, Dover, E. Kent, 1930, J. W. LONG.

684/1. *HYDROCHARIS MORSUS-RANAE* L. Miss Pickard, writing from Glynde, E. Sussex, on January 2nd, 1931, says:—"I found (today) quite fat Frogbit resting buds and one which had sent up a leaf nearly an inch across." On January 15th I visited the spot and induced other buds to rise by stirring the mud at the bottom of the ditch. These buds measured 16 mm. in length. On January 19th these prematurely risen buds remained floating on the surface unopened. On February 7th three out of four buds, brought home and placed in a glass bowl, sank to the bottom. One, however, remained floating, and put out a leaf three mm. in breadth. Resting buds were found on a plant taken at Glynde on August 28th, 1931, J. G. DALGLEISH.

†702/13(2). *ALLIUM PORRUM* L. Common Leek. Hortal. Henfield, E. Sussex, 1931, E. PAYNE, teste J. FRASER.

†704/2. *HYACINTHUS ROMANUS* Reichb.=*BELLEVALIA ROMANA* Sweet. Alien, S. Europe. South Meadow, Eton, Bucks, 1931, A. M. BALFOUR.

†717/4. *COMMELINA COELESTIS* Willd. Alien, Mexico. Sidings of the Olympia Cake & Oil Co., Selby, E. Yorks, September, 1931, H. FOSTER. Also, from the same locality, distributed this year (1931) by W. A. SLEDGE, as *C. nudiflora* L., teste Kew. Det. J. FRASER.

732/1. *SAGITTARIA SACITTIFOLIA* L. In May 1927 several young plants were found in Lewes Levels growing from tubers bearing ribbon-shaped laminae, and others of a distinct spatulate type. Digging up a plant in the late summer or early autumn, among the leaves at the base will be found some white stolons each one bearing scale-leaves and

terminating in a bud. Many stolons may arise from a single plant. The varied forms of leaves is of great interest to the student of causes. *Sagittaria* frequently shows all three types of lamina on the same plant, ribbon, spatulate, and sagittate forms. The first leaves produced by a seedling are ribbon-shaped whether the plant is wholly or only partially submerged. It is difficult to realise, when observing the long streaming leaves which rise and fall with the swift current of rivers, that this is the same plant which can be found bearing sagittate leaves growing in a near-by ditch, but here and there from among this submerged tangle there struggles to the surface a sagittate leaf. The floating forms of *Sagittaria* are fairly plentiful in Sussex marsh drains, but rarely, if ever, produce flowers, J. G. DALGLEISH.

735/5. *POTAMOGETON ALPINUS* Balb., var. *PALMERI* Druce in *Rep. B.E.C.*, 1929. When staying with Miss C. E. Palmer at Odiham in North Hampshire in 1904, she showed me a handsome Pondweed growing plentifully in the Basingstoke Canal, which she had first noticed there in 1882. It had somewhat of the facies of *praelongus*, and I queried it as a possible hybrid—" *alpinus* ? \times *praelongus* " in my "Plant List," p. 73, 1908. Subsequent collection and examination failed to detect *praelongus* in it, and Mr Arthur Bennett said the second supposed parent was non-existent in this Canal. Later on I submitted a large series to Mr Bennett, who agreed with me that it was a variety, and suggested that I should name it var. *PALMERI*, which I did in *Rep. B.E.C.*, 1929, p. 98 and p. 140. Mr Pearsall has recently had, from two different stations in this Canal, fine fruiting examples which show the fruit to be that of normal *P. alpinus*, G. C. DRUCE.

746/3. *SCIRPUS* (*SCHEONOPLECTUS* group) in Britain, J. E. LOUSLEY in *Journ. Bot.*, 151, 1931. In this useful note Mr Lousley gives varietal rank to var. *fluitans* (C. & G.) Husnot of *S. lacustris*; var. *capitatus* Hausskn. (Cardiganshire) of *S. Tabernaemontani*; and var. *conglomeratus* Döll of *S. triqueter*. He also gives hybrids of *lacustris* \times *triqueter* = *S. carinatus* Sm., and *Tabernaemontani* \times *triqueter*, which I once described (*Rep. B.E.C.*, 68, 1924) as *arunensis* Druce. It is, however, pre-dated, as Mr Lousley shows, by \times *S. Scheuchzeri* Brügger. He gives good descriptions of these and other possible plants from Britain. He lays stress on the glabrous glume in *lacustris* and the asperous one (especially near the midrib) of *Tabernaemontani*, which normally has two, not three, stigmata. He gives few particulars of the Formby habitat—the only British habitat besides the Channel Islands—of *S. americanus*, discovered by Mr R. E. D. BAKER (see *Rep. B.E.C.*, 762, 929, 1928), where it is quite plentiful over a small area.

747/2. *ERIOPHORUM ANGUSTIFOLIUM* Roth. The older authority is Honckeny Verz. *Aller Gewachse Teutschl.*, i., 153, 1782. Roth's publication dates from *Teut. Fl. Germ.*, i., 24, 1788.

758/3. ORIGIN OF SPARTINA TOWNSENDII. Ex Nature, p. 781, May 23, 1931. From its characteristics and the circumstances of its origin, Stapf (Curtis's *Bot. Mag.*, 152, Tab. 9125, 1926) and others have concluded that the cord or rice grass, *Spartina Townsendii* H. & J. Groves, must have originated on the foreshore of Southampton Water as a hybrid between *S. alterniflora* and *S. stricta*. The only objections to this have been raised on the ground that it is fertile and breeds true to type. Cytological study has shown *S. Townsendii* to have 126 chromosomes in its root-tip cells—nearly double the highest number previously reported in the Gramineae—and its putative parents have been found to have 70 and 56 respectively. These observations support the assumption that *S. Townsendii* is of hybrid origin and, further, they explain its fertility and its true-breeding behaviour. It is an allopolyploid similar to *Primula kewensis* and other recent experimentally produced plant species. *S. alterniflora* is generally considered to be an introduced species from America, while *S. stricta* is native. The hybridisation and chromosome doubling which have given rise to *S. Townsendii* occurred in Nature, without human agency, but yet in such circumstances as almost to approximate to experimental control. *S. Townsendii* has almost completely eliminated its parents wherever it has come into competition with them, and has spread very widely from its centre of origin. It emphasises the fact that one of the results of allopolyploidy is the maintenance of hybrid vigour, and is a striking example of the significance of hybridisation followed by polyploidy in plant evolution, as it seems to rise above the objections which have caused some authors to hesitate in their admittance of full specific rank to newly originated allopolyploids. C. LEONARD HUSKINS, Dept. of Botany, McGill University, Montreal, March 26.

777/7. PHELEUM MICHELI All. Fl. Ped., ii., 233, 1785. This name (teste Bercherer) is supplanted by the earlier name *Phleum hirsutum* Honkeny Verz. Aller Gewachse Teutschl., i., 183, 1782, G. C. DRUCE.

844/6. EQUISETUM PALUSTRE L., var. SIMULANS Druce, var. nov. Braunton Burrows, N. Devon, July 1931, G. C. DRUCE. Distributed this year (1931). Branching from the base, with many simple stems, variegated with black and pale greenish-yellow bands, it simulates *variegatum*, but has all the essential features of *palustre*. It is related to the var. *nudum*. It occurred in patches with *palustre*, and was plainly distinguishable from it, G. C. DRUCE.

868/1. AZOLLA FILICULOIDES Lam. This little alien continues to extend its range. The ditches round Lancing are covered with its vigorous growth, due to the contents of an aquarium being emptied. It has now made its appearance in Lewis Levels. Numerous attempts to keep the plant throughout the winter in an aquarium both in and out of doors have failed, and Mr A. E. Ellis tells me he has had the same experience. This is curious, seeing how exceedingly hardy the

plant is in a state of nature. Some of the plants are a bright red while others remain green. I thought at first that this was a seasonal change, having only noticed the red forms in autumn. But the spring still showed red plants which continued throughout the summer. Mr Ellis seemed to think the red was due to shade. But this is not so, as most individuals found in Lewes were red where there is no shade. Only very few green ones showed. The possible number of plants in a pond 50 to 60 feet in diameter has been calculated as 380,000. J. G. DALGLEISH.

NOTES ON PUBLICATIONS, NEW BOOKS, ETC., 1931.

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

ADAMS, J., M.A. A Students' Illustrated Irish Flora, being a guide to the indigenous seed-plants of Ireland. Pp. viii. + 343, tt. 578. Outline map of Ireland. L. Reeve & Co., 1931; 12/-. Illustrations and particulars of distribution of each plant, additional chapters on classification, relation to environment, topographical distribution, list of poisonous plants, and lastly the English and Irish names.

This enumeration of its contents may tempt some botanists to purchase this well-printed and well-illustrated work but, truth to tell, one is not able to recommend it. The omissions are numerous. There is no reference to *Utricularia Bremii*, only known from Ireland, nor to the purely Irish *Pinguicula grandiflora*. *Callitriche aquatica* alone is given. Of the pondweeds only *P. natans*, *densus*, *crispus*, *perfoliatus* and *pectinatus* are mentioned. *Fumaria capreolata* is the only representative of the climbing Fumariae and *officinalis* of the agrestal. No allusion is made to *Viola epipsila*, and *V. tricolor* is the only Pansy. Of *Juncus*—*squarrosus*, *effusus*, *articulatus* and *bufonius* are alone picked out. No allusion is made to the especially interesting Brandon Mountain and Co. Clare Saxifrages. Three sedges exhaust that large and interesting group—*remota*, *arenaria* and *pubicaris*. No allusion is made to *Scirpus triqueter*, and even the Twitch is passed by. The habitats are as loosely given. *Simethis*, "near the sea," is an unclear phrase, and is it *Sisyrinchium angustifolium* that is found "in bogs?" No allusion is made to the alien, *S. californicum*. *Habenaria conopsea* is found "in pastures." *Orchis latifolia*, of course, is given, but the true plant is unknown for Ireland, and *O. maculata* is found "in moist situations." *Spiranthes Romanzoffiana* occurs in meadows! There is only one *Cochlearia*. *Ulex europaeus* and *nanus* are given, but not the characteristic Irish plant, *U. Gallii*. *Potentilla fruticosa*, another characteristic Irish plant is said to grow in rocky or stony places. *Erica Mackayi* is not referred to. *Ajuga pyramidalis* is given for Aran Island, but it is not confined to it. Ireland seems to be deficient in Thistles as only *C. pycnocephalus* (in the strict sense it does not occur) is given. *Cirsium arvense*, *C. lanceolatum*, *C. palustre*, and *C. pratense* are given, but Hudson is not the authority for the last named. Is it not an exploded idea that the lower spiny leaves of the Holly have been evolved for protection against animals, while the upper leaves are spineless? One regrets that so much labour has been spent on a work which, by its arrangement and inadequacy, can never meet with a remunerative sale. One advantage in the book is the Benthamite pictures. There is not enough purely Irish work to attract the field-

botanist. Why did not the writer try to illustrate Praeger's Topographical Botany following the sequence there given.

AELLEN, PAUL. Die Wooladventiven Chenopodien Europas. Verh. Nat. Gessel. in Basel, pp. 77, 1930.

- Chenopodium album* L., var. *densifoliatum* Ludw., sub-sp. *argentina*.
Rodleben, ZOBEL; Derendingen, PROBST.
- C. opulifolium* Schrad. Tweedside.
Forma *mucronulatum* Aell. Rodleben, Derendingen.
Forma *obtusatum* Aell. Rodleben, Derendingen.
Sub-sp. *petiolariforme* Aell. S. Africa. Derendingen.
- C. giganteum* Don = *C. amaranticolor* Coste. N. India, Nepal. Lackalanga, BLOM; Tweedside, HAYWARD, Rep. B.E.C., 637, 1928.
- C. Probstii* Aell. Australia. Tweedside, 1913, HAYWARD and DRUCE, Adv. Fl. Tweed., 1919; Lackalanga, 1929, F. ANDER.
Forma *lanceolatum* Aellen. Derendingen.
- C. Zobelii* Ludw. Argentina. Rodleben, Derendingen, Solothurn, etc.; Tweedside, HAYWARD and DRUCE.
Forma *hircinifolium* Aellen. Rodleben, Derendingen.
Forma *multidentatum* Aellen. Derendingen.
- C. leptophyllum* Nutt. America. Rodleben, 1910; Tweedside, 1911, HAYWARD and DRUCE, Adv. Fl. Tweed., 1919; Derendingen, etc.
Var. *Leptophylloides* (Murr) Thell. Roggwill, Derendingen.
Sub-sp. *desiccatum* (A. Nels.) Aellen. Montpellier.
- C. Phillipsianum* Aellen. S. Africa.
Var. *Galpini* Aell. Kettwig.
Var. *Burtii* Aell. Derendingen.
- C. Vulvaria* L. Tweedside, HAYWARD, etc.
Forma *rhombicum* Murr. Derendingen, 1916.
- C. pallidicaule* Aell. Tweedside, 1913, HAYWARD and DRUCE.
- C. urbicum* L. Derendingen, etc.
- C. murale* L. Derendingen, etc., 1911; Galafoot, Selkirk, 1928, HAYWARD.
Forma *spissidentatum* (Murr) Aell. Derendingen.
Forma *latifolium* (Fenzl) Aell. Derendingen.
Forma *rubescens* Corb. Derendingen.
Forma *microphyllum* (Coss. & Germ.). Galafoot, 1928, HAYWARD.
- C. polyspermum* L. Europe, Asia, Africa, N. Derendingen.
- C. hybridum* L. Europe, Asia, Africa, N. Derendingen.
- C. suecicum* Murr = *C. pseudo-opulifolium* (Scholz) Murr in Rep. B.E.C., 174, 1912, and Adv. Fl. Tweed. Rodleben; Galashiels, 1912, etc., HAYWARD and DRUCE.
- C. hircinum* Schrad. S. America. Rodleben; Tweedside, 1913, HAYWARD and DRUCE; Bradford, 1917, 1921, CRYER and DRUCE; Derendingen, AELLEN.
Forma *multidentatum* (Ludw.) Aell. Rodleben, Derendingen, AELLEN; Bradford, CRYER. See DRUCE in Rep. B.E.C., 436, 1928.

- Forma *deminutum* (Ludw.) Aell. Derendingen, etc., 1916, PROBST;
 Rodleben, 1907, ZOBEL; Port Juvenal, 1846, TOUCHY; Bradford,
 1917, CRYER; 1921, DRUCE, etc.
- Sub-sp. *angustatum* (Ludw.) Aell. Derendingen, etc.
- Sub-sp. *crataeginum* (Ludw.) Aell. Derendingen, etc.
- Forma *acutatum* (Ludw.) Aell. Derendingen, etc., 1917.
- Var. *subtrilobum* (Issler) Aell. Derendingen, PROBST; Bradford,
 1917, CRYER.
- Sub-f. *erectum* (Ludw.) Aell. Derendingen.
- Sub-f. *densum* (Ludw.) Aell. Derendingen.
- Var. *latilobum* Murr in HAYWARD and DRUCE Adv. Fl. Tweed. =
pallidicaule.
- C. Berlandierii* Moq., sub-sp. *Zschackei* Murr. N. and C. America.
 Derendingen, etc.
- Forma *neglectum* Aell. Rodleben, ZOBEL.
- Forma *angustum* (Ludw.) Aell. Rodleben, ZOBEL.
- C. ficifolium* Sm. Europe, Asia, Africa, N. Port Juvenal, 1852,
 TOUCHY; Gala-on-Tweed, 1912, HAYWARD.
- Forma *subintegrum*. Rodleben, ZOBEL.
- C. Quinoa* Willd. Peru, Bolivia, Ecuador. Tweedside, 1915, HAYWARD.
- Cf. sub-sp. *Milleannum* Aell. Tweedside, 1916, HAYWARD, as *C. pani-*
culatum in Rep. B.E.C., 51, 1917.
- C. purpurascens* Juss. Ouar, India, Siberia.
- C. auricomiforme* Murr. Australia, New Zealand. Derendingen,
 PROBST; Tweedside, HAYWARD and DRUCE, Adv. Fl. Tweed.;
 Bradford, 1918, Rep. B.E.C.
- C. auricomum* Lindl. Australia. Derendingen, PROBST.
- Forma *subglabrum* Aell. Derendingen, PROBST.
- C. triangulare* R. Br. Australia. Bradford, 1919, DRUCE and CRYER
 (*C. paniculatum* Druce Br. Pl. List, 97, 1928); Derendingen.
- C. stellulatum* (Benth.) Aell. Australia. Derendingen.
- C. Polygonoides* Aell. Australia. Derendingen, etc., PROBST.
- C. multifidum* L. (*Roubieva*). Port Juvenal, 1846, TOUCHY; Rodleben,
 Derendingen, etc.; Tweedside, HAYWARD and DRUCE, Adv. Fl.
 Tweed., 202.
- Forma *latisectum* Boule & Aell. Kettwig.
- C. bonariense* Haum. & Trig. Kettwig.
- C. foetidum* Schrad. Tropics and sub-tropical. Bradford, 1921, CRYER;
 Derendingen, PROBST.
- Var. *intermedium* (O.K.) Aell. (*C. graveolens*, Adv. Fl. Tweed., 200,
 1919, etc., non Willd.). S. Africa. Tweedside.
- C. Ambrosioides* L. S. America.
- Forma *genuinum* Aell. Port Juvenal, TOUCHY; Rodleben; Tweed-
 side, HAYWARD, Trans. Bot. Soc. Edin., 43, 1909; Derendingen,
 PROBST; Bradford, 1921, DRUCE and CRYER.
- Forma *angustifolium* (Moq.) Aell. Kettwig.

- Forma *suffruticosum* (Willd.) Aell. Port Juvenal, 1836, TOUCHY;
Tweedside, HAYWARD and DRUCE, Adv. Fl. Tweed.; Derendingen, etc., PROBST.
- Forma *dentatum* (as *C. vagans* (*C. chilense*), HAYWARD and DRUCE, Adv. Fl. Tweed., 200).
- C. carinatum* R. Br. Australia. Derendingen, etc.; HAYWARD and DRUCE, Adv. Fl. Tweed., 199, fig. 59; Bradford, CRYER.
- C. cristatum* F. v. M. Australia. Derendingen, PROBST.
- C. holopterum* (Thell.) Thell. & Aell. in Rep. B.E.C., 637, 1928. Australia. Tweedside, 1911, HAYWARD, as *carinatum*, in HAYWARD and DRUCE, Adv. Fl. Tweed.; Derendingen, etc., PROBST.
- C. trigonocarpum* Aell., nov. sp. New Zealand. Derendingen, 1926, PROBST.
- C. inflata* Aell. Australia. Kettwig.
- C. atriplicinum* F. v. M. Australia. Derendingen, 1927, PROBST.
- C. macrospermum* Hook. f., sub-sp. *halophilum* Aell. S. America. Tweedside, 1912, HAYWARD, as *C. ambiguum*; Lackalanga, etc.
- Var. *subviride* Thell. & Aell. Rodleben, Derendingen, etc.
- Forma *farinosum* Aell. Port Juvenal, TOUCHY.
- Forma *latifolium* Thell. & Aell. Rodleben, etc.
- Forma *angustius* Thell. & Aell. Derendingen, PROBST.
- C. glaucum* L., sub-sp. *ambiguum* (R. Br.) Thell. & Aell. Australia, etc. Derendingen, PROBST.
- Forma *minus* (Moq.) Aell. Derendingen, PROBST.
- C. rubrum* L. Europe, Asia, Africa, N. America. Galashiels, 1908, HAYWARD.
- C. capitatum* (L.) Asch. Kettwig.
- C. virgatum* (L.) Ambrosi. Port Juvenal, TOUCHY.
- Forma *minus* (Vahl) Aell. Hérault, 1859.
- C. antarcticum* Benth. & Hook. Derendingen, PROBST.
- C. myriocephalum* Aell. Kettwig.

AGRICULTURE, THE FIFTEENTH INTERNATIONAL CONGRESS OF. Prague, June 1931. This handsome Catalogue is replete with fine photographs. The President of the Congress is Prof. F. Vladislav Brdlik, and the Secretary, O. Kadnev, LL.D. A fine likeness of President Masaryk forms the frontispiece. Particulars of the Republic of Czecho-Slovakia are given. The population in 1921 was 13,613,172, the ninth largest in Europe, whereas its area is only the fourteenth. Its density of population makes it rank as the seventh of the European States. 5,386,043 people are engaged in Agriculture. It is entirely inland. There are good maps and a mass of information regarding this very attractive country.

ARGENTINA, BULLETIN DEL MINISTER DE AGRICULTURE DE LA REPUBLIC. October-December, 1930. About 90 pages are devoted to a paper on Grape Cultivation, illustrated with excellent figures. Another good paper is on *Ustilago*. January-March, 1931, has a paper by A. R. Milan on the Solanaceae of Argentina, with a clavis to the genera. There

is also a useful paper on *Datos perra La Agrostologia Argentina* and their nutritive value. The figures of the grasses are excellent. They include *Phleum pratense*, *Bromus Unioloides*, with six varieties, *Dactylis*, etc.

BAILEY, L. H., and ZOE BAILEY. *HORTUS*. A concise Dictionary of Gardening, General Horticulture, and Cultivated Plants in North America. Pp. 652, tt. xvi. The Macmillan Company, New York, 1930; £2 2s. Well and attractively printed, this handsome volume comes as a welcome addition to our works of reference. This book is an annotated inventory of the species of plants and their main botanical varieties now in cultivation in the United States and Canada, outside botanic gardens, experiment stations, government test gardens, special fanciers' collections and gardens, together with brief indications of their uses and methods of cultivation. The nomenclature follows the International Rules of 1905 and 1910. Wisely they state that "names retain their original spelling and it is not allowable to modify the structure of either generic or specific names." So one uses *Tecoma* unhesitatingly although it is only part of the vernacular Mexican word, *Tecomaxochitl*, and it does not matter that *Agrimonia* is a corruption of *Angemone*, or that *Solidago* has only an irregular relation with the Latin *solidare*. We understand, they say, why Robert Brown used only one "t" in making the generic name *Mathiola*, and left out the second "t" in *Malcomia*. They should be spelled as they were originally written by Robert Brown. Nor can they regret that *Plumeria* was written to honour Plumier, *Mahonia* for McMahan, *Stranvaesia* for Fox Strangways. *Buginvillaea* honours De Bougainville. Jussieu and Commelin framed a Latin name and it should be written as they framed it, though subsequent writers have used ten different ways of spelling. Their choice of the word *Hortus* is happy, and is justified for such a work as it forms a worthy successor to the enormous volume of the Eystadt garden in Bavaria compiled by Besler in 1614. Linnaeus' "*Hortus Cliffortianus*" is a classic example, and Loudon's "*Hortus Britannicus*," 1830, worthily sustained the name. There is no other available word that quite so well covers the attempt to compile a descriptive document of the plants in cultivation, in a given time, place, or region. It contains 5,290 "captions," which are separate articles, 2519 genera, 12,659 species' names, 3987 synonyms and 3102 varieties. The total Latin binomials and trinomials number 19,748. Diphthongs are termed ligatured letters. The arrangement is alphabetical; and the setting up of each article is clear. For example—" *Centaureum (Erythraea)*, Centaury, Gentianiaceae. Small mostly ann. herbs with opposite simple and entire leaves, and red or rose more or less pink-like bright flowers borne in capitula." Five species are given, including *C. pulchella*. This is how the American Pillar is described "H.W. (Van Fleet, 1902, introduced by Conrad and Jones, 1908) *R. Wichuriana* × *R. setigera* × Red H.C.). Flowers large, single, open, very lasting, slightly fragrant, crimson-carmine with white eye, golden-yellow stamens, followed by red hips in autumn, borne in immense clusters on long strong stems. Foliage abundant, large, rich

green, leathery, mildews slightly. Growth very vigorous, 15-20 feet high, climbing; abundant bloomer in June. (Illustr. in 1923 'Rose Annual,' facing p. 41; in 1924 facing p. 152). Illustr. in this work, p. 113." Another example—" *Rosa Moyesi* Hemsl. & Wils. (Western China). Deep blood-red flowers about 2-2½ in. across with grey anthers and brownish filaments. Beautiful foliage and strong growth, but difficult to establish. No other wild rose has stirred the imagination of rose-breeders so much as this. (Illustr. in 1920 'Rose Annual,' facing p. 24; frontis. in colour in 1925 'Rose Annual.')

Illustr. in this work, p. 236." An allusion should have been made to its beautiful fruit and thorns. There is a most lovely plate of *Rosa spinosissima*—the simple beauty of a single Rose. One of the few misprints is on p. 232, where *Rosa hibernica Gravesii* should be *Grovesii*. A most useful list of Originators and Introducers of Roses is given as an appendix. But Francis Crépin is a Belgian, not a French botanist, and the name should be John Gerard, not Gerarde. Johann Hermann was a Leyden, not a German botanist. L'Obel was a native of Flanders, not France. George Prince is dead, but his descendants still carry on the business at Longworth, Berks. Regarding nomenclature, *Cirsium* is correctly used, *Cnicus* being limited to *benedictus*. *Epipactis* is restricted to *Goodyera*, and *Nephrodium* is rightly referred to *Dryopteris*. *Nymphozanthus* is used for the Yellow Water-Lily. *Limonium* = *Statice*, and *Statice* = *Armeria* is the correct way. *Ulmus campestris* has for synonyms, *U. sativa* and *U. procera*, and *foliacea* is used in the sense of *nitens*, but the Elm names are not on the surest foundation. The book teems with interest, and should be on the shelves of all American and most British horticulturists.

BATHER, F. A., D.Sc., F.R.S. THE MUSEUM'S JOURNAL. The organ of the Museums Association. Duncan & Co.; 2/-. A useful publication which contains from the pen of our member, Mr H. A. Hyde, an article on Botany in relation to the small Museum. He gives an example of one of the Tables used in the Cardiff Museum, and shows what can be done in very small surroundings to illustrate each and all of the great principles of plant occurrence.

BEAUVERD, G. POLYMORPHISME DE QUELQUES PLANTES DU MASSIF DE LA VANOISE (SAVOIE), in which a number of new varieties are described. Among them is *Carex microglochis*, var. *pygmaea*—only 5-7 cm. high. He also describes on p. 532 a variety of *Veronica agrestis* where the corolla has one lobe pale rose, while the three others are white—var. *Sallesiaca* Beauv., also *V. polita*, sub-sp. *leiocarpa* Beauv., with white flowers and glabrous fruit.

BEDDOWS, A. R. *Triodia decumbens* Beauv. (*Sieglingia*). Ann. Bot., 443, 1931. He alludes to the well-known occurrence of grains in the old leaf-sheaths at the base of the stem, which Schroeter showed me over twenty years ago. Beddows gives them the name of "Cleistogene," and figures them. They are fertile while still enclosed in the sheath. Cleistogamous panicles are the ones that most usually occur.

BELGIQUE, BULLETIN DE LA SOCIÉTÉ ROYALE DE BOTANIQUE. Tome lxxiii., fasc. 2, pp. 80. Brussels, 1930-31. There are obituary notices of M. L. Magnel, 1863-1930, a useful worker at the Taxonomy of Belgium, and of A. Hardy, 1846-1929, who did much work in Touraine. He had a large and good herbarium. M. Jean Houzeau de Lehaie has a paper on La Variation Orchidées Indigènes en Belgique. Of *O. mascula* he has three well-marked varieties. There is a comprehensive list of the Botanical works published in Belgium, 1923-1930, of observations on Orchids in Holland, France, and Italy. In France and Italy among 40 species noticed were *O. praetermissa* and *maculata*, and the fifteen Holland species also included *praetermissa*. He recognises in France two distinct "types majeurs" of *O. Morio*. Eight varieties of *O. latifolia* were seen in Holland, France and Belgium. M. Vermuelen gives a full description of *Orchis latifolia*—*O. latifolia*, *junialis* and *praetermissa*, but he gives a wrong colour for *praetermissa* "lilac plutôt pâle." The author does not seem to realise the frequent hybridity, and he says *Fuchsii* and *maculata* are joined together by a chain of intermediates. He also does not seem to realise the importance of soil influence.

BIOLOGICAL ABSTRACTS. A Comprehensive Abstracting and Indexing Journal of the World's Literature in Theoretical and Applied Biology, exclusive of Chinese Medicine. Union of American Biological Societies. 9 dollars. The author of *Athyrium alpestre*, says Prof. Fernald, is Ryland, not Mylander. Kenneth K. Mackenzie in *Rhodora*, 31, 119, 1929, follows my acceptance of the genus *Radicula* Hill vice *Rorippa* Scop.

BOSE, SIR JAGADIS CHUNDER. MOVEMENTS IN PLANTS. Pp. 211, tt. 80. Longmans, Green & Co., 1931; 18/-. Forming vol. vi. of the Bose Research Institute. The introduction is from the pen of Sir Jagadis in which he states that the ascent of the sap is not a physical process due to root pressure, but is essentially a physiological effect by the rhythmic activity of living cells throughout the length of the plant, in and from the absorbing root to the transpiring leaf. He clearly urges his reasons for adopting this hypothesis in Chapter X. on the Conduction of Impulse in Plants. It is a valuable contribution, supplemented as it is by papers by R. K. Dutt, N. N. Das, B. Palit, S. C. Das, and G. P. Das. N. C. Nag and H. N. Bannerjee contribute a paper on the Proteolytic Enzyme of *Carica Papaya*—a subject initiated by Professor Vines, who contended that there were two Enzymes, Peptase and Ereptase. This was denied by Prof. Wilstatter but these authors, although they have not isolated Ereptase, believe it exists. In a second paper they show that they were able to separate them by a Kaolin method. The "Movements in Plants" shows not only the fertility and industry of Sir Jagadis but also his magnetic power in stimulating the interest in his pupils who are actively engaged in handing on the torch which he has so effectively ignited.

BOTANIK ANTIQUARIATS KATALOG, 51. A very comprehensive catalogue of Botanical works from K. F. Koehler's Antiquarium, Leipzig.

BOTANICAL SOCIETY OF EDINBURGH. Transactions and Proceedings, xxx., pt. 4, 1931. Includes, Notes on Salt-Marsh Plants by Miss Moir and D. F. Stewart. The annual excursion of the Scottish Alpine Club is described by R. Moyes Adam, p. 326. Loch Laggan Hotel was the trysting place and Creag Meaghaidh, a wonderful hill, with its neighbour, Beinn Chaoruinn, were explored. They are both rich in alpine plants. Despite adverse weather the alpinists had a successful time. The alpine grasses *Phleum alpinum* and *Alopecurus alpinus* were both seen, but the members evidently were not out for critical species. The list includes a respectable number of alpines, including *Juncus castaneus* and *biglumis*. Was the latter really this rarity and not *triglumis*, which is not given, but which I saw there? Nor is there any mention of *Cerastium Cerastoides* (more abundant there than anywhere in Britain), *C. alpinum* × *vulgatum*, and *Saxifraga rivularis*.

BOTANISTS, INTERNATIONAL ADDRESS BOOK OF. Published for the Bentham Trustees by Ballière, Tindall & Cox, pp. 605, 1931; 12/6. A directory of Individuals, Scientific Institutions, Universities, Societies, etc., in all parts of the world interested in the study of Botany. Dr Diels of Berlin, Dr E. D. Merrill of New York, and Dr T. F. Chipp of Kew formed the Committee to arrange for the publication. Dr Chipp died suddenly on the eve of its completion. It contains Index of Countries, List of Abbreviations, List of Societies, etc., and a very comprehensive index of botanists. It is admirably printed and well arranged, and must prove of real service to any working botanist. The alphabetical list at the end of the book is a true blessing since any name can readily be traced. The geographical indices, too, are most serviceable. I have put it to a pretty severe test and the results have been most satisfactory. The reasonable price, compactness, and its well-ordered arrangement make it an essential book for every botanical library:

BOWER, F. O., Sc.D., LL.D., F.R.S. SIZE AND FORM IN PLANTS. Pp. 232, fig. 73, tab. 25. Macmillan & Co., 1930; 12/6. This subject formed the theme of his Presidential Address at the Bristol Meeting of the British Association. Here we have it amplified and brought into the orderly arrangement so characteristic of Dr Bower. The scope is outside our Taxonomic side of Botany, but all of us congratulate him on producing so important a work which, to some extent, occupies a middle ground between the Physiologist who studies function, and the Morphologist who studies form.

BOYDON-RIDGE, W. T., B.Sc. THE FLORA OF NORTH STAFFORDSHIRE. Pp. 173, 1931. Issued as Appendices 1-3 to the Transactions and Annual Reports of the North Staffordshire Field Club, 1922-1929. We are glad to receive this long promised volume on which Mr Boydon-Ridge has spent much labour, especially as it promises to be a prelude to a

complete Flora of the county. The boundary line between North and South Staffordshire is not given in detail, but appears to be a line drawn across the county east and west, north of Stafford. From this area it appears that 997 species have been recorded, besides 150 varieties, an estimate not easy to follow. It seems that Bagnall's list included 963, including varieties. It may be said that the figures cited on p. 149 are defective, through omitting the Cryptogams and Coniferae. Garney's list, which had many misnomers, had 779 plants. It is not clear that the 1105 plants cited, including varieties and hybrids, are for the whole of the north of the county. The notes on the Flora are interesting, and might well be extended, especially for the mountain-limestone area. So too, are those of the six Natural History Provinces (with an annexed map)—1, Lowland. 2, Tableland. 3, Coalfield. 4, Churner valley. 5, Mountain-limestone. 6, Sub-alpine, reaching to 1658 feet in the Roaches. The rivers are briefly described. Their drainage systems might be adopted for the divisions of the new Flora, namely, (1) Trent, (2) Severn, (3) Weaver in the northern area. There is a short Bibliography and list of the workers at the Flora. In the literature, the B.E.C. Reports, which contain some hundreds of Staffordshire records, find no place. The Flora proper occupies 130 pages. Unfortunately the synonyms are printed in the same large Roman letters as the species. This, with the awkward breaking up of the name, gives an unpleasing appearance to the page. From 60 to 100 species are errors, and these should have been either relegated to a place at the end or bracketted. Needless to say they are in the same type as the native species. Some of these should be sent to limbo—*Cerastium tetrandrum*, *Geranium sanguineum*, *Trifolium agrarium*, *Lathyrus palustris*, *Callitriche autumnalis*, *Apium repens*, *Carum Bulbocastanum*, *Erigeron alpinum*, *Arctium Newbouldii* (twice), *Centaurea aspera*, *Sonchus palustris*, *Primula elatior*, *Echium plantagineum*, *Althaea officinalis*, *Galeopsis dubia*, *Atriplex Portulacoides*, *Rumex longifolius*, *Aceras*, *Damasonium*, *Juncus biglumis*, *Potamogeton filiformis*, *Carex Oederi*, *Festuca sylvatica*, *Brachypodium pinnatum*, *Dryopteris uliginosa*, *D. aemula*. Mr Boydon-Ridge has yet remaining many local species to tempt the botanist. *Draba muralis*, *D. incana*, *Hutchinsia*, *Silene nutans*, *Rubus saxatilis*, *Ribes alpinum*, *Cicuta*, *Galium pumilum*, *Valeriana pyrenaica*, *Doronicum Pardalianches*, *Cirsium* (not *Onicus*) *heterophyllum*, *Crepis paludosa*, *Hieracium anglicum*, *Campanula latifolia*, *Andromeda*, *Vaccinium intermedium*, *V. Vitis-Ideae*, *Oxycoccus*, *Pyrola rotundifolia*, *P. media*, *Polemonium*, *Symphytum tuberosum*, *Limosella*, *Utricularia minor*, *Galeopsis speciosa*, *Rumex maritimus*, *Daphne Mezereum*, *Habenaria albida*, *Crocus nudiflorus*, *Gagea*, *Elisma*, *Cladium*, *Calamagrostis lanceolata*, *Melica nutans*, *Hymenophyllum*, *Asplenium viride*, *Equisetum hyemale*. These make a good show. We congratulate Mr Boydon-Ridge on this goodly instalment. In the new Flora I plead for its divisions into river areas, for the inclusion of the published data, and especially for a due notice of Plot's "Natural History of the County." The book suffers much from its get up.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE. Centenary Meeting in London, September 1931. President, Brig.-Gen. The Rt. Hon. Jan Christian Smuts, F.R.S., Prime Minister of S. Africa, 1921-1924, whose address, given in the Memorial Hall, Westminster, was worthy of himself and of the occasion. Two Handbooks were issued, one, London and the Advancement of Science, by various authors, pp. 321, 1931. The introductory survey is by Dr Allan Ferguson. Special mention is made of William Harvey, 1578-1657, and of Bacon. Sir C. Wren also receives due notice. The account of Henry Cavendish is good. Dr Wollaston, 1766-1828, was closely related to the Royal Society, as Secretary and President. I have a letter of his announcing the discovery of a new element—Palladium—and of the somewhat harsh criticism which it evoked. John Hill is said to have earned a place in the list of London's scientific worthies and receives less abuse than usual. The account of him is extremely able and not without a strain of humour. The writer quotes against Hill:—

“Thou essence of Dock and Valerian and Sage
At once the disgrace, and the pest of this age,
The worst that we wish thee, for all thy damn'd crimes
Is to take thy own physic and read thy own rhimes.”

There is no doubt that his selling these remedies made him deadly enemies among the medical profession. He was rejected as a member of the Royal Society, but his review of the works of the Royal Society of London was a fine piece of pungent criticism, though perhaps inferior to that of “English Bards and Scotch Reviewers.” The account of the Royal Society is from the pen of Mr F. A. Towle. It first started in 1646 at the Bulls' Head Tavern in Cheapside. In 1660 it again settled in Greenham College, and Charles II. gave it a Royal Charter in 1662, and a silver-gilt mace similar to that used in the Commons. The Library contains about 100,000 volumes. The Philosophical Transactions began in 1664 and continue to the present time. For special purposes a trust amounting to £600,000 has been formed; grants of £6000 for scientific purposes being made annually. Sir Joseph Banks, our Botanical Macaenas, was President for 41 years. The Patron is St Andrew. The Royal Society is the one great institution in this country which embraces in its purview the whole wide realm of nature, and elects into its ranks the most accomplished representatives of every department of science. The other leading Societies receive due recognition. Education in London is dealt with by Mr T. L. Humberstone. The fifth Chapter, by Sir Frank Heath, is on Government and Scientific Research. Sir Frank Dyson gives an account of the Royal Observatory, Greenwich, founded at the instance of Charles II. The first Astronomer Royal was John Flamsteed, 1646-1719. Here it was that Halley discovered that the Comet he had seen had visited the earth 75 years earlier, and predicted its return in 1759. Maskelyne weighed the earth. Major Chipp gives an account of Kew Gardens, but the early history is not completely told. Sir Daniel Hall speaks of the John Innes Horti-

cultural Institution. The Development of Medicine is told by Dr H. H. Bastford, and the very numerous (about eighty) Museums of London are enumerated by Dr F. A. Baker, but even this is not exhaustive, Tradescant's Museum was transferred to Oxford in 1682. Hans Sloane's Collection went to the British Museum, purchased for the inadequate sum of £20,000, which was raised in part by a lottery. The trustees include the Archbishop of Canterbury "chosen to overcome the scruples felt by some against the lottery." The Natural History Museum was completed in 1880, the architect being Alfred Waterhouse. Among the omissions appears to be that of the Hume Institute, which has large and valuable Botanical Collections. The whole of the very useful publication is contained in a small compact volume, fortunately not printed on earthy paper, so that it may last to the bi-centenary meeting, which few of us will see.

The second Handbook gives a retrospect of the British Association, 1831-1931, by the Secretary. Part of the cost was contributed by Sir Charles Parsons. The first membership ticket is illustrated as a frontispiece. Sir D. Brewster was among the prime movers in founding the Association, as is seen by the paper in the *Edinburgh Journal of Science*, B.S., Vol. v., 1831. The Mother Society was the Yorkshire Philosophical Society (of which one of our members, Mr H. J. Wilkinson, is the present Secretary), and it was in York that the first meeting was held under the Presidency of Earl Fitzwilliam. The next year it met at Oxford, presided over by Canon the Rev. W. Buckland, and in 1874 came the celebrated meeting at which Bishop Wilberforce received a knock-out blow from Prof. Huxley. It had been the writer's privilege to go to Nottingham to invite the Association to come to Oxford under the Presidency of the Marquis of Salisbury in 1894, when Lord Rayleigh showed him the tube of the new gas (Argon), then unnamed, and also to London with the Mayor to offer a similar invitation to the meeting which was presided over by H.R.H. the Prince of Wales, in 1926. The overseas meetings are well detailed, that in Australia being over-shadowed by the Great War, but it did not prevent some of the science savants receiving the Honorary Degree. The various scientific activities are well set out, and the handbook itself forms a most useful history of this important Association.

BRITTEN, JAMES, and G. S. BOULGER. A BIOGRAPHICAL INDEX OF DECEASED BRITISH AND IRISH BOTANISTS. Second Edition, revised and completed by A. B. Rendle, M.A., D.Sc., F.R.S. Pp. 342. Taylor & Francis, London, 1931. This eminently useful publication had the Preface for the first edition dated June 1, 1893. It was a model of conciseness and accuracy, and is invaluable to any student of British Botany and Botanists. It is well not to discard the earlier volume since there has been much evisceration. Take, for instance, Dr Mavor. In this edition the point that he prepared a General View of the Agriculture of Berkshire in 1809 is overlooked, an omission all the more remarkable since it contains the first lengthy list of Berkshire plants, and the

interesting fact that he was ten times Mayor of Woodstock. Appended are a few further omissions that occur to me. Under Berkeley, Rev. Miles J., reference should be made to Northants "Notes and Queries," and Druce Fl. Northants, cxvii., 1930. Reference might have been made to the set of paintings made by Johann Sebastian Muller, which he made especially for Queen Charlotte and which are now preserved in a satin-wood cabinet in the Royal Library at Windsor Castle. Ansell, John, his Herbarium came to me through the kindness of Mr Gambier-Parry. To Ashmole, Elias, and his copy of the "Phytologia Britannica" with many MS. notes in the Bodleian Library, reference to Fl. Berks might have been given to show what they were. Baker, Anne Elizabeth, wrote a Glossary of Northants Words, two vols., 5000 references—many botanical; see Druce Fl. Northants, lxxxix. Bauer, Ferdinand, 1000 paintings of the "Flora Graeca" at Oxford, and 131 sepia drawings of the places where the plants were gathered, Hb. Druce. Cape Bauer on the Australian coast is named after him. He resided for eight months on Norfolk Island. Allman, G. J., *Linaria sepium*. Baxter, Wm., Fl. Berks, clxii. Blackstone, J., Druce in Watney's Hist. of Cornbury. Browne, Rev. W., Rep. Ashmolean Nat. Hist. Soc. and Druce Fl. Oxf., ed. ii. lxxix. Boswell, H., Mosses in Fl. Oxford, 1886. Bukley, Edward, see Morisonian Herb., 199. Danvers, Henry—Earl Danby. Watney, V., Cornbury Park. Macnamara's Memorial of Danvers Family, 1815. Delany, Mary, Druce Fl. Bucks, lxxxix., and Masters Hist. and Antiq. of Naseby, 29, 1792. Don, George, Rep. Pharmaceutical Confer. at Dundee, 1902. Doody, Samuel, Field and Semple Chelsea Gardens. Fielding, Henry B., founded the Fielding Curatorship at Oxford. Garnsey Rev. H., gave new ceiling to Magdalen College Dining Hall. Gotobed Fl. Berks, cxlvii. Gosselin, J., discovered *Cicendia*. Henderson, Joseph for some time at Milton (G. Fitzwilliam) and there helped John Clare. Hobkirk, C., forms of *Crataegus*. Krieg, D., see Morisonian Herb. Hill, John, Makers of British Botany. Ingwall, Thos., c. 1844, discovered *Teucrium Botrys* at Boxhill, Ann. Nat. Hist., 1844. Joad, he gave the rock-plants which started the rock garden at Kew. Knowlton, Thos., *Sedum dasyphyllum*, Ray Syn., 1724. Lees, Edward, Corr. Memb. Bot. Soc., London. Macartney, Lord, 1737-1836, J.N.B., xxvii. Eastern plants at Oxford. Merrett, Pinax reprinted, 1667. Mill, G. G. Fl. Berks, clxix. Morgan, Edw., 3 vols. Hort. Soc., Bodleian Library Notcutt, W. L., Druce Fl. Northants, cxvii. Paley, Rev. F. A., Druce Fl. Northants, cxxi. Pamplin, Druce Fl. Oxf., cxiii. Pitcairn, A. Vita Morisonii, c. 1700. Pitt, W., Druce Fl. Northants, lxxxvii. Plot, R., Druce Fl. Oxf., ed. ii., lxxv., *Ulmus Plotii*. Pitchford, J., Hudson Fl. Berks, cxlvi. Sowerby, J. de Carle, engraved plates for Sibth. Fl. Graeca. Stratton, F., plants in Hb. Druce at Oxford. Tyacke, N., *Achemilla argentea* in Arran, sp. in Herb. at Oxford. Sim, J., *Botrychium*. Huntly, Marchioness of, M.A. Pegus, born Uffington, 1821, died at Orton, 1893. Herb. and paintings at Orton and Peterborough. See Viet. Count. Hist. Hunts, and Druce Fl. Northants, cxx. These come to one as one looks upon the well-filled pages, but the exigencies of space

made it imperative to limit the matter. Another reason for the retention of the old volume is that a few names were included in the first edition which it has not been thought worth while to insert in the second. The selection of the names is extraordinarily good, and the masses of information accurate. How much has been done since the first appearance is shown by the figures of 256 pages in the earlier volume and 338 pages in this. We congratulate the editor on a good piece of eminently useful work.

BRITISH MUSEUM (NATURAL HISTORY), DEPARTMENT OF BOTANY. Exhibition of a Selection from the Historical Collections, for the fifth Botanical Congress, 1930. Pp. 23. London: Murray & Co. The Museum actually dates from 1753, Sir Hans Sloane's collection being purchased for £20,000. It contained a Herbarium in 33 large folios. It was removed from Montagu House, Bloomsbury, to South Kensington in 1881. Sloane's connection with Jamaica arose from the fact that he was Physician to the Duke of Albemarle and stayed with him in that island for fifteen months. The plants he collected there are contained in the first eight volumes of the set. Banks marked his species in an annotated copy of Ray's *Historia Plantarum*. They include a magnificent series of plants of the 17th and 18th century botanists. Banks went with Cook round the world, botanising in Labrador and for six months in Iceland. Solander acted as librarian and botanist from 1764, and went with Banks to Iceland. Banks was also assisted by Dryander, Robert Brown, and John Lindley. To Robert Brown he bequeathed an annuity and the use of his collections during his lifetime, when they were to go to the British Museum. A general view of its contents are given in this brochure, which also includes the chief collections up to date, but no allusion is made to Benbow's Buckinghamshire plants, of which he was so meticulously careful. A list of the exhibits is also included, but under Ferdinand Bauer there is no reference to the 1,000 unequalled floral drawings of his at Oxford, which were used in the *Flora Graeca*.

BULLER, A. H. REGINALD, F.R.S. RESEARCHES ON FUNGI. Vol. iv. Further Observations on the Coprini, together with some investigations on social organisations and sex in the Hymenomycetes. Pp. 330, tt. 149. Longmans, Green & Co., London, New York, Toronto, 1931; 21/-. "This volume, the fourth of its series, is divided into two parts. Part I. is devoted to the record of some further observations on the Coprini or Ink Fungi, while Part II. treats of problems connected with social organisation and sex in the Hymenomycetes, and particularly in the Coprini. In Part II., Chapter I., an attempt is made to elucidate the physiological advantages which accrue to the mycelia of Mushrooms, Toadstools, and other Higher Fungi through the existence of the numerous hyphal fusions which are so characteristic of them. It is these hyphal fusions which permit of various mycelia co-operating in the formation of fruit-bodies. In the final chapter of Part II. it is shown in detail that, in *Coprinus lagopus*, a diploid mycelium is able

to diploidise an appropriate haploid mycelium. This discovery seems to provide a clue to the biological significance of conjugate nuclei. Incidentally, in the course of the work, it has been possible to calculate the speed of movement of nuclei derived from one haploid mycelium (or an appropriate diploid mycelium) along the hyphae of another haploid mycelium which the first mycelium is diploidising." Dr Buller is to be warmly congratulated upon the issue of so scholarly a volume, which is well printed and cleverly illustrated. Some of the printing is in Coprinus Ink.

CALIFORNIA UNIVERSITY, BOTANICAL PUBLICATIONS OF. These show a most healthy spirit of investigation, and include many valuable papers, but space only allows of a passing glance. Halperin on *Poa bulbosa*. Rarotonga Ferns, collected by H. E. and S. Thew Parks, by E. Bingham Copeland, include a new *Dryopteris*, *Athyrium*, and two *Aspleniums*. Miscellaneous oriental Pteridophytes include a new *Gleichenia* from Malay, a *Cyathea* from Samoa, another from Aneitum, and a third from Tonga. There are many others from New Guinea, etc. There are several plates. John Billing (153-170) has an important paper on Chromomeres of Liliaceous Plants.

CARDIFF NATURALISTS' SOCIETY, TRANSACTIONS OF. Vol. lxii., pp. 92, 1929; 10/6. A well-printed Report containing several interesting articles. Botany is not one of the strong sections. The address of the Hon. Librarian is the National Museum of Wales.

CAVEES, F., D.Sc., F.L.S. BOTANY FOR MATRICULATION. Revised by L. C. Fox, M.A. Second Edition, pp. 509. W. B. Clive, University Tutorial Press, High Street, New Oxford Street, London, 1931; 6/6. In this compact work the syllabus of the Matriculation Examination of the University of London is completely covered, and it will prove useful for school and other students, as well as for those who are interested in the examination of plants. It is well illustrated with 176 text figures. One of these is that of a compound microscope by E. Leitz, Wetzlar, but it seems wrong in these days of restricted business to recommend a foreign make. A very useful feature is the series of questions at the end of each chapter. On the ability to answer them is the test of one's understanding of the text. The treatment of the Families, which do not follow Bentham and Hooker's *Genera Plantarum*, is useful and practical. In the Rosaceae, etc., a short key to the genera is given. The cultivated species are enclosed in brackets. Capitals are not used for specific names in such cases as *Lathyrus Aphaca*. *Taraxacum Dens-leonis* is said to be an evergreen plant, since it is never without leaves. Although there is no mention of its extreme variability, there is much useful information given on the life history of the flower-head and of the individual flowers which open only for about three fine days of eight hours each; in wet or cold days they remain closed. The student is asked to test the various observations on the plant itself. Of the Hawkweed we are told some authors distinguish as many as thirty, others

only four or five. We have over 260 in our List for Britain alone, while Zahn gives about 800 species, with some thousands of sub-species. Under the Thistle, *Cirsium* should be given as the name of the plumed Thistles. *Senecio Cineraria* might have been mentioned, as well as that increasing species, *S. squalidus*, under that genus. The habitat of *Solidago* is not confined to moist woods. The Orchidaceae is not included in the families, but a passing reference is given to *O. Morio*. The book can be strongly recommended for its general excellence.

CHARLES, VERA K. SOME COMMON MUSHROOMS AND HOW TO KNOW THEM. Pp. 60. United States Department of Agriculture, No. 143. For sale by Superintendent of Documents, Washington; 30 cents. A clear, concise account with key and forty-nine excellent illustrations. They are mostly British, species of a wide geographical range being selected for description.

COLVILLE, F. V., has been awarded the George Robert White Gold Medal of Honour, the highest Horticultural award in the United States. Dr Colville has studied extensively the Flora of the Rocky Mountains. Forty years ago he made the first botanical survey of the Death Valley, and he is the acknowledged authority on that region. He is the joint author of *Standardised Plant Names*, which gives authoritative names for 20,000 species and varieties in the United States. He is now Acting Director of the National Arboretum at New York. In experimenting on the growth of the Mountain Blueberry, he demonstrated the effect of cold in stimulating the growth of plants, and found that the Wild Crab, Cranberry Bush, Trailing Arbutus, etc., would not grow until they were chilled.

DANSER, Prof. B. H. Zur Polymorphie der *Polygonum lapathifolium*. Pp. 101-123. Nederl. Krindk. Arrd., June 1931. Bussy, Amsterdam. Prof. Danser accepts the name *lapathifolium* and does not mention *P. scabrum* Moench. He describes, as sub-species, *mesomorphum* = *lapathifolium*, var. *virescens* Gren. & Godr.; sub-sp. *lanigerum* R. Br. as species, Australia; sub-sp. *africanum* (Meisn.) Dans., Congo, Cameroons, etc.; sub-sp. *nodosum* (Pers.) Dans., Europe, Asia; sub-sp. *glandulosum* (R. Br.) Dans., Japan, Asia, Australia, Africa; sub-sp. *oligocladum* Dans., Rotterdam, adventive; sub-sp. *syringifolium* Dans., Netherlands; sub-sp. *totmentosum* (Schrank) Dans., N.W. Europe; sub-sp. *leptocladum* Thell., Europe. Nepenthaceae, Mitt. Inst. Alleg. Bot. in Hamburg, 217, 1931.

DREWETT, F. DAWTREY, M.D. THE LIFE OF EDWARD JENNER, M.D., F.R.S., Naturalist and Discoverer of Vaccination. Pp. 127, with portrait. Longmans, Green & Co., 1931; 6/-. In this pleasant little volume, Dr Drewett has brought together much of interest relating to Jenner, whose biography by John Bacon in two volumes appeared nearly a century ago (1838). Jenner was the third son of a clergyman living

at Berkeley, Gloucestershire. His father died when he was five years old, and he was brought up with affectionate care and judgment by his uncle, the Rev. Stephen Jenner. At the age of eight he went to school at Wootton under Edge, and later to Cirencester. He developed early a taste for Natural History. Before he was nine he had made a collection of Dormice nests, and when at Cirencester a collection of Oolitic fossils. Later on he studied Pharmacy and Surgery at Sodbury. Then, when he was twenty, he came to London and was a pupil of John Hunter, who had a menagerie at Brompton. Hunter became a hero to Jenner and a life-long friendship resulted. In 1771 Capt. Cook returned with many specimens which had been collected for Sir Joseph Banks, including a mass of new plants dried and pressed. These were collected near Botany Bay, and Jenner was asked to prepare and arrange the specimens. This he did with such skill and care that Sir Joseph offered him the appointment as Naturalist to the next expedition. Neither this, nor a partnership with Hunter, was accepted, Jenner preferring to return to the country air at Berkeley. He cared not for the glory of London. "What is its reward?—at best a name. Praise—when the ear has grown too dull to hear. Gold—when the senses it should please are dead. Wreaths—the hair they cover has grown grey. Fame—when the heart it should have filled is dumb." Jenner loved his county and the country life. He is described as having "the generosity of a good man, the simplicity of a great one." In 1788 he married Catherine Kingscote. In 1793 his old friend and tutor died of angina pectoris, and in the same year Jenner nearly died from an attack of typhoid fever, the effects of which he felt for more than a year. Smallpox, at that time, was ravaging the country in its most loathsome form. Inoculation, introduced through the auspices of that remarkable woman, Lady Mary Wortley Montagu, was not successful, but was not officially discontinued till 1840. In 1752, no fewer than 3538 cases occurred in England. In Russia, one child in every seven died from it. Jenner had heard a servant girl say that she could not have Smallpox, for she had had Cowpox, and this led him to go into the subject. On the 14th of May (a day kept as an annual festival in Berlin) he obtained the lymph for a Cowpox cure and inoculated a healthy boy, which made him immune. In 1798 he issued a pamphlet of seventy pages with illustrations. This resulted in his being offered £10,000 a year and a house in Grosvenor Square. In 1800 he visited Oxford, and I have seen a letter relating to his inoculations which he practised there. Dr Drewett gives a mass of information relating to the increased use of the lymph. Over 6000 cases were sent to him from India alone. The Empress of Russia sent him a diamond ring worth £1500, but he made no attempt to enrich himself. The House of Commons voted him £10,000, not without some opposition. His fame was world-wide. In more recent days, with a milder kind of Smallpox, vaccination is not so popular, and is, indeed, distrusted by many. Even a Sunday School child, when asked why Moses was hidden in the Bulrushes, replied: "Because they wanted to vaccinate him!"

DRUCE, G. CLARIDGE, D.Sc., LL.D., F.R.S. THE COMITAL FLORA OF THE BRITISH ISLES. Being the distribution of British (including a number of non-indigenous) plants throughout the 152 vice-counties of Great Britain, Ireland, and the Channel Islands, with the place of growth, elevation, world-distribution, grade, chief synonyms, and first names by which the plants were recorded as British. Pp. xxxii. + 407. With an original coloured map showing the botanical vice-counties. Demy 8vo. T. Buncle & Co., Arbroath, 1932; 20/-. To members of the Botanical Society and Exchange Club, 15/-. Interleaved copies, 3/6 extra—all post free.

All the many well-wishers of the late Dr Druce will be grieved to know that this veteran British field-botanist passed away suddenly the day before this, his last work, was published. I had myself put off a visit to him only a few days before he died, as he complained of the cold. I remember that quite twenty years ago this valuable summary of British Plant Distribution was even then being built up, for he showed me a specimen of it on one of my visits to Oxford. All members of the Botanical Society and Exchange Club of the British Isles, of which Dr Druce was Honorary Secretary for so many years, had already much to be grateful for to the author of this work. He was undoubtedly better acquainted with the British Flora as a whole than any other British botanist, and this knowledge he freely placed at the disposal of anyone. He was always ready to help others. In this way he approached the subject of this notice well equipped with first-hand experience and knowledge, and was loyally aided by a large body of collaborators. The annual Reports which he compiled were full of new British or county records, in addition to containing valuable summaries of British botanical literature, or other publications bearing upon it, and useful revisions of genera, etc. It will be difficult to replace so active and skilled a worker as Dr Druce.

The present work is a summary of plant distribution in the British Isles, and thus includes the records of every local and county flora. Previously this information was scattered through a number of now rare and expensive works by Watson, Colgan, More, Praeger and others. It will serve to answer the question whether a plant found is new to a given county or not, and will thus act as a guide to one's own county as well as on one's travels to other areas. Dr Druce says in his Preface, "I trust this book will be the field-companion of many botanists, because it will enable them to see if the plant they gather is new to the vice-county. Many journeys will, I trust, the book make with you," and with graphic but rather pathetic poetry, he continues, "through long tramps up mountain glens, when Bracken gives place to Heather and the Pines disappear, by trickling rivulets on whose sides are *Saxifraga aizoides* and *stellaris* and *Epilobium alsinifolium*, leading up to the rocky cliffs on which grow *Saxifraga rivularis*, *Poa alpina*, *Cerastium Cerastoides*, *nigrescens* and *alpinum* and their hybrids, *Polystichum Lonchitis*, *Sagina scotica*, besides countless *Hieracia*. Or it may be your visit is to a vil- lage by the sea, above which towers a shapeless hill whose slopes are

aglow with *Ulex Gallii*, amid which is the crimson-flowered *Boreta cantabrica*, and where *Erica mediterranea* gladdens the eye. Below one are trembling bogs in which lurk *Utricularia*, and then sea-wards there is a strip of emerald-green turf and yellow sands, offering *Arabis Brownii*, *Spiranthes spiralis* and deep crimson-flowered *Orchis pyramidalis*. Then there is the zone of the tawny orange fucus-covered rocks and the opalescent sea."

Following the Preface, in which the methods adopted are outlined, the reason for omission of some critical genera explained and his thanks to the friends that assisted him (of which he was never stinting) recorded, there is a useful Introduction of twenty pages, discussing broadly the various data that are given for each plant in the Comital Flora itself, which takes up 398 pages. The Introduction explains the mode and plant citation, and reasons for some inconsistency are explained. He notes, *en passant*, that this work brings up to date Clarke's "First Records of British Flowering Plants," in itself a valuable addition to our knowledge. In regard to many old records and segregates, the difficulty of citing distributional records has been largely overcome by commencing *de novo* and utilising the Reports of the Club—a mine of information—and the material of his own Herbarium of 200,000 specimens, passed under review by an army of referees (cited on p. x.). This Herbarium is being maintained by a bequest and contains many valuable acquisitions (pp. xi.-xii.), *e.g.*, those of Charles Bailey, A. Fryer (Potamogetons), George Don, Leefe, Sole, etc. Dr Druce then summarises usefully the work of that pioneer of British Plant distribution, Hewett Cottrell Watson (a portrait is given of him, as well as of Dr Druce himself in academic robes). He summarises the terms used by Watson in his "Cybele Britannica," the provinces and vice-counties, altitudinal zones, stations, the types of geographical distribution, adopting them, or with some modification in the present work. A summary of the scope of "Topographical Botany" is also given, that work of Watson's being "the basis of our Comital Flora." *Inter alia* a detailed statement as to one of the causes of the long feud between Britten, a former Editor of the "Journal of Botany" and Dr Druce is printed. There follows an interesting summary as to the census of British plants, and lists are given of those extinct, or of dubiae, and of those confined to Scotland, Ireland, Wales, the Channel Islands respectively. Then comes a summary of broadly ecological types, *e.g.*, Ericetal, Hydrophytes, etc., a short account of aliens (1800 being included) and their means of dispersal, a summary of recent additions and of those confined to certain counties. A table of vice-counties with their well-known numbers is given, illustrated by a folding map, provided, as Dr Druce gracefully acknowledges on the title page, by W. J. Patey, Esq. A bibliography and a table of the metric and English systems of measurements conclude the Introduction, which is a useful résumé of valuable information compressed into very small space.

As to the Comital Flora itself, it may be best illustrated by an example—the first:—

"CLEMATIS VITALBA L. Traveller's Joy, Old Man's Beard.
Septal. English-Germanic. Hedges, bushy places on calcareous soils,
and chalky downs. South of Denbigh and Leicester. Climbing
Shrub. 10-700 ft.

Europe, W. and C.; Africa, N.

Eng. 48 [31. H. 17. S.].

1-41, 45, 46, 50, 53, 55, 60, 61 [42-44, 51, 52, 54, 56-59, 62-67, 69, 70, 75,
77, 80, 82, 83, 85, 87-89, 97-99, 102].

[H—1, 2, 4, 5, 8-10, 12, 14, 18, 20-23, 26, 31, 37.]

Between Ware and Barckway in the hedges.—Turner Names, G.viii.
back, 1548."

These records of distribution form the cream of the work, and are the result of a life-time's application to the study, for Dr Druce stated in his Preface that the subject attracted him in 1876. It is unnecessary to lengthen this notice by further citation from this part of the work; and I need only add in conclusion that it must be invaluable to all British botanists as a careful and, as far as possible, up-to-date and accurate summary of the distribution of the plants in every county in the British Isles.

A. R. HORWOOD.

ECOLOGY, THE JOURNAL OF. Edited by A. G. Tansley, F.R.S. Vol. xix. 22/6 each number. Cambridge University Press. February 1931. This contains Supp. vii. British Empire Vegetation Abstracts. The Biotic Community, J. Phillips, p. 24. An Economic Aspect of Regional Surrey, C. R. Robbins—the areas of Crowthorne, Wormsley and Calne are beautifully depicted. Vegetation of the Long Mynd, a plateau 1400 ft., highest point 1696 ft., page 45. On the Peat Deposits of Moine Mhor, N. Argyll—the dominance of Pteridophyta, p. 59. Observations on some of the St Lucia Soils, C. W. Hardlaw, p. 63, with beautiful fern photographs. P. 102, On the Importance of some Mosses as Pioneers on our Unstable Soils, W. Leach. P. 136, The Ecology of the Ayreland of Brid, Isle of Man, E. J. Moore. Scottish Beechwoods, A. S. Watt. The Boreal Hazel Forests and the Theory of Pollen Statistics, G. Erdtman, p. 163. The Standardisation of Descriptions of Plant Communities, E. J. Salisbury, p. 189. Obituary notice of C. E. Moss, p. 209. August 1931, with Supp. viii. British Empire Vegetation Abstracts. The Plant Communities of Table Mountain, R. S. Adamson, p. 319. Scottish Beechwoods, A. S. Watt, continued on p. 360. Altitudinal Distribution of Plants on the Crimean Mountains, p. 382. The highest mountains are 1500 metres, and that within eight kilometres of the shore, and the most beautiful of the blossoms are those of *Scabiosa caucasica*—Queen of all the Caucasian flowers. The Fenlands of Lough Neagh, Prof. J. Small. The average rainfall is said to be 30 inches. A limited experience would have estimated it at more. There is a useful map of Lough Neagh. I see no reference to either *Deyeuxia Hookeri* or *Carex polygama*. What is *Carex hirsuta*? = *hirta*. Preliminary work on a new Biological Station, Lough Me, Co. Cork, Louis P. W. Renouf, p. 438. Studies on the Ecology of Wicken Fen, H. Godwin, p. 473.

ENGLER, A. DAS PFLANZENREICH. 97 Heft (v., 252). Boraginaceae—Borraginoideae—Cryptanthaeae. Pp 236, tt. 159. February 21, 1931. 37 marks. A. Brand. In this excellent work Mr Brand has adopted *Amsinckia* instead of the earlier *Benthamia* Lindley, without assigning reason for his choice. Our *Lappula deflexa* (Wahl.) Garcke he names *H. tenella* Opiz. He also puts *Lappula deflexa* as *H. deflexa* Lehm. *Lappula minima* he transfers to the genus *Heleroxycarpium* A. DC. and unites *L. Szovilsiana* F. & Mey with it. The well-known name *Eritrichium nanum* he restores, since Villars used the trivial in 1779, whereas the trivial *terglouense* A. Kerner was not used by Hacquet in 1782. He divides *Benthamia* (*Amsinckia*) thus:—

Interior face of nutlet keeled, sepals always three, nutlets 1½-2 mm. long, ± reticulately rugose,	<i>hispidia</i>
Leaves linear, nutlets distinctly rugose; corolla a little longer than calyx,	<i>intermedia</i>
Corolla twice the length of calyx,	<i>spectabilis</i>
Nutlets scarcely rugose but unscaled or corrugated—	
a. Apex acute or setiform, corolla 7-9 mm. long,	<i>Menziesii</i>
b. Apex obtuse, punctiform, nutlets corrugated, immarginate, corolla 5 mm. long,	<i>parviflora</i>
c. Nutlets scarcely corrugated, fuscous,	<i>Lycopsioides</i>

ETUDE DE LA FLORE ADVENTICE DU HAVRE ET DES ENVIRONS. Soc. Linn. Seine Maritimes. Raoul E. Mail, January 1932. Includes an interesting list of adventives, of which *Balanites aegyptiaca* Delile seems to be new to Europe.

FISHER, CANON ROBERT, M.A. FLOWERS OF GRASS. HOW TO KNOW THE NAMES OF THE BRITISH GRASSES. Pp. 47, tt. 28. Wheldon & Wesley, 1931; 2/-. A foreword is given by Mr Rayner. A long list of abbreviations is supplied as well as an explanation of the terms used. Keys are arranged by (1) spike and panicle, (2) awns, (3) flowers. The List of the British Grasses follows. Rayner's Catalogue is called the Standard Catalogue, and for the Latin name, the British Plant List, Ed. 2, is used. *Bromus interruptus* is not included, nor are *Calamagrostis scotica*, *Glyceria plicata*, *Poa irrigata*, etc. This cheap little work doubtless will be the pocket companion of many of our members.

FLINTOFF, R. J. Natural History Notes. Naturalist, February, March, April 1931. *Sambucus Ebulus*, Thomson Dale; *Epilobium nummularifolium* in N.E. Yorks near Glarisdale, etc., a New Zealand plant of garden origin.

FLORA'S LEAGUE. The Society for the Protection of Wild Flowers, Ferns and Trees. Annual Report, Sir W. M. Abbot-Anderson, C.V.O. A delightful foreword by H. E. Salt is given. The Report bears evidence of the activities of the President and members. People desirous of joining the Society should write to the secretary, c/o the Council for the Preservation of Rural England, 17 Great Marlborough Street, London, W.1.

FLORA OF SURREY, being an account of the Flowering Plants, Ferns, and Characeae, with Notes on the Topography, Climate, and Geology, and a History of the Botanical Investigation of the County, by CHARLES EDGAR SALMON, F.L.S. Edited by William Harrison Pearsall. London: G. Bell & Sons, Ltd., 1931.

The County of Surrey has probably been more thoroughly explored by field botanists than any other area of similar size in the British Isles. From the time of the early herbalists to date diligent and numerous workers have recorded their discoveries, so that the compilation of an up-to-date and exhaustive flora has become annually more difficult and yet more necessary. The present work is, therefore, extremely welcome, as it co-ordinates an immense number of records not otherwise easily available and renders the further investigation of the County Flora much easier.

The last *Flora of Surrey*, largely compiled from the manuscripts of J. D. Salmon by J. A. Brewer, was published in 1863 and enumerates 984 species out of a total of 1566 then known for Britain. This work, produced at a time when an era of very active field botany had just commenced, soon became hopelessly out of date, and about 1867 the late Arthur Bennett, and later W. H. Beeby (in 1884) took up the preparation of a new County Flora. W. H. Beeby's Flora reached a high degree of preparation, and doubtless when he handed over the MSS. to the late C. E. Salmon in 1908 he anticipated that a Flora would be published before many years had elapsed. But Salmon was far too painstaking and thorough in all his work to be satisfied even with the excellent materials at his disposal, and he delayed publication in the hope of finding more time to devote to the work of making it as complete as present knowledge would allow.

In 1920 printing was commenced and the first 550 pages of the Flora were printed when the author suddenly passed away on January 1st, 1930, and all hope of completion seemed lost. After a lapse of some months Mr W. H. Pearsall was approached and consented to edit the remaining genera and to carry the work through to completion. Judging from the volume as it now stands, it appears that the position at this time was that 550 pages were printed, about another 65 pages (to approximately the end of the Dicotyledons) were written up by Salmon but unprinted, and the remainder of the work, Introduction and Summary, were entirely unwritten.

Considerable condensation was necessary if the work was to be completed in one volume. Mr Salmon realised this well enough, for about four years ago he discussed publication in two volumes, though apparently he waited to see exactly how much space would be required before coming to a definite decision. Under such handicaps of space it is only to be expected that the second half of the work is quite out of proportion to the first and the result is a very unbalanced volume.

The Introduction comprises several excellent chapters written by various authors. The Topography, by Will. F. Taylor, is excellent, but

in view of their importance, in defining the botanical divisions the account of the Rivers and Watersheds might with advantage have been more lengthy. The chapter on Geology by M. C. Crosfield is very good, but slightly out-of-date. The Botanologia, written by the late Prof. G. S. Boulger (who died in 1922), leaves little to be desired, except that it makes no mention at all of the work done by Surrey Botanists during the last twelve years.

The Plan of the Flora (pp. 57-63) is little more than a reprint of Beeby's account in the Victoria County History, with Bibliography added. The division into districts (ten in number) is based, as in many recent local Floras, upon the river basins. In the case of Surrey this arrangement is somewhat unfortunate. We find districts Xa and Xb separated by $4\frac{1}{2}$ miles of district IIIa, united only as sub-divisions of the same district because they happen to form isolated portions of the catchment area of the Arun. Probably the remark on p. 63 that "the disused Wey and Arun Canal affords some good botanical ground" is somewhat out of date. We find the slopes of the chalk escarpment included in district V, whereas the summits are in districts VI and VIII. It is impossible to be certain of the boundaries of the districts for record purposes; for example, the boundary of Xa only follows any definite landmark (a road) in five cases and then only for a very short distance indeed. The old divisions in Brewer's Flora, though arbitrary, had at least the advantages that they were bounded by rivers, railways, and canals which could be noted in the field and closely approximated to the geological formations.

The first part of the Flora, as completed by Salmon, is carefully compiled and exhaustive, and, so far as it goes, is the most complete local Flora yet published in this country. He seems to have taken as his model the best of the recent Floras (such as White's Flora of Bristol, and Dr Druce's works on the Thames Province Counties). The only really serious criticism possible is that it is ten years out of date. Such recent introductions as *Lepidium Draba*, *Galinsoga parviflora* and *Senecio squalidus* have considerably extended their range during this period, and much more is now known of the distribution of the Pansies and other critical groups in Surrey. The bracketing of old localities where the plants mentioned are now extinct is obviously underdone. Even some of the old Battersea Fields rarities have been left unbracketed! But here Salmon erred, as always, on the side of caution, and he is careful not to assume that, merely because a district has altered or that recent workers have failed to find a plant in the locality recorded, the plant is extinct there.

A few plants have a status assigned to them which most Surrey botanists would probably strongly disagree with. Although the question of the status of a plant in the county must obviously remain largely a matter of opinion, the evidence does not always seem to be in favour of the view taken by Salmon. *Saponaria officinalis* (page 170) is given as "rare as a native by stream sides and on wood borders"—we would

rather call it a long-established denizen. It was naturalised before Gerard's time, and it is therefore not surprising that it "looks native" in some of its stations. *Prunella laciniata* (p. 527) may be native on downs and pastures, as stated, but the question is decidedly debatable.

The notes, as one would expect, are very sympathetic towards rare or decreasing species, and in this connection the remarks on the Mezeron on page 572 are especially commendable. Yet it is rather surprising, after reading this outspoken paragraph, to observe recommendations to grow various plants in the garden such as *Genista tinctoria* (p. 225) and *Geranium pratense* (p. 210).

Those who had the privilege of knowing Salmon personally will remember him especially as a man who always seemed to enjoy life. They will be grateful for several spots of humour which remind us so vividly of the living man. Thus, on page 148, referring to *Lepidium latifolium*, which according to Capron was probably an escape from the Botanic Gardens on the other side of the river, Salmon says, "Details as to how the plant escaped the keeper and swam the river would have been valuable!" On page 123 he recommends a paper on *Barbarea stricta* to British "Barbareans." On page 255 a record given by Ray of *Lathyrus palustris* being found in Peckham-field, "in a squalid watery place," calls forth the comment that "the squalid conditions would not be difficult to discover!" *Mentha* (page 506) is described in a footnote as a "fascinating and sauce-providing genus." Such remarks, though perhaps not very good examples of humour, add considerably to the interest of the work.

A few new forms and varieties are described in the text of the Flora. We may instance *Galium Aparine* L., var. *pseudo-Vaillantii* A. Bennett; *Erica Tetralix* L., forma *latifolia*; *Lysimachia vulgaris* L., var. *angustifolia*; *Lamium album* L., forma *erubescens* Watson; and there are others. But Salmon was no believer in adding new names unless absolutely necessary, and there are no very startling innovations.

It is evident that the author intended to add an appendix giving notes on certain genera in which he took a special interest. Thus under *Polygala* (p. 165) a foot-note tells us, "For a key to the British species see Appendix," and the appendix is, of course, lacking. If the notes for the preparation of such additional matter are in existence, and are in anything like reasonable condition for publication, they should be made available, rather than that they should be lost to British Botany. Salmon knew so much, and yet comparatively published so little, that we cannot afford to lose any of his work which appeared on paper. The notes which appear scattered through the Flora are invaluable and will prove of great use even to botanists who may never have occasion to enter the county. The note on *Bidens* (pp. 383/4) is typical of many other good notes scattered throughout the pages completed by Salmon. They indicate how much we lost in *Carex*, a genus which he did not live to write up, but on which his knowledge was especially good.

The allocation of the localities to the districts is almost faultless, though in a few cases it is felt that one locality appears as two needlessly (e.g., p. 396, *Senecio campestris* districts IIIa and IV). The work is singularly free from misprints—*Veronica serpyllifolia*, var. *rotundifolia* Schrank, has the initial "r" dropped on page 490, "vel" is printed "ve" in the 7th line from the bottom on page 445, and we find "interstinge" under *Euphrasia Rostkoviana* (p. 496)—no others were observed.

The second part of the work—the Monocotyledons (there is no heading to correspond with the one on p. 83), edited by W. H. Pearsall, can scarcely be compared to the portion completed by Salmon. Owing to the unreasonable limits of space, these last pages become little more than a catalogue in parts and entirely lack Salmon's valuable notes. Of many plants of rare or local distribution in the county no detailed records at all are given. This is especially noticeable in the genus *Carex*, where *C. strigosa*, *C. helodes* and *C. vesicaria* are dealt with by general statements and made to appear much more plentiful than is the case. *Galanthus nivalis* is given as "abundant" in three districts, which is certainly not the case. In two of the districts it occurs scattered along the banks of the Mole, whence it is recorded in Brewer, and here it has a semblance of being native. *Narthecium ossifragum* is "Recorded from every district, but very local and scarce in each"—it occurs by the acre in districts II and IIIa especially! *Luzula sylvatica* is plentiful in districts VI, VII, VIII, and IX, which is undoubtedly not so. Salmon was quite enthusiastic when he found a new locality for it in district VIII, and many workers would call it a most rare plant in the county—Brewer knew of only one locality! No Surrey botanist would be likely to call *Juncus compressus* Jacq. "frequent to abundant" in any district—certainly not in six districts as listed. Under *Lilium Martagon*, the Woodmanstone station is made much of, whereas the classic "Mickleham" station, where the plant still exists, is unmentioned. This locality appears in Brewer, and in Beeby's account in the *Vict. County Hist.* A recent record in print is *Rep. W.B.E.C.*, 1926-7, page 399. The writer has seen the Martagon Lily in this old locality in several very recent years in fair quantity. It is annually raided by motorists—apparently non-botanists—for decoration purposes. *Acorus Calamus* (page 615) is said to be a denizen (see also *Journ. Bot.*, ix., pp. 163, 246). Druce (*Fl. Berks*, 509) has no hesitation in giving it native status, and there seems very little positive evidence against this view. The Sweet Flag occurs in greater or less quantity along the banks of the Thames from Oxford to London and, if a denizen, it must certainly have been established for a remarkably long time—certainly before Ray's time.

There are two notable omissions in this part of the Flora of Surrey which was written up recently—no mention is made of *Bromus britannicus* I. A. Williams and *Equisetum occidentale* (Hy) Coste—the locality for which is given under *E. hyemale* on p. 659. The question of the status of this last plant is discussed in *Rep. B.E.C.*, 1929, 42-44. Here

we may also draw attention to Wallace's record of *Vicia gracilis* Lois. (*Rep. W.B.E.C.*, 1927-8, 430), which Salmon later saw *in situ* and considered native. Although the editor decided against addenda we think this discovery so important as to deserve special mention.

There are a few misprints in the second part of the volume, noticeably Burford Bridge and Wimbledon Tark under *Setaria viridis* (p. 635); Vaun Pond and J. E. Bichens for Vann Pond and J. E. Bicheno (p. 637); and under *Glyceria declinata*, "nr. The Compass, Gomshall" for "Nr. The Compasses." But these are trivial errors, and for a writer not familiar with the county to get off with so few misprints is no mean achievement, probably due in no small measure to the excellent handwriting of both Pearsall and Salmon. In this part of the work, unfortunately, initials of recorders have been used in many cases which do not appear in the list of abbreviations and authorities on pages 68-80. Sometimes this is apt to lead to confusion. For example, on page 597 the initials H.W.P. appear under *Malaxis*—and on the same page there is a record by H. W. Page. Undoubtedly, H.W.P. refers to Mr H. W. Pugsley, but this may not be obvious to future generations. Similarly, on page 635, under *Panicum miliaceum*, an authority is given as "D"—probably Lady Davy is intended, but there is no key to this, and the fact that her name appears in full twice on the same page would seem to indicate that someone else is intended. *Epipactis palustris* is recorded from "Near Ham Ponds," an unlikely station. Can Ham Ponds, near Dover, where it still grows, be intended?

In spite of this criticism the second part of the volume is well done, and we are extremely grateful to Mr W. H. Pearsall for preparing the *Flora of Surrey* for publication, and so making the enormous amount of material collected by Salmon available for future work. It is a great pity that he is not familiar with the county—but to this fact, and to this alone, can the errors in general statements of distribution, etc., be ascribed. It must be remembered that the number of records is often a very poor indication of the abundance or otherwise of a species in the district (the Snowdrop, given above, is a good example of this), and that a botanist working from books and notes alone is at a great disadvantage as compared with those who have even slight field knowledge of the area dealt with.

The *Flora of Surrey* lacks a summary and comparison with neighbouring counties, which have been features of recent floras. Useful maps showing the botanical districts and Geological features are added, but it is to be noticed that the latter shows "solid" Geology, the far more useful "drift" maps not being available at the time of publication. Lt.-Col. Wolley-Dod adds "Revision of the Genus *Rosa*," bringing the Surrey records for this difficult group up to date. The frontispiece is an excellent photograph of the author engaged in his favourite pursuit, and there are eight other photographs scattered through the volume. Although the subjects of these are well chosen, they do not give a good idea of the vegetation and are pictorial rather than illustrative.

Throughout the pages we note numerous records by our members—Lady Davy, Mrs Wedgwood, C. E. Britton, J. Fraser, Lt.-Col. A. H. Wolley-Dod, H. W. Pugsley, and others, testifying to the excellent work which these botanists have done in the county. It is to be hoped that a supplement will soon be prepared, bringing the first part of the volume up to date and increasing the material published in the second part.

The *Flora of Surrey* is well printed and produced, though it is unfortunate that there are considerable differences in the colour of the paper, doubtless owing to the printing being done at different times. The binding is rather weak and has a tendency to wear white. C. E. Salmon and W. H. Pearsall have produced a volume worthy to rank among the very best of the British County Floras, a monument to indefatigable labour and everlasting care which it is easier to criticise than to emulate.

J. E. LOUSLEY.

GARDENERS' CHRONICLE, 1931. Price 6d weekly, or 30/- per annum post free. Edited by C. H. Curtis, F.L.S., V.M.H. (a portrait of him appearing on p. 2). 5 Tavistock Street, Covent Garden, London, W.C.2. There is a delightful series of papers on the Revelations of a Pocket Lens by Prof. Small. Kingdon-Ward's description of the Roosevelt Expedition to Indo-China, enriched as it is with good illustrations, is a very welcome feature. Mr N. E. Brown continues his descriptions—they seem inexhaustible—of the Mesembryanthemums. There is a portrait (p. 62) of Sir Arthur Hort. On p. 69 there is an account of the erratically published Genus, *Pinus*, by Lambert. P. 70, an account of Wicken Fen with good photographs, by H. S. Redgrove. He makes no reference to the small *Typha minima*. A note on Musk on p. 116, has many errors. Douglas discovered *Mimulus moschatus* in the Western Rockies, and the immense popularity of it we attribute to the merit of his discovery, but now in cultivation in Europe and in its native country, it has become practically odourless. Stubbs writes thus, "Douglas encountered an insignificant weed which had the, to him, familiar odour of the aristocratic scent. There may have been a single plant. All the musk-scented Mimulus may have descended from this freak, American gardens getting their stock from Europe." A travesty of facts, and a glaring example of horticulture as it ought not to be writ. One speaks of musk with some knowledge, as I have had numbers of musk-pods through my hands. The odd thing is that this loss of scent is equally true of N. American as of British-grown plants. P. 121, the Afforestation of the Culbin Sands. P. 212, an extensive and destructive heath fire took place in Glen Culbin when 2000 to 3000 acres were involved. P. 232, a memorial tablet to Sir Thomas Hanbury at Wisley is figured and described. P. 240, Asiatic Gentians. P. 241, on Henna, Rev. H. Friend. P. 262, some Antipodean Forms of *Myosotis*. P. 264, Review of Druce's "Flora of Northamptonshire," which enumerates 895 native, 77 denizen species, and 630 adventives, varieties and hybrids. P. 365, the Hon. Freedom of the Reading Town Council was conferred on Mr

Leonard G. Sutton, in May last. P. 365, *Ranunculus paucifolius* is probably one of the rarest plants in the world, being limited to a small hollow a few acres in extent, in the Southern Alps of New Zealand at about 2000 ft. altitude. It is a small plant 2 to 4 in. high, flowers $1\frac{1}{2}$ in. in diameter, glossy golden-yellow. Only a dozen plants are now left. P. 468, fine photographs, and an excellent description of *Cedrus brevifolia* and *Quercus alnifolia* in Cyprus, by my friend, Mr C. W. James. P. 485, portrait of Dr G. Claridge Druce and an account of the presentation to him by the members of the Botanical Society and Exchange Club of the British Isles by Earl Buxton before a distinguished gathering. High Culture in Relation to Commerce—from February onwards, a valuable series of notices—Tobacco leads the field with its 11,000,000 pounds of leaves. P. 435, Home of *Alstroemeria Ligta* in Argentina. 2/11 *Sequoia*, by A. Grove. First made known about 1852. Judgè Fry measured the rings of 2000 fallen trees during the past forty years, and found that two were over 3000 years old, and 54 more than 2500 years. 2/33. The Hon. Vicary Gibbs was awarded the Gold Major Medal of the American General Association. 2/35. Polyploidy in Tulips, Sir A. D. Hall. 2/50. The loose illustration on p. 50 is a beautiful group of what is called *Orchis maculata*. It is, however, a cultivated race of my *O. Fuchsii*, itself perhaps slightly crossed with *maculata*, but it is not *O. maculata* L. 2/75. Foxgloves, garden of E. J. Russell, Harpenden, Herts. 2/62. Field of English *Valeriana officinalis* L. 2/134. Cultivation of Essential Oils and Drug Yielding Plants in Great Britain, H. S. Redgrove. 2/174. Vitality of Seeds, A. Grove. The results are amazing. *Ambrosia elatior* only attempted one germination and that was in its 40th year. 2/214. *Lilium albanicum* Griseb., allied to *L. pyrenaicum*. 2/226. Botanists and Plants named after them, exhibited at Kew during the British Association Meeting. 2/313. Climatic Factors Governing the Distribution of Plants, W. B. Turrill. Arboreta and Botanic Gardens in the United States. 2/343. Portrait of Col. F. R. Balfour of Danwyck. 2/357. Plants for London Gardens. 2/362. *Anemone nemorosa*, var. *Robinsonia*, is much praised, and is said to have its origin in Ireland, but Baxter at Oxford had it in cultivation in the forties. 2/374. Marquis of Headfort. 2/390. Mr J. S. L. Gilmour appointed assistant Director of Kew. He added a rare species to Northants, *Galium anglicum*, and he now has the ball at his feet. 2/430, etc. Studies on Plant Breeding, A. C. Darlington. M. de Wildemann retires from the Directorship of the Brussels Botanic Gardens.

GENEVE, BULLETIN DE LA SOCIETE BOTANIQUE DE. Ed., Prof. R. Chodat. Vol. xxii., pp. 544, 75 cliches, 5 plates, 3 coloured, 1930; 20 francs. Includes nine able papers, one being by H. R. Oppenheimer on "Florula Transjordanica," with 13 vignettes and a biographical notice of Aaron Aaronsohn, the discoverer of *Triticum Dicoccoides* on Mt. Hermon. "He was," says W. C. Bullett of Vermont, "the greatest man I have known," and there is a most appreciative and able notice of him by Alex. Aaronsohn. A Bibliographical Index is also supplied. A most

useful Flora of Palestine extends over 300 pages. Vol. xxiii., pp. 554, 1931; 22 francs. This fine volume is chiefly filled by a great work by M. Beauverd, "Recherches sur la flore vasculaire du Massif de la Tournette," 557, pp. 1-428. A most excellent Flora in every sense, it enumerates 1274 species, 150 micro-morphs, and 30 hybrids. La Tournette is in the neighbourhood of Annecy. The chronology of exploration begins with Allioni's visit in 1750, when *Ranunculus Thora* and *Campanula thyrsoidea* were among the plants gathered. The Abbé Puget visited it 1852-1866 and gathered many species. Our Swiss friend, L. Bouvier, worked there in 1865-1877, and a goodly list of workers' names is given. There is a copious Bibliography. Most excellent chapters on the Phytogeographia of La Tournette are given, which are freely illustrated. The number of species recorded is 1352. Switzerland has 2587, France 4700, Europe (Nyman) 9500, the World (B. & H.) 102,000 species. F. Chodat has an important paper "Essai d'Acclimatation de Céréales Natives dans un Village Valaisan situé à la Limite Supérieure de cette Culture."

GODFREY, COLONEL M. J. Monograph and Iconograph of Native British Orchidaceae. With 56 coloured plates from the paintings by Mrs Godfrey. To be published by the Cambridge University Press. The work is arranged to show the thread of evolution from the primitive types to the more recent highly specialised forms. The wonderful floral structures are described and their insect visitors discussed. All the known natural hybrids growing wild in the British Isles are described and nearly all are figured. The work must be very costly. The subscription rate of £5 5/- may be sent to the Printer to the University. The price after publication will be raised to £7 7/-. On the Pollination of *Coeloglossum*, *Nigritella*, *Serapias*, etc., *Journ. Bot.*, 128, 1931.

GRIEVE, Mrs M., Whins Cottage, Chalfont St Peter, Bucks, has issued, at 9d each, several booklets describing herbs and how to grow them, which have some useful information in them. "Nettles and Dadders." It is quite true that the Roman Nettle is a doubtful native—one might say more, that it is an alien. It might have been well to say that it is practically extinct. "Belladonna, Bittersweet, Black Nightshade and Potato" form another one of the series, as do "Mullein, Toadflax, Veronicas." The title page gives *Linaria hederacea*. *L. Cymbalaria*, it is presumed, is meant. It is found out that the blocks illustrating it in Gerard and Parkinson are put in upside down. Yet another is "Dandelion and other Composites," including Dahlia, from which a valuable principle was obtained in war-time.

HESLOP-HARRISON, J. W., D.Sc., F.R.S., and Dr K. BLACKBURN. A Preliminary Examination of the Morphology of the Somatic Chromosomes in *Rosa*. Proc. of Durham Philosophical Society, April 1931. They found *Rosa lutetiana*, var. *punicea*, to be diploid. *R. spinosissima* has two satellited chromosomes, and very possibly four. The paper is a preliminary to future study.

HONG KONG NATURALIST. A Quarterly Journal. May 1931, 5 dollars per annum. It is well printed and illustrated, and contains many readable articles as well as a good account of the Kingfisher, with three coloured plates. There is a good paper on Tea, by S. Jenyns. One of the most popular teas in local restaurants is flavoured with Chrysanthemum, and others are scented with Rose, Orange, Jasmine, Gardenia and Azalea petals. Another interesting contribution is by Chia-jai Shen on Crabs, with figures. There is a Synopsis of Chinese Fish by H. W. Fowler.

HOETICULTURAL SOCIETY, THE JOURNAL OF THE ROYAL. Pp. clxxvii., 278, September 1931. As usual, this Journal contains many readable and valuable contributions, beginning with An Account of the Garden at St Nicholas, Richmond, Yorks, situate at about 500 ft. altitude. It is much cut up with walls and hedges. Standing on a steep wooded bank above the Swale, it was originally a monastic guest-house belonging to Easby Abbey, of which nothing now remains. Eight excellent photographs of the House and Garden show what beauties it contains, while the text gives a pleasing description of the methods used to maintain its beauties. "Lawns" are treated of by that expert, Mr M. L. Sutton. He says that lawns are usually composed of grasses which are simple or upright in growth, together with others of a stoloniferous or creeping habit. An American expert friend of mine preferred a lawn in which one only selected species is grown. In Britain there has been a tendency to exploit stoloniferous or creeping grasses, but Mr Sutton thinks they are only valuable in combination with the upright grasses. Our American friend staked his (ultimate) salvation and his (present) prospects on one only, the special species being *Agrostis capillaris* (*vulgaris*). *A. alba* is too coarse a species to make a really good lawn except at a great cost. One of the most important upright grasses is *Festuca rubra* (a very variable species), which is extensively creeping. *Festuca ovina* is another useful lawn grass. *F. tenuifolia* has shorter and finer leaves and grows on poor rocky soils. My experience is that it is a good soil-indicator, and is at its best on acid peaty soils. *Cynosurus cristatus* is a favourite with both the English and American experts. *Poa pratensis* is another good lawn grass, and it exists in several varieties; *P. trivialis* likes moister soils. A variety of *trivialis*—*septentrionalis* Druce, which grows in Zetland, has flowers 50 per cent. larger than the English form and produces a much larger amount of herbage, but it is unsuitable for lawns. *Lolium perenne* often forms a considerable percentage of lawn herbage. *Poa annua* is not altogether to be despised. I wonder grass-growers do not try the perennial or biennial form of it—I saw it this year in Orkney. Having made the lawn, rolling must not be forgotten as one of the agents to keep it in order, and a top dressing given. *Si opus sit*. Dr Baur of Munchberg gave the Masters' Memorial Lecture on April 8th. Mr G. W. Leak supplies "Paeony Cultivation," with a list of species. Mr E. A. Bunyard gives an account of John Wedgwood's garden, and Prof. J. Davidson contributes an excellent

account of the Flora of British Columbia. Although there are now two towns in N. America named Vancouver, one in Washington, and a second, to which we all turn, in B.C., there is a third, a seaport town in Canada, which now covers 40 square miles, where 50 years ago there was no Vancouver. The timber has given the city its importance. Four species, *Pseudotsuga*, Sitka spruce, *Tsuga heterophylla* and *T. plicata*—the last, the Giant Cedar, grow extensively. The Skunk Cabbage, a yellow Aroid with a spathe two feet high and leaves four to five feet long and eighteen to twenty-four inches across, is a prominent object in the swamps. In bogs, *Kalmia polifolia* and the Labrador tea tree, *Ledum groenlandicum*, with their pretty white flowers, are frequent, and the two Smilacinas, *S. racemosa* and *amplexicaulis*, are ornamental species. *Linnaea borealis*, var. *americana*, takes the place of grass on wood-margins and roadsides. *Amelanchier* is pretty and common, and the fruit welcomed by the Indians. The most striking tree is *Cornus Nuttalliana*. I shall not forget seeing a tree of sixty feet high or more, covered with its showy large white blossom. The three Elders, the red, blue, and black, are showy plants. The Natural History Society is thriving there with its 300 members. Their excursions are limited to about fifty members, who camp out and have a most enjoyable time. There is a wealth of colouring in the scarlet *Castilleia*, blue, pink, and white Lupines, and the scarlet Columbine—a delightful species—I nearly jumped out of the railway carriage when I first saw it. Then by mountain streams are the large crimson-flowers of *Mimulus*, and the small golden-yellow flowered alpine species. There are Saxifrages galore, and the saxifraga-looking *Eriogynia pectinata*. Then there are the magnificent lemon and yellow flowers of *Erythronium grandiflorum*, and the Marsh Marigold whose flowers vary from white to mauve. Above 7000 ft. *Silene acaulis*, *Phlox Drummondii*, *Phacelia sericea*, and *Pentstemon* are common. In one season 400 species of alpiners were collected. Such is the region which Prof. Davidson describes so well, and illustrates with such charming photographs. Gardening in London is described by Thomas Hay—a thoroughly practical and enthusiastic paper—and *Cistus* hybrids by Sir O. E. Warburg. Our member, Mr T. A. Lofthouse, gives a graphic account of his wanderings in Spain. He speaks with admiration of the curious *Sarcocapnos enneaphyllos* growing in rock crevices facing north. I once saw it on the steep face of the castle tower at Segovia, where probably the seeds were blown from the mountains of La Granja. It is a stimulating paper and Mr Lofthouse is to be congratulated on the excellent photographs of the scenery with which it is adorned. Arthur Batten contributes a paper on the Cultivation of the Tulip in Turkey. There is a photograph of the Honolulu church where the N. American explorer, David Douglas, is buried, and on which the Horticultural Society has placed a plaque. Nineteen pages are devoted to the additions to the Library.

HOUGHTON, A. D., M.D., Ph.D. THE CACTUS BOOK. With a foreword by N. L. Britton. Pp. 147, tt. 18. Macmillan & Co., New York,

1930; 10/-. The wonder and beauty of this bizarre family were first brought to my notice at Bronx Park, New York, by N. Lord Britton. Thanks to the munificence of Mr Carnegie, he, with Dr Bose, has produced four handsome volumes, selling at £20, describing the family. It was pleasing for me to see perched on a high ladder sketching one of the giant species a female artist who began her flower-painting in a Staffordshire china factory. These volumes drew attention to the beauty of many of the species, and led to their becoming popular with horticulturists. There are about 1500 species, divided into nearly a hundred and twenty-five genera. Therefore, this smaller and very portable book is likely itself to be popular and to increase the popularity of these (in many cases) easily grown plants. Dr Houghton gives especially valuable details for growing them from seeds or cuttings. But why bother with the spiny brutes, a person afflicted with Cactusitis is often asked. The answer is "the Cacti contain more and greater beauties of adaptation than the Orchids, larger flowers than the Iris, and more beautiful colouring than the Rose." Some of the flowers of *Epiphyllum* measure a foot across. Even the spines rival the feathers of the Bird of Paradise, as in *Neomammillara plumosa*, while *Lemairea cereua* Weber has its red and black dagger shaped spines eight inches long. But neither all succulent nor all prickly plants are Cacti, although all Cacti are succulent. Here is their definition—"It must have two cotyledons; the fruit must be a one-celled berry; the plant must have areoles whether it has spines or not; it must be perennial; the ovary of the flower must be below the insertion of the petals and sepals." There are three tribes—Pereskieae, Opuntieae, and Cerieae, which are divided into 125 genera. Each of these consists of one or more (sometimes hundreds) of species. About 3000 hybrids are listed. This popularity has led to a disastrous reduction in the native species. So, now, seed-raising is of the greatest importance, but they are long in germinating. Cutting and grafting are practically explained, and the important branch of cultivation, "watering," is carefully described. The Cristates and other monstrosities have a special chapter. A most valuable conspectus of species lifts the book to a high level of usefulness.

HOWARTH, W. O., and H. G. CHIPPINDALE. Note on the Biology of *Coryne Sarcoides* Jacq. and *C. umalis* Nyl. Trans. & Proc. Manchester Lit. and Phil. Soc., May 1931; 1/-.

HURST, C. P. Natural History Notes round Great Bedwyn. Wiltshire Arch. and Nat. Hist. Mag., 279, 1931. Includes many flowering plants and a valuable list of Fungi, a few Hepatics and Lichens.

HUTCHINSON, J., and J. M. DALZIEL, M.D. FLORA OF WEST TROPICAL AFRICA. The British West African Colonies, British Cameroons, the French and Portuguese Colonies south of the Tropic of Cancer to Lake Chad and Fernando Po. Vol. ii., pt. i., pp. 292, tt. 99, 1931. Crown Agents for the Colonies. Ericaceae to Lamiales, including the great family, Rubiaceae. Comprised in it are the genus, *Hutchinsonia*,

founded by Robyns, and *Robynsia*, founded by Hutchinson. *Limosella tenuifolia* is kept as a distinct species.

HYDE, H. A. WELSH TIMBER TREES, NATIVE AND INTRODUCED. Pp. 107. National Museum of Wales; 1/-. In this remarkably cheap and useful book Mr Hyde has brought together a mass of useful material. It was produced quite independently of Mr Gilbert Carter's book, of the preparation of which Mr Hyde was in complete ignorance. They are not rival works but are supplementary the one to the other. There are a large number of illustrations which materially add to its value, and these are in part due to generous friends. The principality has about 1500 species of plants, but only thirty-three are large enough to be called trees. There is an excellent introduction and a map showing the distribution of Welsh woodlands. In addition to the indigenous trees, space has been given to include some of the introduced species. In the Elms, owing to the wrong lead given by some authorities, *U. minor*, a name which should be given to the Cornish Elm, is used for another species. *Campestre* (sic) is a nomen confusum, and is certainly not accurately applied to the English Elm. There is a capital photograph of the Mamhilad Yew which measures thirty-one feet in girth, also of Larch which attains a girth of thirteen and a half feet, and grows to as high an altitude as 1250 feet. The Scots Pine shows a girth of ten and a half feet and reaches a height of 107 feet at Llanfilangel Court. At Stanage Park there are some Corsican Pines 117 feet high, probably the tallest in Britain. The Black Poplar reaches to 102 feet and eighteen feet in girth at Brecon. The figures and details of the Willows are exceedingly good. At Powis Castle there is an Oak 105 feet high and twenty-four feet in girth. It is a hybrid *Q. Robur* × *sessiliflora*. Under the Elms, the Guernsey Elm is not referred to. An Ash tree, 102 feet high, is in Dynevor Park. The Bibliography does not include the B.E.C. Reports where *Ulmus Plotii* (erroneously called *U. minor* in the text) is described. This little book will be found most useful to tree lovers—not only of Wales, but of Great Britain.

IRISH NATURALIST. Bi-monthly, 6/- a year. Vol. iii., 1931. Editor, J. A. S. Stendall, M.R.I.A., Deva, Haypark Avenue, Belfast. Phenological Observations, pp. 139-171, by J. W. Brunner and A. W. Stelfox. *Equisetum hyemale*, Glynn, near Skeagh Bridge in Antrim, Nora Fisher, p. 209. *Hieracium killinense*, Whitewell, Belfast. *Callitriche polymorpha*, Co. Clare, new to Ireland, Druce, p. 218. Coastal Survey of N. Ireland, Miss J. M. White, p. 233. Cork's Contribution to Natural History, Prof. P. W. Renouf.

ISSLER, E. Plantes Importées par L'Industrie Lanière. Bull. N.H. Colmar. Includes species of which *Martynia proboscidea* Glox. and *Harpagophyton procumbens* are figured.

JAMES, W. O., B.Sc. AN INTRODUCTION TO PLANT PHYSIOLOGY. Pp. 259, 1931. Oxford: Clarendon Press. "This book seeks to give a

balanced account of the more elementary aspects of plant physiology. Recent research has been noticed, where fundamental principles are involved, but controversial matter has been as far as possible avoided. Experimental work is set out at the end of each chapter, the needs of small laboratories being kept in view. It is hoped that the book will meet the requirements of students of senior school or junior University standing." This is well arranged in eight chapters. The accepted name for the Marram Grass is *Ammophila arenaria*. Capitals are not needed for *Sagittaria sagittifolia*, or *Hypericum calycinum*, but are needed in *Prunus Lauro-cerasus* and *Corylus Avellana*. The account of Phytosynthesis, as is that of the Sugars and the materials which are formed from some of them, is excellent. The illustrations are numerous and good.

JENKIN, T. J. THE METHOD AND TECHNIQUE OF SECTION BREEDING AND STRAIN-BUILDING IN GRASSES. With a prefatory note by R. G. Stapledon. Pp. 45. Imperial Bureau of Plant Genetics. Bulletin No. 3. Agricultural Buildings, Aberystwith, 1931; 3/-. He finds by these investigations marked differences from the strain point of view between the plants resulting from ordinary commercial seed of a number of the more important herbage species, and those making a spontaneous or insom (=indigenous) appearance in prepared swards. Mr Jenkin supplies full details of his methods of working. In this Journal Mr Stapledon gives his results with *Dactylis*, and Captain R. D. Williams gives methods and technique of breeding Red Clover, White Clover, and Lucerne.

JOURNAL OF BOTANY, THE. British and Foreign, 1931. Edited by A. B. Rendle, D.Sc., F.R.S. 2/- monthly; 22/6 yearly. New Genera of Asiatic Mosses, H. N. Dixon, p. 1. Some Rare Plants of Scotland, M. L. Fernald, p. 8—so rare that *Eriophorum alpinum* and *opacum*, which he records for Kinlochewe, have evaded persistent search by Mr Wilmott, Mr F. Druce, Mr Corstorphine, Mr Chapple and myself! He also records *Antennaria dioica*, var. *hyperborea* from the Slioch. Obituaries, Ernest H. Wilson, p. 18, and an appreciative yet discriminating memoir of C. E. Moss, J. Ramsbottom, p. 20. *Limonium paradoxum*, H. W. Pugsley, p. 44, originally collected as *auriculifolia* at St David's Head, Pembroke, by E. F. Linton in 1905, and at Malin Head, Co. Donegal, by Hart in 1898. The variations of *L. binervosum* seem to be limitless. Two Botanical Excursions near London 1848, pp. 50 and 72. *Scrophularia alata* (as *Ehrharti*) was gathered at Charlton, Kent, and Battersea, Surrey. *Viola mirabilis* is recorded from Ashtead, Surrey. Is this correct? The *Parietaria erecta* is wrongly named. Obituaries of H. W. Monckton, p. 55; Thomas Hebden, p. 78; Prof. C. H. Ostenfeld, p. 79; F. B. Taylor, p. 103; R. Vowell Sherring, p. 104; Ignatz Urban, p. 105; Erik L. Ekman, p. 106; Spencer Le Marchant Moore, p. 134. *Juncus "alpinus"* in Teesdale, G. C. Druce. Gathered on Widdy Bank in 1903 and shown to Dr Lees in 1909. Dactylorchids of North Africa, Rev. T. Stephenson, pp. 134 and 177. The Schoenoplectus group of the genus *Scirpus* in Britain, J. E. Lousley, p. 151. The plants considered are 1. *S. lacustris* L., b. *fluitans* (C. & G. Husnot). Sheaths usually prolonged

in a leafy blade, floating, often very long. This was noted in the *Flora of Oxfordshire*, 452, 1927, and seemed to be a state rather than a true variety. Also found in River Onse, Bluntisham, Hunts, Rev. W. W. Newbould, 1846. The hybrid with *Tabernaemontani* is not yet known with certainty for Britain. The hybrid with *triqueter* = \times *S. carinatus* (Sm.), Lousley points out that the reference in Ind. Kew for the name is preceded by *S. carinatus* Sm. E.B., t. 1983, 1809, which is given in my *Fl. Berks*. This is very variable. It is known for v.-c.s 2, 3, 16, 17, 21. There are specimens in Herb. Dillenius. 2. *S. Tabernaemontani* Gmel., b. *capitatus* Haussk. Spikes capitate, crowded, spikelets almost sessile forming a compact ball, Cardigan, A. Ley (Itchington Holt, Warwick, plants merge into type). \times *triqueter* = *S. Kükenthalianus* P. Junge = *S. Scheuchzeriana* Brügger = \times *S. arunensis* Druce (much antedated). Glumes asperous, stigmas usually two, v.-c.s 13, 15, 16. 3. *S. triqueter* L. Four varieties have been described—spikes with distinct elongated peduncle=(1) *vulgaris* Döll. Glumes reddish-brown, glabrous with green mid-ribs. (2) *Hoppii* Weihe. Spikelets mostly smaller; glumes purplish brown, asperous; spikes congested with quite short peduncles, often quite sessile. (3) *Lejeunei* Weihe. Glumes pale, greenish, dotted. (4) *conglomeratus* Döll. Peduncles usually slight; glumes as in type; anthers mostly truncate and mostly pilose. Lousley says much of our *triqueter* comes under this variety. V.-c.s 2, 3, 13, 15, 16, 17, 21; H. Limerick and Clare. 4. *S. americanus* Pers. Jersey, S. Lancashire. There appears to be no reference to the *Rep. B.E.C.* where the Lancashire station is first published. New Vice-County Records for North Country Mosses, A. Thompson, p. 163. Obituaries, H. B. Williamson, Dr Rudolph Marloth, p. 172. South-west Naturalists' Union, p. 193. On the excursion *Listera cordata* was seen at Dunkery. South-Eastern Union of Scientific Societies, p. 194. An excursion was made along the water-meadows below Winchester, the hybrid grass \times *Lolium festucaceum* being seen in plenty. British Veronicas of the Agrestis Group, E. Drabble and J. E. Little, p. 180 and 201. Var. *micrantha* Drabble in *Journ. Bot.*, 25, 1926, corolla 3 mm. or less, var. *Garckiana*, var. *Boraeana*. *Veronica polita* Fr. antedates *didyma* Ten. Under *V. persica* they give a key to the species and varieties:—

Sepals ovate, acute or subacute, A.

Sepals oblong obtuse, B.

A. Capsule with two turgid keelless lobes = *V. polita* (*grandiflora* is a large-flowered form).

Capsule obreniform with two divergent compressed sharply keeled lobes.

Plant \pm stout, leaves sharply or simply serrate = var. *Aschersoniana*.

Plant \pm stout, leaves doubly and obtusely crenato-serrate = var. *Corrensiana*.

Plant slender, leaves very small, simply dentate = var. *Kochiana*.

B. Capsule obreniform, with short crisped eglandular and usually some long glandular hairs = [*V. opaca*].

Capsule obovate, with very long glandular and often some long eglandular hairs = *V. agrestis*.

Carex Notes, C. E. Salmon, p. 233. Among other notes he says Kükenthal rejects Marshall's $\times C. Ewingii$, which is only *saxatilis*. I had already queried it in my List. This is also true of Marshall's *intermedia*, which is only *panicea*. Kükenthal makes *C. Sadleri* *C. binervis*, var. *alpina* Drejer. I still think there are two plants, and I see no reason to delete *C. gracilis*, var. *gracilescens*. *Rubus argenteus* W. & N., f. *glandulosa* Barton & Riddelsdell, p. 238. Watson thought it was *alterniflorus* M. & L., see *Rep. B.E.C.*, 505, 1927, but Barton and Riddelsdell reject this and name it as a new species *R. cissburiensis*. V.-c.s 7, 12, 13, 14, 15, 16, 17. Field Notes, chiefly 1930, Rev. H. J. Riddelsdell, pp. 240, 309. Several have already been published. *Rubus nessensis* (as *suberectus*) King's Lynn, Miss Roper; *R. subcarpinifolius*, Falmer, v.-c. 14; *R. rusticanus* is included for 31 in my Hunts Botany. *R. egregius*, Woburn sands, Beds; *R. Newbouldii*, Streatley, v.-c. 22; *R. regillus*, Freeland, v.-c. 23, Druce as *fuscus*. It was named by Rogers. *R. melanodermis* Heythrop, v.-c. 23. Notes on Selaginella, A. H. G. Alston, a valuable paper. Obituary, Dr Percy Groom, p. 266. A New *Juncus* in Scotland (found by the Rev. E. S. Marshall), H. W. Pugsley, p. 278. "A distinct species, which will probably be reduced to the rank of a sub-species or variety of *subnodulosus* Wahlb." Buchenau already records it as forma *gracilis*. Congratulations to Mr J. W. White, Hon. M.Sc., Bristol, and Mrs White, on their diamond wedding, p. 248. South London Botanical Institute, twenty-first annual meeting on October 16, 1931, p. 248.

KEEN, BERNARD A. THE PHYSICAL PROPERTIES OF THE SOIL. Pp. 330; 2 plates, 93 figures. Longmans, Green & Co., 1930; 21/-. This is one of the celebrated Monographs on Agricultural Science. The author's object, he tells us, is to provide for those interested in agricultural science a connected and critical survey of our knowledge of the physical properties of the soil. At the same time, he trusts the book will serve to show his fellow physicists some of the attractive possibilities for research in a relatively unexplored tract of physics—the behaviour of moist porous materials displaying colloidal properties. The historical Introduction is a valuable adjunct and the nine other chapters form a very useful work. The historical part owes much to many illuminated manuscripts and tapestries. The straight-beamed plough is shown in the Bayeux tapestry, the later Luttrell Psalter of the fourteenth century exhibits a plough of a lighter type. Fitzherbert's volume of Agriculture, "The Boke of Husbandry," appeared in 1523. Jethro Tull's work is described as well as that of the chief agriculturists of the time. There is a useful Bibliography appended, and to the expert this highly technical text-book will be much valued. There is also a subject, as well as an author, index.

Kew BULLETIN OF MISCELLANEOUS INFORMATION, 1931. This large volume testifies to the industry and botanical zeal of the staff of the Royal Botanic Gardens, at Kew. The papers include The Buttresses of Rain Forest Areas, W. D. Francis, p. 24. Suggested use as Buttresses as mechanical support, but Naviz (*Proc. Nat. Ac. Sciences U.S.A.*, xvi., 343, 1930) says that they are produced chiefly on the sides of dominant winds, and act as resistant cables. Francis's experience in the Australian rain-forests did not support this. Contributions to the Flora of Burma, C. E. C. Fischer. Notes on new or rare Hyperica, B. Stefanoff. *H. ovalifolium* is a new species. He alludes to the polymorphism of *H. Olympicum*, and names four varieties. Additions to the Flora of Borneo and other Malay Islands, H. N. Ridley, p. 45. Contributions to the Flora of Tropical America, iv. and v., p. 46, N. Y. Sandwith. Several new species are described as the result of a useful expedition to British Guiana. N. E. Brown, p. 61, gives some identifications in the Herbarium of Thunberg and Lamarek. *Abretia rigida* (Thunb.) Druce is included. On the distribution of the Golden Larch, W. R. Price, p. 67. C. V. B. Marquand, p. 67, describes some Asiatic Gentians (about fifty new species and combinations), besides *Sarretia Tara* T. A. Sprague. An Appendix Review of the work of the Royal Botanic Gardens, Kew, during 1930. General Index, 1919-1928, 2/-. The Flora of the Libyan Desert, W. B. K. Shaw. National Pinetum at Baddesbury. Fifth Quinquennial Review, N. Dallimore, p. 166. N. Y. Sandwith, p. 170, continues the Contributions to the Flora of British Guiana. S. African Plants, N. E. Brown, p. 191. Additions to the Index Kewensis, p. 199. Flora of Siam, Prof. Craib, p. 206. General Smuts' Botanical Expedition in Northern Rhodesia, p. 225, accompanied by Mr J. Hutchinson, and a young Oxford botanist, Mr J. B. Gillett. (Given as a Paper to Section K, British Association). 5200 specimens were collected by Hutchinson on his two African tours. Many new species are described and figured. Further Contributions to a Flora of Madeira, p. 257. The Loofah Industry, F. N. Hower, p. 266. It is the produce of *Luffa cylindrica*. Flora of Siam (cont.), Prof. Craib, p. 277. Introduction of Cinchona to India, p. 113. Researches on *Silene maritima* and *S. vulgaris*, p. 118, E. M. Marsden-Jones and W. B. Turrill. Eighteen variations are described. Strict plants are much more frequent on permanent pastures—All Cummings, Wilts; Bradfield; also in Kent, Surrey, Hampshire. Figured on plate viii. The variation in leaf shape is remarkable. That and other variations are figured. It is a most interesting and suggestive paper, but *S. vulgaris* is perhaps one of the least tenable names by which the Bladder Campion is known. Mr Sprague, however, can conserve it and then it will be all right. *Casuarina Distyla*, E. D. Marktin, p. 145. North East British Somali Land, C. L. Collenette, p. 401. Arborescent Senecios of the Virunga mountains, A. D. Cotton, p. 289. The first of these was discovered by Sir Harry Johnston on Kilimanjaro, 47 years ago. More than six gatherings have been found. Some Poison Drugs, D. Thorpe, p. 299. We note *Stachys germanica* is used to relieve stomach trouble. *Silene maritima*

and *S. vulgaris*, Marsden-Jones and Turrill, continued. Contributions to a Flora of Tropical America, N. Y. Sandwith, p. 357, continued. Researches on *Silene maritima* and *vulgaris*, continued, p. 391, gives an account of the progeny of many hybrids found at the Abbotsbury end of Chesil Beach. 66 forms resulted. The influence of *maritima* is on the whole greater than that of *vulgaris*. Obituary of Major Chipp, p. 397, 433. W. B. Turrill on the Flora of the Nearer East, p. 453. On p. 467, N. Y. Sandwith continues his Contributions on the Flora of British Guiana, one species—*Cephaelis Alstoni*—being named after our member.

KEW, H. WALLIS. Ray's Journey through Lincolnshire, 1661. Transactions of the Lincolnshire Naturalists' Union. Pp. 167-174, 1930. Ray was then in his thirty-fourth year and on this journey he was accompanied by Phillip Skippon, afterwards Sir Phillip, and one servant. They left Cambridge on July 26, passing through Huntingdon and Stilton on their twenty-five mile ride to Peterborough. The Choristers made them pay for coming into the Cathedral with their boots on. The next day they passed through Crowland (six miles) with its fine Abbey and Bridge. Thence to Spalding (eight miles) they rode on a very firm bank. "The town is well built and handsome, such as no man would hope to find in such fens and peaty ground. On the thatched houses, House-leek, is planted in great quantity." On July 27th and 28th, they stayed in Boston where "the church is very fair and great, the steeple, for a tower, the tallest that ever I saw, having 344 steps, the open lead lantern is 79 steps." On the 29th they took the road, thirty-four miles, to Spital Fen, ten miles beyond Lincoln, passing Tattersall Castle (now the Nation's property). In the park they discovered *Pneumonanthe*, which afterwards they found on many heathy grounds both in Lincolnshire and Yorkshire. Lincoln was a poor mean town with a beautiful Cathedral. On the 30th they went to Glanford Bridge=Brigg, ten miles, thence to Barton on Humber, six miles, and ferried over to Kingston upon Hull, five miles. Here they noticed great quantities of *Carum* which grows there, and in some places of the Fens of Lincolnshire. It took them from August 1st to 17th to reach Scotland, going as far as Stirling. They returned by Glasgow to Cambridge. At Pontefract he says the Licorice Plantation was the best in England. On the journey only four plants new to him were met with, and in Scotland not one. Mr Kew is to be congratulated on bringing this paper of Ray's to the notice of his fellow botanists.

LEICESTER, TRANSACTIONS OF THE LITERARY AND PHILOSOPHICAL SOCIETY. Vol. xxxii., 1930-31. The Presidential Address—more than usually interesting—was given by Mr W. K. Bedingfield on Monasticism and the Orders with an account of the alterations to the Leicester Abbey of St Mary of the Meadows. It was 140 feet in length, with a large cross aisle 100 × 30 feet. There is a personal note on Dr F. Bennett, a local geologist of repute, by Dr E. E. Lowe. Notes on Swiss Glaciers, with photographs, by B. Strachey. The annual report on Botany shows that

its late energetic Secretary has gone to Stoke-on-Trent, his place being well filled by our member, Mr F. A. Sowter. His observations for 1930-1931 give some interesting localities. *Impatiens glandulifera* was seen in Rutland at Burrowden Quarries and *Ammi majus* at Knighton.

LINDQUIST, BERTIL. THE ECOLOGY OF THE SCANDINAVIAN BEECH WOODS. Pp. 176-532, tt. 74, 1931, with Map. Akademisk Avhandling. The work of an ardent student, he has breathed the breath of life into, what might have been, an arid subject. It has excellent photographs, ably supplemented by his remarks. We are glad to see that he uses *Eupteris* and *Dryopteris* in their proper sense. The photograph of *Hordeum* (*Elymus*) *europaeum* is very good, as is that of *Asperula odorata* in a hundred year old beech wood. In the Chilterns it tends to become less patchy. *Allium ursinum*, on the other hand, is densely spread. The Beech wood at Farnham Common has a rich growth of *Leucobryum glaucum* which occasionally fruits there. The tables must have been a laborious task to prepare, but they materially add to the value of the work. The mapping of the country was not the least difficult of his tasks, the area involved being about 3000 square miles. Three years were spent on this work and by means of a plane (the Albatross) 2900 K. was travelled and 1500 square miles mapped. In Forests which have not been thinned for some years there is a decrease of *Anemone nemorosa*, and *Geranium rotundifolium* dropped rapidly in frequency as the light intensity became less. The really rich ground flora of the Chiltern Hills often coincides with very poor production types. The results plainly show that the flowering of the beech is directly influenced by the summer temperature of the preceding year. Intensity of heat is more important than duration. The Doctorate is well earned by Dr Lindquist. May he live long to continue his researches. *Lycopodium Chamaecyparissias* A. Br. och dess förhålland till *L. complanata*. Bot. Notiser, p. 90, 1929.

LINNEAN SOCIETY, TRANSACTIONS OF THE, 1931. P. 261, An enumeration of the Angiosperms of the Seychelles Archipelago, by V. S. Summerhayes. It is the home of the Coco-de-Mer. The Flora of this group was enumerated by J. G. Baker in the Flora of the Mauritius and the Seychelles in 1877. In 1899, Schimper, Botanist of the German Deep Sea Expedition in the Valdivia, sent a number of plants from there to Kew. Hemsley contributed a valued paper in 1916 as a Supplement to the Journal of Botany and another in 1917 with W. B. Turrill. The results have been included in the present work. Summerhayes says the accepted Phanerogamic Flora numbers 480. There are 110 escapes from cultivation. The Cinnamon is one of these, and it now occupies large areas. 137 are weeds and waste-ground dwellers. 233 may be considered indigenous—a meagre number indeed. Eight of these are marine, ninety are endemic, a high percentage (39%), showing that the separation of this island group is ancient. Eighty-two per cent. of the species are found within the Mascarene group. The distance of the Seychelles to India is 1700 miles (a long journey for the Coco-de-

Mer), 1100 to Zanzibar, and 900 to Madagascar. A general study of the flora shows that it is distinctly Eastern—African genera 7, Mascarene 9, Asiatic 11. The same number of the Transactions contains the Flora of the Chagos Archipelago, by J. C. Willis and J. Stanley Gardner, based on the collections of the Percy Sladen Expedition.

LONDON NATURALIST, THE. The Journal of the London Natural History Society for 1930. Pp. 142. L. Reeve & Co., Ltd.; 3/-. A well printed and excellent Report on which this flourishing Society is to be warmly congratulated. The papers read to the Society were numerous and interesting. The finances are in good order. The President is L. S. Tremayne, Esq. *Oenanthe Lachenalii* was found in Middlesex in the Thames Marshes. The Plant Galls Section has been doing good work throughout the year. The President's Address was entitled "The Unseen Will." Mr Wm. Watson contributes his fourth learned paper on Brambles of Kent and Surrey. He has not seen *R. mucronatus* Blox. from Kent or Surrey, but he thinks he has *R. Banningii* from Eltham Park (v.-c. 16). He would put it in the group *foliosus*. He has not met with *R. apiculatus* Weihe in Kent or Surrey. He is inclined to refer a plant from Ryarsh Wood (v.-c. 16) to *R. retrodentatus* M. & L., which is new to Britain, as is *R. timendus*, var. *roseiflorus* Sudre, which Salmon recorded as *infestus* from Reigate. *R. Drejeri* in two forms, occurs near Guildford as forma *homoeacantha* F. & G., and from Dunster, Somerset, as forma *heterocantha*. There is a valuable paper (which has been issued as a separate volume) by T. H. Harrison on the "Birds of the Harrow District."

LUNDEGARDH, DR HENRIK. ENVIRONMENT AND PLANT DEVELOPMENT. Translated from the second German Edition by Eric Ashby, M.Sc. Pp. 330, fig. 87. Edward Arnold & Co., 1931; 24/-. "In the four or five years which have elapsed since the first edition appeared, the realm of experimental ecology has been most extensively explored. Especially in soil science, microbiology, and the study of the sociology of plants, the output of literature has been immense. No more attempt has been made here than was made in the first edition to give an exhaustive review of the literature. The book is not intended as a handbook, but is rather to give the principles of a certain type of research. Despite the numerous additions to the literature, and a thorough revision of the text, the general structure of the book has been retained. Those aspects of the subject in which I have been particularly interested have been somewhat extended. By constant reference to the summaries of other authors, I hope to have attained some equality of treatment of the different fields. Restrictions of space have precluded a fuller treatment of the wide literature which deals with the practical applications of the subject in forestry and in agriculture. New text figures have been added, and two have been withdrawn. Since the two maps (omitted from the English Edition) are intended to give only a rough schematic outline, it has not been considered necessary to improve them."

McCANDLESH, ANDREW C. A LIST OF WIGTOWNSHIRE PLANTS. Pp. 49, 1931. This is merely a list of names without localities. Naturally, considering the ignoring of my List (which appeared in the *Report of the Botanical Record Club* for 1883-4, when I noted 552 plants) by Bennett and Britten in the *Supplement to Topographical Botany* where my records are erroneously transferred to Newbould (who had never been in the county) the author simply cites them incidentally through McAndrew's later list of 1893. The List is clearly printed and commendably free from misprints, and it will be a handy volume for the pocket as one goes through the county. Varieties are not given, so *Vicia sylvatica*, var. *condensata* Druce, and *Melampyrum pratense*, var. *hians* Druce, which were first described from Wigtown are unnoticed, as is *Mentha longifolia*, var. *alpigena* Briquet. Other omissions are *Ranunculus peltatus*, *R. heterophyllus*, *R. pseudo-fluitans*, *Fumaria confusa*, *F. densiflora*, *F. Boraei*, *Cardamine flexuosa*, *Viola Riviniana*, *V. Curtisii*, *Polygala serpyllaceum*, *P. dubium*, *Raphanus maritimus*, first made known from the county, *Cerastium viscosum*, *C. semidecandrum*, *C. tetrandrum*, *Spergularia media*, *S. marina*, *S. rupicola*, etc., etc. *Ulex minor* is given. Does this really exist in the county? *Ulex Gallii*, which is plentiful, is omitted. *Medicago arabica* is given but not *denticulata*. Space will not allow allusion to further omissions, which are doubtless caused by taking so restricted a Flora as Bentham for the standard.

McFARLAND, J. HORACE. MODERN ROSES. A uniform descriptive list of all important Roses in commerce, prepared for the American Rose Society. Pp. 284, tt. 38 coloured. The Macmillan Company, 1930; 21/-. About 10,000 named Roses have been brought into commerce within a century, but many of these are no longer obtainable and it was felt necessary to limit the work to those which could be obtained in 1930. The assistance given by the American Rose Association with its 5000 members was very great. The price of the work allows nothing for the very great cost of compilation and composition. The McFarland Company supplied, without charge, the coloured illustrations—some of those in sepia being indeed very beautiful.

McINNES, LATIMER. A List of the Flowering Plants and Ferns of Kintyre. Typescript, pp. 19. These are based on his own observations extending over nearly fifty years in the southern part of the Peninsula, within a radius of ten miles from Campbeltown. Ewing's Catalogue (Ed. 2, 1899) includes the whole of the Peninsula and also the whole county southwards from the Crinan Canal to the Mull of Kintyre. The plants recorded in Prof. J. H. Balfour's Excursion in August 1844 are also noted. The records of Mrs Macalister Hall (of Killean) are also marked. The list includes *Thalictrum minus*, *T. majus*, *T. alpinum*, *Fumaria capreolata*, *Crambe*, *Teesdalea*, *Dianthus Deltooides*, *Cerastium atrovirens* (as part from *tetrandrum*); *Stellaria palustris*, "frequent;" *Claytonia*, *Radiola*, *Lavatera arborea*; *Althaea* ? rare; *Dryas* ?, *Circaea canadensis*, *Cicuta*, *Carum verticillatum*, *Oenanthe Lachenalii*, *Sambucus*

Ebulus, (*Solidago cambrica* is an error); *Senecio Smithii*, the Magellan species; *Lactuca muralis*, *Oxyccoccus*, *Lysimachia punctata*, *Centunculus*, *Utricularia intermedia*, *Utricularia Epithymum*, *Pneumaria*, *Anchusa sempervirens*, *Galeopsis speciosa*; *Polygonum maritimum*, an error for *P. Raii*; *Aristolochia*, *Hippophae*, *Sparganium minimum*, *S. affine*, *Zostera nana*, *Listera cordata*, *Orchis praetermissa*; *Habenaria chloroleuca* and *chlorantha*, these are identical, but the name to be used is *H. virescens*; *H. albida*, rare; *Cephalanthera latifolia*, is not this a misnomer for *C. alba*?; *Scirpus rufus* (appears twice); *S. cernuus*; *Carex rigida*, "common;" *C. aquatilis*; *Bromus arvensis*, common, is probably a misnomer; *Festuca Myuros* and *Bromoides*, these are identical; *Ophioglossum vulgatum*, and both of the Hymenophyllums. The plants included in this very useful paper are all in the vice-county 102, for which it contains some new records.

MARIE-VICTORIN, FRÈRE. *L'Anacharis canadensis*, Histoire et Solution d'un Imbroglio Taxonomique. Contrib. du Laboratoire de Botanique de l'Université de Montreal, No. 18, 1931. Here is presented another of Frère Marie-Victorin's important papers. The tangle which he says he has unravelled is the generic name to be used for the Canadian Water-Thyme. It will be remembered that Babington used *Anacharis* when he recorded it as British. The type specimen is in the Herbarium of Michaux at the Jardin des Plantes, Paris. He gathered it in his celebrated journey through Canada in 1791, and named it *Elodea canadensis* Fl. N. Amer., i., 20. Nuttall in the *Gen. N. Amer. Pl.*, ii., 242, 1818, imposed a new generic name for it—i.e., *Udora*. Frère Marie-Victorin gives a full account of its introduction into Europe and its behaviour there. He also cites very freely the accounts given of it in British waters. He then deals with the "Invalidité de Nom Générique *Elodea* pour la plante de Montreal." *Elodea*: Fol. verticillata, Flos hermaphroditica, Cal. subaequale, Stam. 3, Stig. bifida. *Anacharis*: Fol. opposita, ♂ Spatha bifida, Antherae 9, in fulcro communi. ♀ ignota species, fol. verticillatis forsan delegendae. Therefore, following Babington and Planchon, he reserves *Anacharis* for the dioicous plant of North America and reserves *Elodea* for the South American species with hermaphrodite and triandrous flowers. He then examines the objections against this change, but decides that the study of the Montreal plant permits one to adopt definitely and completely the restored name *Anacharis* for our plant—*Anacharis canadensis* Planchon Am. Sc. Nat. Bot., iii., ii., 75, 1849.

MARLBOROUGH COLLEGE, REPORT OF THE NATURAL HISTORY SOCIETY, for the year ending 1930. Pp. 135; 5/-. Edited by the Rev. L. G. Peirson. In the Botanical Section it is noted that 534 species and varieties had been found, including *Rubus fuscus*, *Ophrys Sphegodes*, *Epilobium roseum*, as well as several varieties, and the hybrid *Viola Riviniana* × *silvestris*. The Report is quite an interesting one, attractively printed. On pp. 113-124, Mr C. P. Hurst supplies an admirable paper

on the Fungi of the District, twenty-four of his own being new to the Marlborough Flora, besides five from other observers.

MESEMBRYANTHEMA. N. E. Brown, A.L.S., Dr A. Tischner, M.C. Karsten. Edited by E. J. Labarre. Descriptions, with chapters on cultivation and general ecology, in English, German, and Dutch. Pp. 323, with two coloured plates, and 180 illustrations. L. Reeve & Co., Ltd., 1931; 36/-. For many years past readers of the *Gardeners' Chronicle* must have been amazed at the number of species with which that great worker, Mr N. E. Brown, has continually enriched its pages. A large number of new genera have been described—a most unpopular thing to do. Dillenius, Haworth, and De Candolle, early workers on the genus, had been content to leave such an olla podrida under one generic name, now Brown has made many, perhaps too many. He told me when he studied the living plants he felt bound to make his elaborations. If one looks through this beautiful book, so well printed, so beautifully illustrated, and with such ample descriptions, one is bound to agree with him to a great extent. But I am for large genera with, when necessary, numerous sections, or sub-genera, since this saves the creation of many new names. In this work 188 species are described belonging to 41 different genera, not including synonyms. The showy species of *Carpobrotum—edule (aequilaterale)*, so well known to us, is not included. A few years ago all the species described in this handsome volume would have been named *Mesembryanthemum*. This work gives 100 species and 200 species of the stemless or very dwarf species which are unnoticed in Berger's work. Linnaeus established the genus in 1753, and for long it remained unbroken, as it was practically unexamined. Even Haworth only separated a single genus, *Hymenogyne*. Mr N. E. Brown began their study in 1865. How thorough and painstaking his labours have been, this volume will bear witness. Dr Tischner gives an excellent chapter on their cultivation, and this is sure to lead to an increasing popularity for these bizarre creatures, especially as so many can be readily grown from cuttings. The illustrations are both numerous and excellent. The two coloured plates have a most attractive guise, for, although the plates are so tiny, yet the details are beautifully but not obtrusively given. Mr E. J. Labarre gives a pleasing foreword, from which we learn that many of the photographs were from his own set. Mr N. E. Brown supplies many of the beautiful drawings. The paper on general ecology is supplied by Herr M. C. Karsten, and is a valuable piece of work. The notes on mimicry are of great interest. Burchell, that great explorer, a hundred years ago, called attention to it as occurring in *turbiniforme (Lithops)*, which looked like a pebble similar to those amid which it was growing and having the same varying colour. There is an interesting reference to wind-sowed plants. The volume is a distinct addition to Botanical Literature, and we heartily congratulate its "makers" on their success.

NATIONAL TRUST FOR PLACES OF HISTORIC INTEREST OR OF NATURAL BEAUTY, THE. Report, 1930-1931. Pp. 154 with map. 7 Buckingham

Palace Gardens, Westminster, S.W.1. The Society has suffered an incalculable loss by the death of the able and genial Chairman of the Executive Committee, Mr John Bailey, who died on June 29th. The Committee appeal for £500 to complete the purchase of Bolt Tail, Devon. The views include Haresfield Beacon, Housestead Camp on the Cotswolds, Witley Common Cottage. It is stated that 7339 people visited Tattersall Castle, Treasurer's House, York, Alport Height, Perthshire, Plaitford Common, Longshaw Moor. The appended map shows the situations of the Trust Properties. There is an appreciative letter from the Prime Minister who is one of the Hon. Vice-Presidents. The Earl of Crawford and Balcarres takes the place of Mr John Bailey as Chairman of the Executive Committee.

NATURE. A Weekly Journal of Science. Published by Macmillan & Co., Ltd., St Martin's Street, W.C.2. 1/- weekly. Editor, Sir R. Gregory, Bart. This Journal continues its most able help to Science, and its papers on the Faraday Memorial and the Centenary Meeting of the British Association have been exceedingly well done. On p. 325, Prof. Ruggles Gates gives a valuable paper on the origin of Bread Wheats. We heartily congratulate him on his recent honour. On p. 536 there is an interesting review on Vol. v. of the costly "Index Londinensis," now brought to a conclusion, by one who ought to know a great deal about it. He alludes to John Hill's *Family Herbal*, 1812, with its "mostly very crude" figures. But Hill died in 1755. He says the names are often quite foreign to our modern ideas. In these cases the Editor has interpreted the terms figured in terms of modern nomenclature. For example, *Malva moschata* is called in the book "Vervan Mallow" *Alcea*, which is not a classical name at all, but he says names are always quoted just as the author gives them. The previous paragraph makes one shudder since *Comarum palustre* in Vol. i. is also given in Vol. iii. as *Potamogeton palustris*, but it is not the Pondweed.

NATURE RESERVES, SOCIETY FOR THE PROMOTION OF. British Museum (Nat. Hist.), Cromwell Road, London, S.W.7. Lord Rothschild has succeeded Lord Ullswater as Chairman, a position which he has occupied with such conspicuous success since 1912. At Wood Walton Fen, which was given by the Hon. N. Charles Rothschild, Capt. E. B. Purefoy has introduced a colony of the Great Copper Butterfly, which is thriving well despite the attacks on it by *Inchneumon*. The Marsh Sow-Thistle was also planted there, and it has now greatly spread. The lower water-level of the Fens has made the place much drier, so far to the advantage of the flowering plants.

NORTH WESTERN NATURALIST, THE. Edited by A. A. Dallman, in collaboration with nine other scientists. Vol. vi. Published by T. Bunce & Co., Arbroath. Annual subscription, 7/6. Post-glacial History of European Woodlands, F. E. Weiss, F.R.S., p. 6. Nature Study at Brooklyn Botanic Garden, Ellen E. Shaw, p. 11. Richard Buxton,

Botanist, p. 18. *Epilobium nummularifolium*, Carding Mill Valley, Church Stretton, p. 30. Cumberland Mosses, Jas. Murray, p. 31. The Flora of South Lancashire is well on its way, p. 66. Nectar and Honey, A. A. Dallman, p. 74. Hosts of *Lathraea Squamaria*, p. 96. *Spartina Townsendii* on the Lancashire and Cheshire Coast, J. D. Massey, pp. 98 and 163. A kindly reference is made to the 80th birthday of G. C. Druce, p. 130. Changing Scenes, F. E. Weiss, p. 132. The Welsh National Herbarium, H. A. Hyde, p. 135, an excellent account of a very virile institution. Mr Hyde has now brought the botanical collection up to 123,378 specimens. Mid-Shropshire Orchids, George Potts, p. 163, includes of course "*O. latifolia*, common generally in wet ground." It is more than useless to publish such statements. It should be incumbent on a recorder to know the plants he writes about. One presumes that he means *incarnata*, but, if so, he should say so. *O. maculata* L. is not *O. Fuchsii* Druce, and it is more than doubtful if *elodes* Griseb. is true *maculata*. The last is a precise and definite name, *elodes* is vague and out-dated. The name *Habenaria chloroleuca* is not correct; it should be *H. virescens*. Fruiting of *Adoxa*, A. A. Dallman, p. 165. *Senecio squalidus* and *Radicula sylvestris* in S. Lancashire, J. D. Massey, p. 166. Congratulations are offered in the December issue to W. T. Boydton Ridge on his succession as President of the North Western Naturalists' Union. Since 1890 he has been President of the North Staffordshire Field Club. An especially important article in the Journal is the Supplement by A. Wilson, F.R.Met.Soc., on the Altitudinal Range of British Plants in England, Wales, Scotland and Ireland, from which I have repeatedly taken references for my Comital Flora. It is a work of great detail, and is remarkably well done. Unfortunately, much of "The Comital Flora" was in type before the article appeared, but I heartily congratulate Mr Wilson on his work. It will greatly supplement the notes given in "The Comital Flora."

PHENOLOGICAL REPORT, THE, 1930. Editor, E. Stanford. Pp. 345-464; 3/-. Summaries of the observations are given. For 1930, there was an excess of rain (except for N. Scotland) in all four seasons, it being the ninth successive wet year over the British Isles. The summer half contributed nearly two-thirds of the excess. Interesting phenological details are given on p. 352. *Scabiosa Succisa* flowers earlier in Scotland (N. & E.) and England N.E. than in its southern habitats. A weakness of the Report seems to be that too vague specific names are used, e.g., *Rosa canina*, where 50 plants may be included, and each district recorded may have a different species under observation. Black Knapweed and Hawthorn are other instances. A midland observer with *oxyacanthoides* under observation would shatter the notes made by other observers of *monogyna*. Pp. 99-152 is "Hawthorn" Range. It is difficult to swap horses when crossing a stream, but the central authority should insist on having a specimen of the species handed to it. The mass of work involved in this Report is stupendous, and we must congratulate the Society on its production.

PRESLIA, REPORT OF THE CZECHO-SLOVAK BOTANICAL SOCIETY OF PRAGUE. Pp. 117. 1930. Ad Floram Carpatorassicum Additamenta Critica, with beautiful photographs of *Viola declinata*, *Gentiana* species, etc. *Circaea luteitiana* has two forms—*albiflora* and *rubriflora*, and a var. *villosa*. There is a valuable catalogue of Czecho-Slovak Botanists, and how vigorous they are the list of their works testifies.

PROBST, R. Vierter Beitrag zur Adventiv-Flora von Solothurn und Umgebung. Separat. Mitt. Naturf. xxi., pp. 46, 1929-31. A most excellently compiled and compact account of the adventives of that district rich in wool-aliens. *Acaena anserinifolia* (Forster) Druce = *A. sanguisorba* Vahl, Derendingen, is also naturalised by the Tweed, as mentioned in the "Adventive Flora of Tweedside." Dr Probst has, as a possible wool-alien, a purple-flowered *Convolvulus arvensis*, which I have seen at Selkirk. There is an excellent guide to the Literature, but it is not exhaustive.

RAMSEY, LEONIDAS W., AND CHARLES H. LAWRENCE. GARDEN POOLS LARGE AND SMALL. New York: Macmillan & Co. Pp. 108, photos 28, drawings 13, 1931; 10/6. The coloured frontispiece of blue, pink and white Water-Lilies is a delightful rendering of a pool within a garden—a garden within a pool. A real need exists for a book which not alone tells how to build a pool which conforms to the concept of good taste in landscape gardening, but which, when constructed, becomes an integral portion of the home grounds. In this useful guide excellent details as to how to form a pool, where to place it, and what to plant in it, are supplied. The excellent illustrations are most helpful, and there are examples not only of the large tanks but of small pools for which room may be found in most gardens. These pools are most desirable adjuncts to the ordinary garden since a completely different set of plants may be grown. To ensure success no better guide than this can be found.

RUBEL, PROF. VON E Bericht über das Geobotanische. Forschungsinstitut Rubel in Zurich. 1931.

RUSSELL, SIR JOHN E., F.R.S. CONDITIONS AND PLANT GROWTH. One of the popular and able Rothamstead Monographs. Sixth edition, pp. vi. + 636, fig. 60. Longmans, Green & Co., 1931; 21/-. Twenty years ago witnessed the first production of this book, and its steady progress through the years has added an immense amount to our knowledge of the subject. To keep the matter to about 600 pages has only been accomplished by the most rigid pruning. Its contents are (1) Historical and Introductory. (2) Soil conditions affecting plant growth. (3) The composition of the soil. (4) The soil in nature—changes in its mineral composition. (5) Changes in the original matter. (6) The micro-organic population of the soil, and its relation to the growths of plants. (7) The Biotic conditions in the soil. (8) The soil in relation to plant growth. (9) Methods of characterising soils. The Appendices include—Methods of soil analysis, Selected Bibliography of papers on soil condi-

tion, Index of authors and of subjects. The excellence of Sir John's work is generally acknowledged, and the production of this portly volume, brim-full of accurate information, adds another debt to that the agricultural world owes him for his painstaking observations.

SALISBURY, E. J. Morphology and Ecology of *Ranunculus parviflorus* L. *Annals of Botany*, clxxx., 1931. An able study of a most interesting species. The examination of 725 flowers from a diversity of localities has yielded many points of value. Maps are given to show the geographical distribution, which is typically atlantic. With us it is most persistent in Devon and Cornwall, and Durham is its northern limit. It occurs in France, Spain, Portugal, Algiers, Morocco, eastwards along the Mediterranean seaboard to Southern Greece, Thrace, Taurida and Cyprus (!) where it grows freely in damp soils. It also extends to the Canaries (!), Madeira (!) and the Azores (!). It is absent in northern and central Europe, rare or absent in E. France. As a form, it is found in Australia and New Zealand, and it is naturalised in the United States and in Bermuda. He shows that the statement made by Moss of its preference for calcareous soils is misleading. Actual culture gives no support to this view. In the examination of the species, 115 different types of floral organisation were observed. It is shown to be a winter annual.

SEWARD, A., Sc.D., LL.D., F.R.S. PLANT LIFE THROUGH THE AGES. A Geological and Botanical Retrospect. Pp. 583, tt. 137, and nine reconstructions of Ancient Landscapes by E. Villiamy. Cambridge University Press, 1931; 30/-. In this handsome volume Prof. Seward has brought together an immense amount of information treating of the subject, and his knowledge of Palaeontology has led him to select that which is most applicable to the subject. One is accustomed in works of this character to hear most positive statements on what, after all, is purely conjecture. From time to time we have had estimates given of the age of the world, each given by an authority in an *ex cathedra* manner, and they differ even more greatly than "builders' " estimates. Eddington says the geologist may claim anything up to 10,000 million years without provoking a murmur from astronomers. Rutherford said 34,000 million years and probably much less. Kelvin just gave a 100 million which he afterwards reduced to 20 million. While Sollas needed 70 million, the Clerical suggestion was the Biblical age, dated from 4104 B.C., and they knew the day to a hair. One may expect the claims made will vary from time to time, but even the largest amount demanded seems scarcely adequate to account for all the forms of animal life which occur. But estimates are apt to overlook the more rapid alterations which went on when greater radio-active forces were in existence. Not only do the estimates vary of how long ago was the beginning of things, but also of the ways in which they have developed. We at least may say all is conjectural, but that there is a greater probability of one than another. On this most precarious platform, the most positive statements are made. Prof. Seward is too

wise to commit himself to such dangerous hypotheses. The book covers such a wide area, is so full of valuable detail and so excellently arranged, that to make a condensation of it is well nigh impossible. It should be in the possession of every student. It is beautifully printed and illustrated, thanks to the Cambridge University Press, and the Professor gives well deserved thanks for its help. The completion of this excellent piece of work must give a great and lively pleasure to its producer. He has certainly attained his object of "giving to those who have little or no knowledge of Botany or Geology, glimpses of the plant-world at the several stages of its development. By eliminating all that is untrustworthy, we can at least place the student in a position to form his own conclusion and supply him with an outline which can be modified or improved as fresh discoveries are made."

SINGER, CHARLES. A SHORT HISTORY OF BIOLOGY. A general introduction to the study of living things. Pp. 572, fig. 193. Oxford: Clarendon Press, 1931; 18/-. The cover indicates the aims of this scholarly volume—"The book places before the reader, in simple language, the general nature of the main subjects of interest in modern Biology. These are treated as a series of problems awaiting solution. A consideration of the way in which these problems have gradually emerged shows why they, and not innumerable other themes that have been raised in the past, are now absorbing the energies of men of science. Thus the volume, though historical in method, is essentially an introduction to current Biology. It demonstrates that the trend of scientific thought can be understood only when interpreted in the light of history. The book will afford the non-technical reader an insight into the preoccupations and interests of the biologists of to-day." In this work Dr Singer has given first the oldest Biology, starting with Hippocrates, 460-370 B.C., through Aristotle, 384-322 B.C., to Theophrastus, 380-287 B.C., but there were many earlier observers, notably Thales of Miletus, who predicted and observed the Eclipse on the 28th of March 585 B.C. But his works were scattered records, whereas with Hippocrates the works themselves remain and they show the Physician in the sick room, and can watch him at his work. Some of his aphorisms remain to this day with us. "One man's meat is another man's poison." "Desperate diseases need desperate remedies." His Charter of Science sets forth the scientific method of assuming natural explanations of all observable events. From 322 B.C. to 1200 A.D. covers the Decline and Fall of Ancient Science. On the death of Alexander in 323, his Empire was broken up. Egypt fell to Ptolemy, whose dynasty lasted 300 years, the last of the sovereigns being Cleopatra. It was at Alexandria that Anatomy became a recognised science. These dark ages are, I expect, not so dark as they seem, and one always thinks that the Romans never had proper credit given to them for their aid to our horticultural knowledge. Dr Singer says that botanical drawing began to be practised towards the end of the first century B.C. Dioscorides and Pliny did excellent work in the first century A.D. Two figures of *Erodium Mala-*

choides and *Geranium molle* are depicted from the MS. of Juliana Anica. The really dark ages are from 200-1200 A.D. But individual work went on. There is an excellent engraving of the carving on Chartres Cathedral of the Columbine, of about 1260. We have at Christchurch Cathedral, Oxford, of a century later, an example of the work of Albertus Magnus and some of his excellent drawings are reproduced. The great Florentine artist, Botticelli, was the first botanical painter in modern times and thirty species can be identified in his paintings. A beautiful illustration of *Anemone nemorosa* and *Caltha* by Leonardo da Vinci is given. An excellent account is given of Harvey. A chapter is devoted to the Historical foundation of modern Biology. He says in the 16th and 17th centuries many plants were naturalised—Tomatoes, Maize, Acacia, etc. Is the last not the *Robinia*? The others were grown at Bologna and exist in Aldrovandi's Herbarium, with Tobacco. Ray, Dr Singer considers to be one of the great Systematists. We attribute to him a "Catalogus" of British Plants in 1697. He certainly issued in 1670 a "Catalogus Plantarum Angliae et insularum Adjacentium," but it was not this work but his "Synopsis" of 1690, 1696, and its third edition by Dillenius in 1724 which were the pocket companions of every botanist of this country till Hudson's "Flora Anglica" in 1762 took their place. Reference might have been made under Australian Exploration, to Bauer as the unrivalled painter of the plants for Sibthorp's "Flora Graeca." He and Brown collected 4000 species in Australia. The two last chapters, xiv. and xv., of this fascinating work are devoted to Sex and the Mechanism of Heredity in which Mendel's work receives adequate treatment.

SOUTH EASTERN UNION, TRANSACTIONS OF, 1931. Contains the address by the President, Lt.-Col. A. H. Wolley-Dod, on "The Experiences of a Field Botanist," pp. 27-40. A very readable and graphic paper. He liked Bentham and his Keys. Britten told him that a botanist tried to run down the Primrose by a Key and came to the conclusion that it was a Fern! A good story, was he relating a personal experience? In 1881, Wolley-Dod went to Gibraltar where he collected industriously. On returning to England he stayed with Marshall when the *Flora of Kent* was being prepared. In 1896 he went to the Cape. In 1912 and 1913 he was stationed at Gibraltar, and the results of his botanical work there have been published.

SPRAGUE, T. A., D.Sc., AND E. NELMES. The Herbal of Leonhardt Fuchs. Journ. Linn. Soc., xlviii., n. 325, pp. 545-643, 1931. An extremely able paper in which the woodcuts in Fuchs have been identified, with many most interesting details. The translation into English of the habitats is very useful, and these habitats are descriptive. The Bibliography is a valuable part of this able work. The figure of *Papaver Rhoeas* is said to be the variety *erraticum* = *P. Fuchsii* Thunb. 100 species are mentioned for the first time in Germany in the "Herbal." The Introduction includes the Life of Fuchs, the Preparation and General Characteristics of the Herbal, Its Object and Arrangement,

its Bibliographical Source, New Genera, Taxonomy and Nomenclature. To him we owe the genera *Ophioglossum*, *Digitalis*, and *Campanula*, and the names of twenty species now in use were founded by him. *Aconitum Lycoctonum*, *Allium ursinum*, **Anagallis foemina* (this was used by Aldrovandi, and his accompanying specimen at Bologna is as blue as if it had been gathered last year), *Angelica sylvestris*, **Atriplex hortensis*, **Cannabis sativa*, **Chelidonium majus*, *Digitalis purpurea*, **Hedera Helix*, *Hordeum distichon*, *Iris germanica*, **Lactuca sativa*, *Lilium croceum*, *Origanum vulgare*, *Pimpinella major* (needlessly altered by Linnaeus), **Plantago major*, **Raphanus sativus*, **Smilax aspera*, **Sonchus aspera*, **Vitis Vinifera*. (The asterisked names are used by Dioscorides). Of the 100 new species in Fuchs, Linnaeus only directly cites Fuchs for eleven. The scientific value of his work and his place in the history of Botany are short, but excellent chapters, as is that of the systematic conspectus of the plants figured. Out of the 487 included species, 289 appear to have been known to the Ancients, and 64 to the Middle Ages. 31 were first recorded by Brunfels, the remaining 103 were first figured in Fuchs, though many of these had been previously described in Tabernaemontanus "Bock" in 1539. Brunfels "Viva Eicones" contained 258 species and varieties, of which 162 were classical, 49 mediæval, and 47 new. Only 211 of them were included in Fuchs "Historia." Fuchs, however, had 276 additional plants of which 103 were new. *Diploxaxis tenuifolia* (named *Eruca sativa*) is one of these. It is apparently indigenous in Southern Europe, but introduced in the North, and is said by him to be a recently introduced medicinal plant cultivated in gardens. Thellung gave its first European record as Strassburg in 1740. The final chapter is on the identification of the figures.

STAPLEDON, R. S. WELSH PLANT BREEDING STATION. Pp. 240, 1931; 5/-. Self- and cross-fertility and flowering habits of certain herbage, grasses, and legumes, with studies in bulb development and spikelet characters in *Arrhenatherum*, A. R. Beddows, B.Sc., and T. J. Jenkin, M.Sc. It is found that the annual species are mostly highly self-fertile. At Aberystwyth low-fertility was recorded for *Alopecurus agrestis*, *Apera Spica-Venti*, and possibly *Phalaris canariensis*. Kornicke found the perennials in a high degree of sterility except the fully self-fertile *Brachypodium sylvaticum* R. & S., *Cynosurus cristatus* L., *Festuca gigantea*, and *Hordeum secalinum*, as well as some other foreign species. *Sieglingia* has long been known to be cleistogamous, but 50 per cent. only of the fruits were fertile. Prof. Jenkin treats of the self-fertility of *Lolium perenne*, and gives a paper displaying great evidence of research. This includes crossing *L. perenne* with the var. *multiflorum*, the offspring showing no evidence of incompatibility nor of sterility in the F₂ generation. As regards *Arrhenatherum*, a much valued research on *A. elatius* and *tuberosum* is given and unlike Gilibert, Underwood, and others, Jenkin thinks the differences are scarcely specific. Soil conditions had only a modifying effect on degrees of bract-development. This is excellently dealt with and matter of real value is given which throws new light on the relationship of the two types. It appears to

me that it is more convenient to keep them apart, but at the same time to bear in mind that *elatus* may also be bulbous. We hope Prof. Jenkin will give us the results of his studies on *Phleum praecox* and *P. intermedium*.

STEPHENSON, REV. T. Dactylorchids of North Africa. Journ. Bot., 145 and 177, 1931. *O. elata*, *O. Munbyana*, *O. Durandii*.

SWANSEA, PROCEEDINGS OF THE SCIENTIFIC AND FIELD NATURALISTS' SOCIETY. President, Prof. A. E. Trueman. Our member, Mr J. A. Webb, B.A., gives an account of the twenty excursions made during the year, in which many interesting plants were seen. His Report on Botany is not confined to Glamorgan, but has reference to Brecon, Radnor, Cardigan, Monmouth, etc., and contains much of interest. The plants include *Lychnis alba*, Rhayader, Brecon; *Lavatera arborea*, Cardigan; *Malva rotundifolia*, Presteign, Radnor; *M. nicaeensis*, Cumbwria, Swansea. The best find was that of *Geranium sanguineum*, var. *lancastrienne* (sp. non vidi) Sandrill area in W. Gower, v.-c. 41, Mr P. S. Jewell, a great extension of its range. *Prunus Cerasus* and *P. domestica*, Lanwyrld, Brecon; *P. insititia*, Abergweryn; *Sedum reflexum*, Cardigan town; *S. micranthum*, Penrice; *Limosella tenuifolia*, pond near Aberavon (it also grew in quantity at Kenfig), a notable find; *Narcissus lobularis*, Whitland, Carmarthen. A photograph is given of their Life-member and Past President, Mr H. R. Waterfield. The Relation of Air-vesicle to Habitat in *Ascophyllum nodosum*. by G. David. A well-printed and well-edited Report.

THE FIFTH INTERNATIONAL BOTANICAL CONGRESS, CAMBRIDGE, 1930. Report of Proceedings. Edited for the Executive Committee by F. T. Brooks and T. F. Chipp. Pp. 677. Cambridge University Press, 1931; 21/-. A portrait of Prof. A. C. Seward forms the frontispiece. At a meeting in London in 1911, a committee and provisional officers were appointed for a congress in Britain in 1915 when I was chosen a Vice-President. This was subsequently abandoned owing to the war. The fourth Congress was held at Ithaca, U.S.A., in 1926, when an invitation was sent by Great Britain inviting the fifth Congress to take place in London. This was cordially accepted. On January 27, 1927, another meeting was held in London, when Oxford or Cambridge were deemed more suitable meeting places, the choice eventually falling on Cambridge. It was also decided that the Congress should be confined to pure Botany. It seemed to me that it was to be a restricted meeting and that my side of the subject would not meet with much favour, so, as I had no special invitation, I decided not to attend. The meeting was practically a meeting for teachers, and it cannot be said that field-systematists had any undue share in its deliberations. The Conference appears to have been well organised and the functions numerous, a reception before the official opening being given by the Minister of Agriculture at the Imperial Institute in London. The opening conversation took place at St John's College, Cambridge, on August 17th,

and the meetings were held daily until the 23rd. A luncheon was given for the Hon. Graduates at Magdalen College by the Vice-Chancellor on August 20th. These were—Prof. Diels, Berlin (the successor to Dr Graebner), Dr J. Briquet (Geneva), Prof. Halle (Stockholm), Prof. Jones (Wisconsin), Prof. Schroeter (Zurich), Prof. Went (Utrecht), Prof. Dangeard (Sorbonne). An invitation for the sixth Congress, to be held in Holland in 1935, was given on behalf of Dutch Botanists by Prof. Went. The abstracts of the lectures and discussions occupy over 600 pages. The book is a handsome one—such as the Cambridge University Press usually produce—but it is disappointing to see how small a part is devoted to the views of British taxonomists.

THOMPSON, J. McLEAN. STUDIES IN ADVANCING STERILITY, Part iv. The Theory of the Leguminous Strobilus. Publication of the Hartley Botanical Laboratories, University of Liverpool. Pp. 77, 1931. Both are papers of a high order of merit, and are beautifully illustrated.

THURSTON, EDGAR, C.I.E. Notes on the Cornish Flora. Royal Inst. of Cornwall, 1930. Includes *Reseda lutea* L., var. *longifolia* Ten., Par; *Viola Lloydii* Jord., Par; *Malva parviflora* L., Launceston; *Rubus egregius* Focke, Glym Bridge; *Sonchus oleraceus* L., var. *albescens* Neum., and many others.

TORREY BOTANICAL CLUB, BULLETIN OF THE. Editor, Tracy Elliott Hazen. Monthly. 6 dollars yearly. Among many papers of interest is the List of Seed Plants and Ferns of the Glacier Bay. National Monuments, Alaska, by W. S. Corfe. The Phytogeny of the Maize Plant, G. N. Allum. The Genetics and Octogeny of Maize are also fully gone into. A. C. Smith treats of the Ferns from Mount Roraina. Botanical results of the Tyler Dinda expedition, No. 5, 6, 7 and 8. This is in the Orinoco Valley. Mount Dinda, which rises to over 7000 ft., was ascended.

WATSON BOTANICAL EXCHANGE CLUB. Forty-seventh Annual Report for 1930-1931. Distributor (of 1844 specimens), E. C. Wallace. There is a photograph of "Skeg," a vernacular name for a Bullace by J. E. Little, who corrects his "hybrid" sedge *C. contigua* × *divulsa* to *C. divulsa*. Like ourselves the Society suffers from a lack of real working members. There seem to be no new records.

WEISS, F. E., D.Sc., F.R.S., P.L.S. The Post-glacial History of European Woodlands. North Western Naturalist, March 1931. Dr Weiss gives special prominence to the importance of investigations of pollen occurrence in the peat-moors of Britain. He holds that Beech woods came in after the separation of Britain from the Continent. Its pollen is very scantily represented even in our more recent upper layers of peat deposit, and is absent from Ireland. In prehistoric times *Carpinus* was hardly represented in Britain. The prevalence of the Alder points to a greater rainfall associated with badly drained lowland soil.

WILD FLOWER MAGAZINE. Editor, Mrs Dent, Flass, Mauls Meaburn, Penrith. Bi-monthly. The Society goes on with intense zeal under the stimulating influence of its President. The Rev. D. M. Heath, p. 3, gives a paper on "Botany in the Winter Months." He mentions many late and early flowers. "Three in a Car" is a readable note. Its occupants went half across England to get *Cuscuta epilinum* in Northamptonshire. They halted at Esthwaite for *Hydrilla* and *Naias*, in Glen Farg for *Lychnis Viscaria*, and at the Sands of Barry for *Corallorrhiza*. They went northwards, culling *Linnaea* and *Goodyera* at Grantown, and *Moneses* near Golspie. Then Inchnadamph was visited for *Arctostaphylos alpina*, *Carex rupestris* and *Arenaria norvegica*, and Betty Hill for *Dryas*, *Oxytropis*, *Carex incurva*, and *Primula scotica*. At Thurso the usual rarities were noted. On the return Glen Lyon and Ben Lawers were visited and the rare alpine seen, but not *Potentilla rupestris*, for that does not grow in Scotland. *Astragalus alpinus* was gathered on Ben Vrackie. It was a memorable journey with a chauffeur of the first water. Mrs Dent gives an account of a London Rock-garden, p. 8. On p. 13, *Anemone Pulsatilla* is wrongly recorded for Oxfordshire; it should be Berks. Sussex Notes should be sent to F. O. Whitaker, 45 Lindene Road, Plumstead, S.E. 18 (not to Mr Gordon Dalgliesh). *Tunica Saxifraga*, p. 18, was first found by Miss Andrews in 1925, but Miss S. Haines had it two or three years earlier. Of course it is not native. California Thistle at Hampstead, p. 10, what is this? April-May, Mrs Dent gives an account of her visit to Portugal. E. M. Haines writes on "Friends from Abroad"—*Gaultheria Shallon* in the New Forest, and *Azolla caroliniana*—but it is not *caroliniana*, but *fliculoides*. Mrs Milvain, p. 15, found eighteen orchids on the Cotswolds. June-July. Many kindly references are made to Dr Druce. The Rev. H. H. Harvey, p. 3, found *Lychnis alpina*, *Mulgedium*, *Astragalus alpinus*, etc., etc., in Clova. On p. 4, the Bucks *Euphorbia Esula* is an error for *virgata*, so too the Sussex *Esula* is *virgata*. Miss Robinson found *Lathyrus hirsutus* near Brighton. Dr Power found *Mespilus* and *Tragopogon porrifolium* in Lincolnshire. It is not *Isoetes lacustris*, p. 6, which grows in Dorset, but *echinospora*. *Euphorbia pilosa*, p. 11, does not grow at Windsor. Dr Druce, p. 15, records *Juncus alpinus (subnodulosus)* from Widdy Bank in 1903. August-September. Mrs Dent gives a graphic account of her journey through Britain. Miss Gillam describes Switzerland in May. Miss Vachell's Flowers and Climate is reprinted here, and an account of the de Laszlo portrait presentation is given on pages 8 and 12. October-November. Contains a photograph of de Laszlo's portrait of Dr Druce, and a most kindly reference to it by the Editor. A Day with St Brandon, p. 4—an account of an ascent of that fine Irish mountain. Mrs Foggitt and Lady Victoria Russell were of the party, and they gathered *Saxifraga decipiens*, *S. groenlandica*, *S. Drucei*, and *S. sponhemica*. An account and review of the B.E.C. Report for 1930 is on p. 7.

WILLIAMS, R. O. FLORA OF TRINIDAD AND TOBAGO. Pp. 197-308. Government Printing Office, Port of Spain, 1931; 4/6. The continua-

tion of this excellent Flora covers Connaraceae, Leguminosae to Mimosa. The Leguminosae are one of the most important Families of the Islands. There are good keys to the genera. Some of the most beautiful trees in the islands belong here. Such are *Erythrina*, *Caesalpinia*, *Haematoxylon* and *Cassia*. The completed volume will be a most useful addition to our Island Floras.

WILSON, A., F.R.Met.S., F.L.S. THE ALTITUDINAL RANGE OF BRITISH PLANTS. Pp. 105. Reprinted from the North Western Naturalist. T. Buncl & Co., Arbroath, 1931; 4/-. We have nothing but praise for this work which Mr Wilson has compiled with such enthusiasm. One may safely urge every subscriber to "The Comital Flora" to buy a copy, as although many altitudes are given in that work, there are many others given here for which one could not find space. Mr Wilson gives consistently the plant altitudes for England, Wales, Scotland, and Ireland, and the sources of his information. It is very fortunate that the dates of publication should so closely synchronise. There must be, too, a range of readers outside the Comital Section, and to these and to others, we can cordially recommend this carefully compiled and well-arranged list which reflects credit alike on its writer and on the valuable publication in which it first appeared.

WINCHESTER COLLEGE NATURAL HISTORY SOCIETY, REPORT. 1927-1931. Pp. 63, 1931. Editor, S. A. McDowall. There are notes on Hybrid Orchids by P. M. Hall. The botanical notes include a record at Holmesby of \times *Drosera obovata*, ? N.C.R., also a number of new stations for other plants. List of papers read 1927-1931 is included.

WOLLEY-DOD, COL. A. H. In a note on *Rosa scabriuscula* in "A Revision of the British Roses," *Journ. Bot. Suppl.*, 90, 1931, Lt.-Col. A. H. Wolley-Dod, the author, drops *britannica* as a nomen confusum, and makes two new forms of *scabriuscula*—one forma *Leesii*, Menai Straits, the second forma *moretonensis*, Moreton, etc., Cheshire (as *Jundzilliana*). I can see no Lees mentioned under the Menai Bridge plant, only Harbord Lewis. See *The British Roses*, *Journ. Bot. Suppl.*, 97, 1910. Is *Leesii* correct? (The name is correctly written "*Leesii*." See *Journ. Bot.*, 41, 1929).

OBITUARIES.

FRIES, PROF. THORE CHRISTIAN ELIAS. He was Professor of Botany at Lund University and leader of the Swedish Botanical Expedition to Southern Rhodesia, where he died early in August 1930, at the early age of 44. He was the son of Prof. Theodor Magnus Fries and the brother of Prof. Robert Fries.

LOTSY, DR JOH. PAUL. Biology has suffered a great loss by the death of Dr Lotsy, who was well known in this country and exceedingly popular at meetings of the British Association, which he frequently attended. He was the author of a great work on the phylogeny of plants, of which three volumes appeared in 1907-11. This was, however, never completed, as the result of his valuable investigations in genetics, to which the latter part of his life was devoted. Two valuable contributions to evolutionary theory were written in English—"Evolution by means of Hybridization," 1916, and (in conjunction with Dr Goddijn) "Voyages of Exploration to Judge of the Bearing of Hybridization Upon Evolution. I—South Africa," 1928.

He was for some time Secretary of the Dutch Society of Sciences, having its headquarters at Haarlem. He was a great traveller, pursuing his studies in South Africa, Australia, and New Zealand. He attended the Centenary celebration of the British Association at the special request of its President, General Smuts. He had been in failing health for some time before his decease, at the age of 64.

MARLOTH, DR RUDOLF. This great Cape botanist was in charge of the Botanical Survey Area at the Cape and was appointed a member of this Botanical Survey in 1918.

Dr Marloth was formerly a consulting analytical chemist, and in the course of his work gained a reputation as a botanist. He was president of Section B at the first meeting of the South African Association for the Advancement of Science in Capetown in 1923, and of the whole Association at Kimberley in 1914. He was president of the Cape Chemical Society in 1913. The author of many botanical works, Dr Marloth was chiefly known to European flower-lovers for "The Flora of South Africa," which is especially valuable as an introduction and companion to the great "Flora Capensis" now for many years in preparation at Kew.

His second volume on the Podostemonaceae-Umbelliferae did not appear till the end of 1926. Since the eighteenth century the petaloid Monocotyledons have been the chief representatives of the South African flora in our northern gardens, and Dr Marloth's volumes reminded English gardeners of the beauty of many of the bulbous plants of the Cape, especially the hybrid races of gladiolus. He considered that *G. Cardina-*

lis, which Francis Masson (a Kew gardener sent out to the Cape at the request of the Royal Society by George III.) brought to England in 1789, rivals *Disa grandiflora*, "The Pride of Table Mountain," in beauty.

MONCKTON, HORACE WOOLLASTON. Had been Treasurer of the Linnean Society since 1905 and died on January 14th, 1931, at the age of 74. His death was a sad loss to the Society in whose interests he had laboured so assiduously and conscientiously for so many years.

MOORE, SPENCER LE MARCHANT. Born 1st November 1851, and died on 14th March 1931, aged 80 years. An admirable and appreciative article on this well-known botanist appeared in the May issue of the *Journal of Botany*, 1931.

MURR, JOSEF. Studienrath Professor Dr J. Murr, to give him his full style and title, was born at Brixen, Southern Tyrol, in 1864. He died suddenly, at Innsbruck, on December 4, 1931, after a slight operation, apparently from thrombosis. By his death Austria, and indeed all Central Europe, loses one of its leading field-botanists, and this Society a valued Foreign Member.

Murr's father was a schoolmaster, who eventually became Professor at the Training College for Teachers at Innsbruck, as well as School Inspector for that district, and he too followed the scholastic profession. After his schooldays, he graduated at the University of Innsbruck in Philology, and passed on to be a master at the Gymnasias of various Austrian towns, Marburg, Trient, Linz, and finally Feldkirch in the Vorarlberg district. He proved himself to be a capable scholar by the publication of works on classical literature and philosophy. But his real interest and capacity lay in the direction of Natural History, more particularly Botany, in which he attained well-earned distinction. During the seventeen years of his residence at Feldkirch, the period of his greatest activity, he added about eighty species to the known flora of the Vorarlberg, and published scores of papers and notes on the subject in the local scientific journals, in the *Oesterreichische Bot. Zeitschrift*, the *Allgemeine Botanische Zeitschrift*, and in the *Proceedings of the Vienna Academy of Sciences*, etc. All these were the *parerga* to his *opus magnum*, the *Uebersicht ueber die Farn-und Blüthen-pflanzen von Vorarlberg und Liechtenstein* which he succeeded, in spite of great difficulties, in publishing in parts, 1923-6. Though not large, it is a great work. The quite adequate enumeration of the plants is inspired by the spirit of investigation in which the composition of the flora and its history are discussed. Its value from the purely taxonomic point of view is illustrated by his treatment of the genera *Chenopodium* and *Hieracium*, upon both of which he was a recognised authority. As to the former genus, it may be mentioned that a monograph relating to it was published in the Reports of this Society (173, 1912); as to the latter, the account of it given in the "Uebersicht" occupies more than fifty of its pages. Another striking feature is the exhibition of his almost uncanny flair in the recognition of doubtful forms as hybrids, and in

referring them to their parents. But it is perhaps in the "Phytogeographical Appendix," which occupies the last hundred of its five hundred pages, that the chief interest of the book is to be found. It is here pointed out that the significance of the district concerned is that it is the meeting-place of various floras, more particularly of northern and southern, and the share of each contributing factor is indicated. The author's practical knowledge of geology enabled him to give what he terms a "geo-botanical" account of the constitution and distribution of the plant-associations of the flora. It also assisted him in his study of the fossil plant-remains in the interglacial breccia-deposits of Hötting, near Innsbruck.

As the "Uebersicht" enumerates only Vascular Plants, it might be concluded that the author was not familiar with other groups. On the contrary, he was a quite competent muscologist, lichenologist, and mycologist, and published work in all these capacities. Some account of the distribution of these non-vascular plants is incidentally included in the phytogeographical appendix.

Murr was no traveller into foreign parts. It does not appear that he ever quitted Austria, though he may have ventured into Switzerland, Germany, and Italy on his many botanical excursions. But Austria he knew well, from the lake of Constance to the Adriatic.

After his retirement in 1919 from scholastic work at Feldkirch, Murr finally made his home, not at his native Brixen, which, to his lasting sorrow, had become Italian territory, but at Innsbruck, where he had received most of his education. Here his forceful and attractive character, with his facile pen, soon gained the respect and esteem of his fellows, so that he became something of a personage. He had now leisure for preparing for the press his "Uebersicht," already discussed, and also for his work on the fossil plant-remains from Hötting, many of which he succeeded in identifying with species still existing in the district. His literary activity became greater than ever, though less purely scientific. He contributed to the local press innumerable articles on subjects of all kinds. Many of them were popular articles on botanical subjects, the local flora, the botany of the public gardens and hot-houses, the fruits and vegetables of the market, the seasonal changes in vegetation, and accounts of his frequent botanical excursions in the neighbourhood. But he turned more and more to the discussion of social and moral questions. As a devout Catholic, in fact a Tertiary of the Order of St Francis, he was deeply interested in the spiritual as well as the material welfare of his town and of his country, and was unwearied in his efforts to promote both. His good influence will be seriously missed in the city of Innsbruck.

S. H. VINES.

O'BRIEN, JAMES, V.M.H. Had a most profound knowledge of Orchids and their cultivation. In "The Gardeners' Chronicle" of January 3rd, 1931, there appeared an appreciation of his work, together with a portrait. That periodical "gratefully acknowledges its great indebtedness to James O'Brien for years of help and inspiration." He was one

of the earliest recipients of the Royal Horticultural Society's Victoria Medal of Honour in 1897. He was born in 1842 and died on December 29th, 1930.

OSTENFELD, PROF. CARL EMIL HANSEN: All British botanists heard of the death of Prof. Ostenfeld at the relatively early age of 57 with deep regret. He wrote English quite well and was always extremely gracious in the determination of British plants sent to him by our members or others. We are, perhaps, most indebted to him for his valuable work on marine and freshwater plankton. He also possessed an intimate knowledge of aquatic plants. He received the Foreign Membership of the Linnean Society in 1929.

SHERRING, RICHARD VOWELL. An appreciation of the work of this capable botanist appeared in the "Bournemouth Daily Echo" of February 18, 1931. He was one of the founders of the Bournemouth Natural Science Society and the first to receive its gold medal in 1921. He undertook for the Society the recording and photographing of *Spartina Townsendii* in Poole Harbour and his report was published in the "Proceedings." He spent much of his earlier life in investigating the flora of the West Indies and British Guiana, and was elected a Fellow of the Linnean Society in 1887. He died on February 4th, 1931, at the age of 83.

STEP, EDWARD. Most of our members will be familiar with some of the many excellent and popular works on Natural History written by Edward Step. To these many of us turn when asked to recommend books to beginners in the study of botany. Both illustrations and descriptions are commendably reliable, and as a result the books have been much in demand.

NEW COUNTY AND OTHER RECORDS.

ABBREVIATIONS.—*Rep. B.E.C.* = *Report of the Botanical Society and Exchange Club*; *Trans. Bot. Soc. Edin.* = *Transactions of the Botanical Society of Edinburgh*; *Wats. B.E.C.* = *Report of the Watson Botanical Exchange Club*; *Devon. Tr.* = *Transactions of Devonshire Association of Science, &c.*; *Journ. Bot.* = *Journal of Botany*; *Nat.* = *Naturalist*; *N.W. Nat.* = *North Western Naturalist*, ed., A. A. Dallman; *W.F. Mag.* = *Wild Flower Magazine*, ed., Mrs Dent; *Fern Gaz.* = *British Fern Gazette*, ed., F. W. Stansfield; *Rep. Marl.* = *Report of the Marlborough College Natural History Society*; *R.I.C.* = *Journal of the Royal Institute of Cornwall*; *Rep. Winton.* = *Report of the Natural History Society of Winchester College*; † = Adventive; * = New County Record (in the case of adventive plants this is only rarely added); ! placed after a plant signifies that the compiler has seen a specimen; ! placed after a locality that the compiler has seen it there; × placed between two scientific names or before a binomial means that the plant is a hybrid; 52, &c., numbers following a county, refer to the Vice-county in *Topographical Botany*; [] enclosing a record mean that confirmatory evidence is needed.

We have to thank the Director of the Royal Botanic Gardens, Kew; Mr J. Fraser, Mr W. O. Howarth, Prof. O. E. Schulz, Dr Probst, Dr Ronniger, Dr E. Almquist, Dr H. Schinz, M. Jaquet, Dr Aellen, Dr Drabble, Mr C. E. Britton, Dr Dahlstedt, M. Patrice Riencourt de Longpré, Col. A. H. Wolley-Dod, Mr I. A. Williams, Dr Zahn, Mr A. R. Horwood, Mr W. Watson, Mr D. Lumb, Mr C. V. Marquand, Mr P. M. Hall, and others who have rendered critical assistance.

- 2/4. *THALICTRUM COLLINUM* Wallr. Berry Head, S. Devon, DRUCE.
- 2/4(2). *T. UMBROSUM* Butcher. Loch an Larige, M. Perth, 1930, DRUCE.
- 3/2. *ANEMONE NEMOROSA* L., var. *PURPUREA* DC. Wood near Snowhill, E. Gloster, Mrs MILLVAIN.
 Var. *CAERULEA* DC. Common in woods about Tresillian and other parts of Cornwall, C. NICHOLSON.
- †3/4. *A. APENNINA* L. Hasham Hill Park, Stafford, Sir R. CURTIS. The Park is practically in a wild state.
- †3/9. *A. CORONARIA* L. Burton-on-Trent, Staffs, Mr RAYBON, ex Sir R. CURTIS.
- 6/3. *RANUNCULUS ACER* L., var. *MULTIFIDUS* DC. Boat of Garten, Easternness; Kinlochewe, W. Ross; Rysa Lodge, Hoy, Orkney, DRUCE.
 Var. *FRIESIANUS* (Jord.) R. & F. Kirk Bay, South Ronaldshay, Orkney, DRUCE.

Var. *STEVENI* (Andrz.) Lange. A starved form, 3-4 inches high, with small flowers, Ben Lawers, M. Perth, DRUCE.

A submerged form of *R. acer* occurred in a pond at Storrington, W. Sussex, J. G. DALGLEISH.

6/5. *R. BULBOSUS* L. A curious fasciated form, with flat stem nearly an inch across, bearing many small branches with numerous flower-heads, sent from Phillack, W. Cornwall, by R. KEMPTHORNE.

6/7. *R. FLAMMULA* L., var. *OVATUS* Pers. Burnham, N. Somerset, ex W. D. MILLER; Loddon Bridge, Berks, DRUCE.

6/13. *R. PARVIFLORUS* L. Plymouth, S. Devon, 1850, Mrs TOZER. Not in Flora.

[6/20. *R. FLUITANS* Lam., var. *BACHII* (Wirtg.). Tamaraceite, Grand Canary, 1929, DRUCE, teste PEARSALL.]

6/22. *R. TRICHOPHYLLUS* Chaix. Foxcote, Andoversford, E. Gloster, Miss ABELL.

6/24. *R. HETEROPHYLLUS* Weber. A small pretty form at Wigmore Ash, Berks, 957 ft., DRUCE.

Var. *TRIFIDUS* Pearsall. Dalton, v.-c. 69, LUMB.

6/25. *R. PELTATUS* Schrank. "Glabrous carpels," Gangsdown, Oxon, DRUCE.

6/27. *R. SPHAEROSPERMUS* Boiss. & Bl. Growing in great quantity in the water-cress beds and brook at Ewelme, Oxon, 1931, DRUCE; Cheddar Mill-stream, N. Somerset, 1913, Miss I. M. ROPER, as *peltatus*, var. *penicillatus* (Hiern).

6/30. *R. LUTARIUS* Bouvet. Near Lands End, W. Cornwall, probably hybridising with *R. hederaceus*, DRUCE.

6/31. *R. LENORMANDI* F. Schultz. Kirby Moor side, N.-E. Yorks, FLINTOFF.

6/33. *R. FICARIA* L., var. *SINUATUS* Horwood. Plymouth, S. Devon, 1854, Mrs TOZER.

FLORE PLENO, Broughton, S. Hants, Miss SALMON; an interesting plant, I saw it, when I was in Japan, growing as a pot plant in the house of the uncle of the daughter of the Mikado.

Var. *vel forma LUXURIANS*. In marshy ground at Glynde, E. Sussex, DALGLIESH. Growth tall and robust, resembling that of *Caltha palustris*.

7/2. *CALTHA RADICANS* Forst. Golspie, E. Sutherland, DRUCE, with CORSTORPHINE and Hon. Mrs BARING. A small-leaved plant.

9/2. *HELLEBORUS FOETIDUS* L. Adventive near Walton, Staffs, Mr RAYBON, ex Sir R. CURTIS; two stations in Cambridge, J. S. I. GILMOUR.

†13/3. *DELPHINIUM AJACIS* L. Adventive on waste ground near Bideford, N. Devon, DRUCE; Ivybridge, S. Devon, 1884, Mrs TOZER.

21/2. *PAPAVER RHOEAS* L., var. *CHELIDONIOIDES* O.K. Clifton, Beds, H. PHILLIPS.

Var. *CAUDATIFOLIUM* Fedde. Near Lambridge Wood, Henley, Oxon, DRUCE.

21/3. *P. DUBIUM* L. Marston Measey, N. Wilts, DRUCE. *P. DUBIUM* × *RHOEAS* = *P. NICHOLSONI* Druce. Waste ground, Brownstone Farm, Brixham, S. Devon, DAY.

21/5. *P. ARGEMONE* L. Near Marazion, W. Cornwall, DRUCE.

21/6. *P. HYBRIDUM* L. Growing with *P. somniferum*, side of newly-made road, Marazion, W. Cornwall, DRUCE.

21/10. *P. BRACTEATUM* Lindl. Walsall, Staffs, ex Sir R. CURTIS.

31/1. *CAPNOIDES CLAVICULATA* (L.) Dr. A new locality for a rare Berkshire plant at Bucklebury, DRUCE, Miss NELD, and Hon. Mrs BARING.

32/4. *FUMARIA PURPUREA* Pugsley. Ilfracombe, N. Devon, DRUCE.

35/1. *RADICULA NASTURTIUM* Druce. Cornwood, Dartmoor, S. Devon, DRUCE.

35/3. *R. AMPHIBIA* (L.) Dr., var. *AURICULATA* (Beck.) Dr. (teste Schulz). Hurst, Berks, DRUCE.

36/2. *BARBAREA VERNA* Asch. Malvern Wells, Worcester, Miss PICKARD.

36/5. *B. INTERMEDIA* Boreau. St Fagans, Glamorgan, WILLIAMS, ex Miss VACHELL; Mayfield, E. Sussex, Miss PICKARD.

37/1. *ARABIS HIRSUTA* Scop. Cirencester, E. Gloster, Miss ABELL; Loch an Larige, M. Perth, 2600 ft.; Blackhead, Co. Clare, 1930, DRUCE.

†37/9. *A. ROSEA* DC. Dunkeld, E. Perth, M. WILSON.

39/1. *CARDAMINE PRATENSIS* L., flore pleno. Fine examples from an orchard at Butler's Court, Alvescot, E. Gloster, R. STAPLES BROWN; Willoughby Waterless, Leicester, H. W. CLEAR; Lyme Regis, Dorset, Sir M. ABBOT ANDERSON.

Var. *HAYNEANA* (Welw.) Schur. Bransil, Hereford, R. F. TOWN-DROW.

Forma *LACTEA* Beck. Loddon Bridge, Berks, DRUCE.

39/2. *C. AMARA* L. Barcombe Mills, E. Sussex, Miss PICKARD.

43/3. *DRABA INCANA* L. Loch an Larige, M. Perth, DRUCE, gathered in August 1930, on which Prof. O. E. Schulz remarks "ad var. *DIFFUSA* Lindbl. vergens." Strong, large, branched plants.

43/4. *D. MURALIS* L. Garden weed at Tusmore House, Oxon, Hon. Mrs BARING. Fine examples over 12 ins. high.

44/1. *EROPHILA VERNA* (L.) Meyer. Earl Shilton, Leicester, SOWTER; Four Mile Bridge, Anglesey, DRUCE.

Var. *CABILLONENSIS* (Jord.) O. E. S. Shotover, Oxon, BEAK; Elsfield, Oxon, 1895; Cothill, Tubney, Berks, 1884, DRUCE.

Var. *MAJUSCULA* (Jord.) Hauss. [No. 63.] Hitchin, Herts, LITTLE; Lathkill Dale, Derby, PROCTOR.

Var. *ACROCARPA* (Brenn.) O. E. S. [No. 60.] St Ippolyts, Herts, LITTLE; Earl Shilton, Leicester, SOWTER; Glynde, E. Sussex, Miss PICKARD.

Forma *MINUTISSIMA* (Griseb.) O. E. S. Winterborne Steepleton, Dorset, DRUCE.

44/2. *E. BOERHAAVII* (Van Hall) Dum. Andoversford, E. Gloster, Miss ABELL; East Hendred, Berks, DRUCE and LADY DAVY; Cirencester, E. Gloster; Wood Eaton, 1884, Stonesfield, Oxon; Cerne Abbas, Dorset, DRUCE; Bampton, Oxon, BEAK; Purwell, Hitchin, Herts, LITTLE; Ketton, Rutland, SOWTER.

Var. *VINDOBONENSIS* O. E. S. Facombe, Berks; Helston, W. Cornwall (f. *UNIFLORA* (Opiz) O. E. S.), DRUCE; near Charterhouse, Mendip, Somerset; Valley Bridge Road, Clifton, near Tickenham, W. Gloster, TRAPNELL.

Var. *INFLATA* (H. C. Wats.) O. E. S. Stoborough Head, Dorset, Sir M. ABBOT ANDERSON; [69] N. of West Mill, Hitchin, Herts, LITTLE; Burnham, N. Somerset, MILLER; Brackley, Northants, DRUCE; Pendragon Castle, Cumberland; summit of Ingleborough, Yorks, as *uniflora*, TRAPNELL.

Var. *DECIPIENS* (Jord.) O. E. S. Mt. Caburn, Lewes, Sussex, Miss PICKARD; Hitchin, Wymondley Road, Herts, 1930, LITTLE; Burn of Wasdale, Orkney [Ref. No. 3797] (f. *UNIFLORA* (Opiz) O. E. S.), Col. H. H. JOHNSTON; Ashbury Ant Heaps, Berks, Miss TODD; Cuddesdon, Oxon (etiam f. *uniflora* (Opiz) O. E. S.), DRUCE.

Var. *LINEARIFOLIA* O. E. S. Noke, Oxon, 1884, DRUCE.

Var. *BRACHYCARPA* (Jord.) O. E. S. [No. 51.] Lower Stondon, Beds, LITTLE; Marcham, Frilford, Berks, DRUCE.

Var. *MURICOLA* (Jord.) O. E. S. Ashbury Ant Heaps, Berks, Miss TODD; Riever Wood, Churn Downs, Berks; Shalbourne, N. Wilts, DRUCE.

44/3. *E. PRAECOX* (Stev.) DC. Ballyalaban, Co. Clare, O'KELLY; Athery, Galway, DRUCE.

Var. *VIRESCENS* (Jord.) O. E. S. Duddington Heath, Rutland, SOWTER; Water Eaton, Oxon; Yardley Gobion, Barnack, Northants, DRUCE; Ballycahill, Co. Clare, O'KELLY.

47/2. *HESPERIS MATRONALIS* L. Shalbourne, N. Wilts, DRUCE.

†48/1. *WILCKIA MARITIMA* Scop. Bideford, N. Devon, DRUCE.

49/3. *SISYMBRIUM ALTISSIMUM* L. Settle, Yorks, new to v.-c. 64, H. H. STURDY and J. N. FRANKLAND.

49/4. *S. ORIENTALE* L., var. *IRIOIDES* Thell. Burton-on-Trent, Staffs, DRUCE.

49/5. *S. IRIO* L. Burton-on-Trent, Staffs, DRUCE.

†54/1. *BRASSICA OLERACEA* L. Waste ground, Adderbury, Oxon, DRUCE.

†54/2. *B. NAPUS* L., var. *SYTOMOCARPA* O. E. S. Launcells, Cornwall, Rev. W. W. MASON.

Var. *AURICULATA* (DC.). Witley, Surrey, DRUCE.

†54/4. *B. RAPA* L., var. *BRIGGSII* Wats. Burton-on-Trent, Staffs, DRUCE.

54/14. *B. ARVENSIS* Kuntze, var. *ORIENTALIS* (L.) Aschers., sub-var. *STRICTA* Celak. Holmbury, Surrey, CASTALIA, COUNTESS ~~OR~~ GRANVILLE.

Var. *MEDIA* Achogne. Kingsdown Cliffs, E. Kent, CASTALIA, COUNTESS OF GRANVILLE.

†54/16. *B. JUNCEA* Coss. Near Dover, E. Kent, J. JACOB.

†54/20. *B. GALLICA* (Willd.) Dr. Waste ground near Settle, Yorks, new to v.-c. 64, STURDY and FRANKLAND.

54/22. *B. INCANA* (L.) F. Schultz, forma *GLABRESCENS* (Cosson) O. E. S. Burton-on-Trent, Staffs, DRUCE.

55/1. *DIPLOTAXIS TENUIFOLIA* (L.) DC. Dartford By-pass Road, W. Kent, Lady BAKER.

†56/2. *ERUCA ERUCA* (L.) Dr., var. *ERIOCARPA* (Boiss.) Post. Adventive, Burton-on-Trent, Staffs, July 1930, DRUCE.

(All the BURSÆ have been kindly determined by Dr E. ALMQUIST.)

59/2. *BURSA ABCISSA* (E. At.). Stenness, Pomona, Orkney, 1931, DRUCE.

59/4. *B. BATAVORUM* (E. At.). Dashwood Hill, Bucks; Goring, Oxon; Hayle, W. Cornwall; Rysa, Hoy, Orkney, DRUCE; Stanton Moor, Derby, 900 ft., PROCTOR.

59/7. *B. BRITTONII* (E. At.). Stanton Moor, Derby, 900 ft., PROCTOR; Cardiff, Glamorgan, DRUCE.

59/9. *B. DRUCEANA* (E. At.). Ledbury, Hereford, DRUCE.

59/10. *B. GALLICA* (E. At.). Near Goring, Oxon; Dashwood Hill, Bucks, DRUCE.

59/12. *B. GROSSA* (E. At.). Wilbury Hill, Herts, H. PHILLIPS.

59/15(2). *B. LAEVIGATA* (E. At.). Hayle, W. Cornwall; Marston, Oxon, DRUCE; Shavington Avenue, Chester, June 1930, WATERFALL.

59/20. *B. PATAGONICA* (E. At.). Reading, Berks, DRUCE.

59/26. *B. TREVIRORUM* (E. At.). Beaulieu, S. Hants, H. PHILLIPS; Shavington Avenue, Chester, June 1930, WATERFALL.

59/27. *B. TURONIENSIS* (E. At.). Stevenage, Herts, H. PHILLIPS; Lead Workings, Masson Limestone, Derby, 1000 ft., PROCTOR; Golspie, E. Sutherland; Torridon, W. Ross, DRUCE and CORSTORPHINE.

59/28. *B. VIMINALIS* (E. At.). Cabbage field, Wilbury Hill, Herts, H. PHILLIPS.

60/1. *CORONOPUS DIDYMUS* Sm. Hayle, W. Cornwall, DRUCE.

61/3. *LEPIDIUM DRABA* L. Hayle, W. Cornwall, R. KEMPTHORNE.

†61/8. *L. PERFOLIATUM* L. Near Dover, E. Kent, J. JACOB.

†61/20. *L. VIRGINICUM* L. [Ref. No. 324.] Cosham, S. Hants, HALL, as *rudérale*. See *Rep. B.E.C.*, 222, 1929. Waste ground, Settle, Yorks, STURDY and FRANKLAND.

†61/22. *L. DENSIFLORUM* Schrad. Tenby, Pembroke, Miss TODD; Par, E. Cornwall, L. T. MEDLIN, ex THURSTON.

†61/28. *L. BONARIENSE* L. Ascot, Berks, DRUCE.

†65/2. *IBERIS UMBELLATA* L. Waste ground, Bideford, N. Devon, DRUCE.

†70/1. *VOGELIA PANICULATA* (L.) Hornem. Dover, E. Kent, J. JACOB.

†76/3. *RAPISTRUM RUGOSUM* (L.) All. Burton-on-Trent, Staffs, DRUCE.

80/2. *RAPHANUS MARITIMUS* Sm. Kilreggan, Dumbarton, Miss G. YOUNG; Llanstephan, Carmarthen, Hon. Mr JUSTICE TALBOT.

88/4. *VIOLA RIVINIANA* Reichb., forma *NEMOROSA* N. W. & M. Lane near Amberley, West Sussex, HALL.

88/6. *V. CANINA* L. × *RIVINIANA* Reichb., forma *MINOR* Murb. Box Hill, Surrey, HALL. Possibly *canina*, var. *ericetorum* Reichb. × *Riviniana*, var. *diversa* Greg. Stenness, Orkney, DRUCE.

88/8. *V. ODORATA* L., type. Maidencombe, S. Devon, HALL.
Var. *DUMETORUM* (Jord.). Stoke-in-Teignhead, Ashton, etc., S. Devon, very frequent, HALL.

Var. *SUBCARNEA* (Jord.). Maidencombe, S. Devon, in an orchard, HALL.

Var. *SULFUREA* (Car.) R. & F. Near Ashton in Teign valley, S. Devon. Native in this station, HALL.

88/9. *V. HIRTA* L. × *ODORATA* L. Maidencombe, Stoke-in-Teignhead, Ashton, and elsewhere in S. Devon, very frequent and variable, HALL; Outershaw, Yorks, DRUCE.

[The PANSIES have been determined by Dr E. DRABBLE.]

88/19. *V. LEJEUNEI* Jord. Very abundant and beautiful in oat crops at Rysa Lodge, Melsetter, etc., Hoy, Orkney, DRUCE.

88/20. *V. LLOYDII* Jord. Pusey, Berks, DRUCE.

88/22. *V. AGRESTIS* Jord. Budleigh Salterton, S. Devon; Newquay, Hayle, W. Cornwall; Minchinhampton, W. Gloster, DRUCE.

88/23. *V. SEGETALIS* Jord. Foxcote, Andoversford, E. Gloster, Miss ABELL.

*88/24. *V. LATIFOLIA* Drabble. Burnham, Bucks; Gangsdown, Oxon, DRUCE.

88/34. *V. CURTISII* Forst. Saunton and Braunton, N. Devon, DRUCE.

*+88/36. *V. HORTENSIS*. Waste ground, Bideford, N. Devon, DRUCE.

+94/5. *GYPSOPHILA ELEGANS* M. Bieb. Welwyn, Herts, H. PHILLIPS.

95/1. *SAPONARIA OFFICINALIS* L. Burnham, Bucks, BASDEN.

Var. *FLORE PLENO*. Frome, N. Somerset, H. W. CLEAR.

+96/6. *SILENE QUINQUEVULNERA* L. Alien, Warwick, B. KING.

+96/16. *S. DICHOTOMA* Ehrh. Near Exeter, S. Devon, Col. WATTS.

+96/20. *S. ARMERIA* L. Welwyn, Herts, H. PHILLIPS.

98/9. *LYCHNIS GITHAGO* (L.) Scop. A few large specimens in an oatfield, Lyness, Hoy, Orkney, shown to me by Miss OLIVIA BARING, DRUCE.

*100/1. *CERASTIUM ERECTUM* (L.) C. & G. St David's, Pembroke, Miss GREEN, ex B. REYNOLDS.

†100/12. *C. TOMENTOSUM* L. Shalbourne, N. Wilts, DRUCE.

101/6. *STELLARIA DILLENIANA* Moench, var. *PARVIFLORA* (Kl. & Richt.) Dr. The green leaved plant, Lichfield, Staffs, R. C. L. BURGESS.

103/2. *SAGINA SUBULATA* (Sw.) Presl. Hayle, W. Cornwall; *Hoy, Orkney, DRUCE.

104/1. *SPERGULA ARVENSIS* L. Hayle, W. Cornwall; luxuriant plants at Farnham, Bucks, DRUCE; Lydford, Somerset, 1850, Mrs TOZER.

104/2. *S. SATIVA* Boenn. Rysa, Hoy, Orkney, the prevailing form, DRUCE.

†108/1. *CLAYTONIA SIBIRICA* L. Lichfield, Staffs, Sir R. CURTIS; Kirkstone Pass, Westmorland, Miss THOMPSON.

109/1. *MONTIA FONTANA* L. Dalwhinnie, Easternness, CORSTORPINE and DRUCE; Fairy Glen, Hoy, Hon. Mrs BARING.

110/1. *TAMARIX GALLICA* L. Rock, E. Cornwall, DRUCE.

112/1. *HYPERICUM ANDROSAEMUM* L. Woody Bay, N. Devon, DRUCE.

†115/2. *ALTHAEA HIRSUTA* L. Burton-on-Trent, Staffs, Sir R. CURTIS.

117/1. *MALVA MOSCHATA* L., var. *GERANIIFOLIA* W. & L. (fl. alba). Stoke Court, Bucks, BASDEN.

†117/4. *M. PUSILLA* Sm. Ryde, Isle of Wight, 1929, LONG; near Dover, E. Kent, JACOB; Great Oakley, Hants, RAYNER. The last was doubted by several botanists and at Zurich they queried it \times *SYLVESTRIS*, but neither Mr E. G. Baker or myself saw any evidence of a hybrid, and we name it as above.

Var. *LASIOCARPA* C. E. S. (det Drabble). Great Oakley, Hants, Dr D. H. SCOTT.

†117/8. *M. PARVIFLORA* L. Welwyn, Herts, PHILLIPS; Newport, Isle of Wight, Miss REYNOLDS, ex LONG; Belstone, S. Devon, 1930, Rev. H. H. HARVEY.

†123/5. *TILIA PETIOLARIS* DC. A large tree in a hedgerow, Lindfield, E. Sussex, Miss PICKARD.

124/1. *RADIOLA RADIOLA* (L.). Logan, E. Cornwall; Rackwick, Hoy, Orkney, DRUCE.

*†127/2. *GERANIUM VERSICOLOR* L. Littlehaven, Pembroke, B. LLOYD.

127/14. *G. ROBERTIANUM* L., var. *LITTORALE* Rouy. Drummore, Wigtown, DRUCE.

128/3. *ERODIUM CICUTARIUM* L'Hérit. Penzance, W. Cornwall, DRUCE, teste DRABBLE.

Var. *PIMPINELLIFOLIUM* (Sibth.). Rock, E. Cornwall, DRUCE.

Var. *LEBELII* (Jord.). Dawlish Warren, S. Devon, Major ORME.

†132/3. *OXALIS STRICTA* L. Farnham Common, Bucks, E. B. BADSEN.

†133/3. *IMPATIENS PARVIFLORA* DC. Farnham Royal, Bucks, E. B. BADSEN; *Lichfield, Staffs, Sir R. CURTIS.

†133/4. *I. GLANDULIFERA* Royle. Budleigh Salterton, S. Devon, DRUCE and Major ORME; Melsetter, Hoy, Orkney, DRUCE.

137/1. *EVONYMUS EUROPAEUS* L., var. *LEUCOCARPUS* Druce. Side of old Canal, Winchester, S. Hants, S. A. McDOWELL.

138/1. *RHAMNUS FRANGULA* L. On shingly side of river at Strathortin, E. Ross, DRUCE and CORSTORPHINE.

150/1. *CYTISUS SCOPARIUS* (L.) Link. Magnificent bushes, 12 feet high, near Facombe, Berks, shown to me by the Hon. Mrs G. BARING, DRUCE.

153/1. *MEDICAGO FALCATA* L. *Hildersham, Cambridge, Miss TODD; Avonmouth, W. Gloster, EVANS.

153/4. *M. HISPIDA* Gaertn. Adventive, Burton-on-Trent, Staffs, DRUCE.

Var. *DENTICULATA* (Willd.). Kenilworth, Warwick, J. LAMB.

Var. *APICULATA* (Willd.). Thetford, W. Norfolk, Miss TODD.

153/7. *M. LUPULINA* L., var. *WILLDENOWIANA* Koch (det. Drabble). Henfield, W. Sussex, E. PAYNE.

155/2. *TRIFOLIUM PRATENSE* L., var. *LEUCOCHRACEUM* A. & P. Nelson, Lancs, TURNER.

155/7. *T. ARVENSE* L., var. *STRICTIUS* Koch. Avonmouth, W. Gloster, EVANS; Maulden, Beds, M. BROWN and J. E. LITTLE, det. DRABBLE.

†155/32. *T. ALEXANDRINUM* L. Burton-on-Trent, Staffs, DRUCE. Named by Dr SCHINZ.

†155/37. *T. RESUPINATUM* L. *SUAVEBOLENS* mod. *PARVIFLORA*, teste P. DE RIENCOURT. Burton-on-Trent, Staffs, DRUCE.

160/6. *LOTUS TENUIS* W. & K. Newquay, W. Cornwall, DRUCE.

†166/6. *ASTRAGALUS ODORATUS* Lam. This is the *A. boeticus* L. of Burton-on-Trent and Bath, where it still persists, teste Dr SCHINZ.

†170/1. *CORONILLA VARIA* L. Coomb Down, Bath, N. Somerset, Sir M. ABBOT-ANDERSON.

173/1. *ONOBRYCHIS ONOBRYCHIS* (L.) Moreton Hampstead, S. Devon, 1850, Mrs TOZER.

176/3. *VICIA CRACCA* L., var. *ELEGANS* Dr. Burton-on-Trent, Staffs, DRUCE.

†176/5. *V. VILLOSA* Roth. Sharpness, W. Gloster, Miss TODD; Chandler's Ford, S. Hants, coll. F. ESCOMBE; comm. HALL.

176/12. *V. SATIVA* L., var. *MACROCARPA* Moris. In a corn crop at Melsetter, Hoy, Orkney, DRUCE. This variety has exceptionally large flowers. Det. E. DRABBLE.

†178/1. *LATHYRUS LATIFOLIUS* L. Salt Hill, Bucks, E. B. BASDEN.

*178/3. *L. TUBEROSUS* L. Old quarries, Slinfold, W. Sussex, P. G. BEAK.

183/2. *PRUNUS PADUS* L. Planted, Shotover, Oxon, Miss PAINE.

184/5. *SPIRAEA DOUGLASHII* Hook. Kinlochewe, W. Ross, DRUCE and CORSTORPINE.

[All the RUBI have been kindly determined by Mr Wm. WATSON.]

*185/2. *RUBUS NESSENSIS* W. Hall. Low Garden, Den of Airlie and below Reekie Linn, Angus, July 1927, CORSTORPINE. First certain record for Angus.

185/4. *R. ROGERSII* Linton. Abundant on Greenham Common, Berks, June 1931, DRUCE; *roadside near Newtyle, Angus, July 1926, CORSTORPINE.

185/11. *R. CARIENSIS* Rip. & Genev. Corfe Common, Dorset, 1916, CUMMING; as *cyclophyllus*.

185/13(2). *R. LAETUS* W. Wats in Journ. Bot., 344, 1930. Near Llanwnda Station, Carnarvon, August 1889, J. E. GRIFFITH, as *argentatus* P. J. M.; Siliwen Woods, Bangor, Carnarvon, June 1896, J. E. GRIFFITH, as *mollissimus* Rogers, teste W. M. R.; Gowertar to Pen-clawdd, Glamorgan, July 1892, E. F. LINTON, as *gratus* Focke; Beauly, Easternness, August 1889, DRUCE.

185/14. *R. IMBRICATUS* Hort, var. *LONDINENSIS* Rogers. Boldu Wood, New Forest, S. Hants, 1907, CUMMING; [Ref. No. 245] field border near Perranzabuloe Church, W. Cornwall, August 1923, F. RILSTONE, as *ramosus* Briggs. See *Rep. B.E.C.*, 433, 1930.

185/14(2). *R. INCARNATUS* P. J. M. Northleigh, Oxon, DRUCE, as *thyrsoides*, det. W. M. R.

185/16. *R. CARPINIFOLIUS* Weihe. Boars Hill, Berks, 1925, DRUCE, as *criniger* Lint., det. RIDDELSDELL; ditto [Ref. No. 1372], H. J. RIDDELSDELL; near Llandudno, Carnarvon, 1931, H. FOSTER.

185/17. *R. INCURVATUS* Bab. Bangor, Carnarvon, July 1904, A. LEY, as *hesperius* Rogers, forma; Tadmarton, Oxon, DRUCE.

185/18(3). *R. PERARMATUS* W. Wats. in *Rep. B.E.C.*, 424, 1930. Aconbury, Hereford, September 1904, A. LEY, as *Salteri*.

185/20. *R. CRYPTADENES* Sudre. Killibury Camp, E. Cornwall; Bideford, N. Devon; Cornwood, S. Devon, DRUCE.

185/20. *R. BIPARTITUS* Boul. & Bouv. [Ref. No. 2050.] Witley, Surrey, July 6, 1897, E. S. MARSHALL.

185/21. *R. OPLOTHYRSUS* Sudre. Midhurst and Burton, Sussex, 1931, WATSON. N.C.R.

185/24. *R. OXYANCHUS* Sudre. Poole Harbour, Dorset, 1907, W. M. ROGERS, as *nemoralis* P. J. M.; Wood Perry, Oxon, DRUCE ("I think *rhomboidalis* Weihe"—W. M. R.).

Var. *SILURUM* (Ley). Cwn Nees, Radnor, 1908, CUMMING; Peat Moor, north of Shapwick, N. Somerset, September 9, 1891, J. W. WHITE, as *carriensis* R. & G.

185/25. *R. CARDIOPHYLLUS* L. & M. Clifton Down, Bristol, W. Gloucester, August 4, 1907, J. W. WHITE, as *rhamnifolius*; Bracknell, Berks, 1931, DRUCE.

185/26. *R. SCHEUTZII* Lindeb. Saintfield, Co. Down, August 2, 1902, C. H. WADDELL, as *leucostachys* forma. The Rev. W. M. Rogers remarked of this, "An abundant form in Co. Down and in E. Armagh . . ." New to Ireland. Kelso, Roxburgh, 1910, Miss I. M. HAYWARD.

185/27. *R. BAKERI* F. A. Lees. Brailsford, S. Derby, August 1888, W. R. LINTON, as *leucandrus* Focke. "Very near my *leucandrus*, which has, however, white flowers."—Dr FOCKE.

185/28. *R. DUMNONIENSIS* Bab. Rempstone Heath, Dorset, 1916, CUMMING, as *rusticanus* × *leucostachys*, teste W. M. R.; Fairmile Common, Surrey, 1903, A. H. WOLLEY-DOD, as *thyrsoides* Wimm. ?First correct record for Surrey.

185/29. *R. POLYANTHEMUS* Lindeb. Old quarry on Howle Hill, near Ross, Hereford, July 1859, W. H. PURCHAS. "I think this is *R. carpinifolius*."—Prof. BABINGTON. "*R. rhombifolius* Weihe or very near it."—Dr FOCKE. (See *Rep. B.E.C.*, 104, 1880.) [Ref. No. 2194.] Boxted Heath, N. Essex, August 5, 1924, G. C. BROWN, as "? *R. Questierii* L. & M."

185/31. *R. LINDEBERGII* P. J. M. Blairgowrie, E. Perth, 1899, DRUCE, as *danicus*, det. W. M. R.; *north side of Forfar Loch, Angus, September 1931, CORSTORPHINE.

Forma UMBROSA. Threlkeld, Keswick, Cumberland, July 1906, W. M. ROGERS, as *lacustris* Rogers; coppices at Glencoign, west bank of Ullswater, Cumberland, August 1917, S. H. BICKHAM, as *lacustris* Rogers. (*R. lacustris* Rogers is in Mr Watson's opinion only the form which *R. Lindebergii* assumes in shade.)

185/33. *R. MERCICUS*, var. *BRACTEATUS* Bagnall. Hermitage, Berks, DRUCE, ? N.C.R.; the Boar's Hill plant so identified being *R. egregius* Focke.

185/34. ? *R. CHLOROTHYRSUS* Focke. S. Briavels, W. Gloster, September 1903, A. LEY, as *macrophyloides* Génév.

185/35. *R. VILICAULIS* Koehl. Banks of the Halthwistle Burn, between South Tyne Colliery and Lees Hall, Haltwhistle, Northumberland, October 1896, C. BAILEY, as allied to *macrophyllus* W. & N., teste W. M. R.; Cooper's Hill, E. Gloster, July 10, 1920, H. J. RIDDELSDELL, as *hirtifolius*, var. *mollissimus* Rogers.

Var. *INSULARIS* (Aresch.). Bank, Brecon Road Station, Radnor, August 1898, A. LEY, as *villicaulis* Koehl. type, teste W. M. R.; Duckington Dingle, Cheshire, August 12, 1907, [No. 1637], A. H. WOLLEY-DOD, as *hypoleucus* forma.

185/35(2). *R. RECTANGULATUS* Maass. Woodlands, Dorset, July 1893, R. P. MURRAY, as *R. stereacanthus* P. J. M., *Rep. B.E.C.*, 1893. (*R. stereacanthus* perhaps = *R. rectangulatus*; see *Rep. B.E.C.*, 1931.)

185/37. *R. SELMERI* Lindeb. Southbourne, Sussex, 1919, CUMMING, as *nemoralis*, det. RIDDELSDELL; Falls of Leny, E. Perth, 1920, Miss I. M. HAYWARD.

185/40. *R. RHOMBIFOLIUS* W. & N. Boar's Hill, Berks, 1925, RIDDELSDELL & DRUCE; Shotover, Oxon, 1896, DRUCE. "I have seen a specimen of *R. vulgaris*, var. *rhombifolius* W. & N., collected by G. Braun off the Lias near Volmerdingsen in Weihe's district, and these specimens from Boar's Hill and Shotover are identical with it. Rogers' and Riddelsdell's '*R. incurvatus*, var. *subcarpinifolius*,' is thus the true *R. rhombifolius* Weihe & Nees."—WATSON. Banbury, Oxon, 1899; Derrynane, Co. Kerry, 1906, DRUCE; valley above Lower Wych, Cheshire, August 1903, A. H. WOLLEY-DOD, as *silvaticus* W. & N., teste W. M. R.; near the Chequers, Bucks, DRUCE, as *Selmeri* Lind., teste W. M. R.

Forma UMBROSA. Royal Common, Elstead, Surrey, 1908, CUMMING, as ? *Salteri*.

Forma APRICA. Vron, N. Radnor, 1908, CUMMING; Enborne Street, Berks, DRUCE; Boar's Hill, Berks, 1894, Dr FOCKE, as *pyramidalis*.

185/41(2). *R. SCIAPHILUS* Lange. Llanwrtyd, Brecon, July 13, 1896, A. LEY as *hirtifolius* M. & W.; Ludford, Hereford, September 6, 1894, A. LEY as *hirtifolius* M. & W.; Biddulph Hall, Staffs, August and September 1889, W. H. PAINTER as *pyramidalis*, teste FOCKE.

185/42. *R. LEUCANDRUS* Focke (assuming that the flowers were white). Parkstone, Dorset, July 11, 1900, W. M. ROGERS as *leucanthemus* P. J. M.

185/43. *R. RAMOSUS* Briggs. Bransgore, S. Hants, June 1905, coll. H. FISHER, comm. W. M. ROGERS as *leucandrus* Focke.

185/45(3). *R. PROPINQUUS* P. J. M. Les Marais et Fauvie, Jersey, 1897, W. M. ROGERS as a weak form near type *Radula* Weihe; "Exactly the same as the Herefordshire '*R. argentatus*' of the Set of British Rubi, No. 30," WATSON. Pengethley, Hereford, August 1891, A. LEY; St Andrews, Guernsey; Moreton Hampstead, S. Devon, June 1911, DRUCE.

185/47. *R. ULMIFOLIUS* Schott, var. *CONTRACTIFOLIUS* (Sudre). Newnham, Northants; Curridge, Berks, DRUCE.

185/49. *R. HEREFORDENSIS* Sudre. Bishop's Wood Estate, Ross, Hereford, 1907, CUMMING as *glabratus*; May Hill, W. Gloster, 1908, CUMMING; Wenlock Edge, Shropshire, August 4, 1904, A. LEY as *lasioclados* Focke, teste W. M. R.

185/49(2). *R. CURVISPINUS* W. Watson. Road from Christchurch to St Catherine's Hill, S. Hants, 1907, CUMMING as *dumnoniensis*.

185/52. *R. LENTIGINOSUS* Ed. Lees. Near Llanberis, Carnarvon, September 1887, J. E. GRIFFITH as *rubicolor* Blox. MS., teste BABINGTON; May Hill, W. Gloster, 1900, CUMMING, specimens with stamens 7-8 mm. long, a good deal exceeding the styles. The type has stamens half as long as the styles, but a form is also frequent with the stamens of the same length as the styles.

*185/53(2). *R. SCANICUS* Areschoug. See *Rep. B.E.C.*, 783, 1928. Burnham, Bucks, 1931, DRUCE. The second station in Great Britain.

185/54. *R. MOLLISSIMUS* Rogers. [Ref. No. 422.] Rocky Hillside, Langreck, Polperro, E. Cornwall, 1926, F. RILSTONE as *hirtifolius*, det. by RIDDELSDELL as forma.

185/56. *R. SCHLECHTENDALII* Weihe. ("Not the var. *anglicanus* of Sudre, but Weihe's type = Questier's *R. Schlechtendalii* in Billot

Exsicc. No. 1469, Aisne."—Wm. Watson). Wing, Bucks, DRUCE, thought by W. M. Rogers to be *rhombifolius* Weihe.

185/59(2). *R. CRUDELIS* W. Watson (sp. ined.) = *R. COLEMANNI* Rogers pro max. parte, non Bloxam. Near Ilfracombe, N. Devon, July 1931, DRUCE.

185/62. *R. SUBINERMOIDES* Druce. Forest of Dean, W. Gloster, 1908, CUMMING.

185/63. *R. ADSCITUS* Génév. Grisnez, Jersey; Alderney, det. as *andegavensis* Bouv. by Focke; Sark, 1906, as *macrophyloides*; probably this, Shotover, Oxon, DRUCE.

185/65. *R. IRICUS* Rogers?. Par, E. Cornwall, 1931, DRUCE.

Var. *MINOR* R. & R. Perhaps this, Lydford, N. Somerset, CUMMING.

185/66. *R. PYRAMIDALIS* Kalt. Middle Marwood, N. Devon, July 1892, W. H. PAINTER as *macrophyllus* W. & N.

185/66. *R. HIRTIFOLIUS* M. & W. ("Not the bramble described under that name in the *Handbook*, which is, I think, *R. sciaphilus* Lange; nor the bramble issued under that name in the Set of British Rubi, which is *R. melanocladus* Sudre, but the plant of Müller and Wirtgen. I have gathered it on Mousehold Heath near Norwich, and described it in the *London Naturalist* for 1929."—WATSON). Hedges, Nantymwyn, Carmarthen, August 1897, A. LEY as *R. Questierii* L. & M., teste W. M. R.; Holm Lacey, Hereford, July 27, 1897, A. LEY as *danicus*; Ystalyfera, Glamorgan, July 11, 1906, H. J. RIDDELSDELL, as *lasiocladus*, var. *longus* Rogers & Ley; Llandewi-Skirrid, Monmouth, August 29, 1909, A. LEY as *lasiocladus*, var. *longus* Rog. & Ley.

185/67. *R. VESTITUS* W. & N. Bourton Woods, E. Gloster, August 18, 1921, RIDDELSDELL, as *anglosaxonicus*, var. *vestitifformis* Rogers.

185/69. *R. LEUCOTRICHUS* Sudre, forma *UMBROSA*. Colwyn Bay, Denbigh, September 2, 1915, S. H. BICKHAM.

*185/71. *R. MACROTHYRSUS* Lange. Berehaven, Co. Cork, DRUCE. New to Ireland.

185/72. *R. LASIOCLADOS* Focke. Mr Watson suggests that a plant from Alderney, DRUCE, is this.

Var. *ANGUSTIFOLIUS* Rogers. Near this, Dinmore, Hereford, September 22, 1892, A. LEY, as *pyramidalis* var.; Tidenham Chase, W. Gloster, August 31, 1910, A. LEY, as *iricus*; Tilehurst, Berks, DRUCE.

185/73. *R. EGREGIUS* Focke (type). Sandhurst, Berks, 1895, DRUCE.

*Var. *EFFEMINATUS* Focke (founded on examples gathered in Oxfordshire). [Ref. No. 1183.] Shotover Hill, Oxon, July 1925, H. J. RIDDELS-

DELL, as *hesperius* Rogers. [Ref. No. 1002], Tremadoc, Carnarvon, September 1922, W. C. BARTON, as *hesperius* Rogers; [Ref. No. 1986], Stanway, N. Essex, 1923, G. C. BROWN, as *criniger* Linton, teste RIDDELSDELL; Beacon Hill Woods, Monmouth, July 4, 1893, A. LEY, as *orthoclados*; Open Heath, Beacon Hill, Monmouth, July 23, 1897, A. LEY, as *orthoclados* var.; near Perfeddcoed, Bangor, Carnarvon, October 1891, J. E. GRIFFITH, as *vestitus* var., fide Dr FOCKE.

185/80. *R. MUCRONIFER* Sudre. Near Presteign, Hereford, July 27, 1897, A. LEY, as *danicus*; specimens from a plant brought from the original station and grown at Astonfield Vicarage, October 1888, W. H. PURCHAS, as *Purchasii* Blox. (In the *Handbook* Rogers conjectures that *R. Purchasii* was a "weakly armed local form of *R. Drejeri*."). *Dun, Angus, August 1917, CORSTORPHINE.

185/81. *R. MUCRONATOIDES* Ley. Bolston Wood, Hereford, July 31, 1907, A. LEY, as *Lettii*.

185/83(2). *R. GELERTII* Frider. Shotover, Oxon, DRUCE. The true plant.

185/83(3). *R. CHAEROPHYLLOS* Sagorski & W. Schultze. *Brodie, Nairn, DRUCE. The Rev. W. M. Rogers said of it, "*R. mucronatoides* Blox., a var. common in the Callander neighbourhood, West Perth." "This is an abundant plant in the Forest of Blean to the west of Canterbury, flowering in the last week of July. I am glad to see it from so far north."—W. WATSON *in lit.* *Cwm Einon, Cardigan, July 18, 1907, W. H. PAINTER, as *Lettii*.

185/84. *R. APICULATUS* Weihe. [Ref. No. 405.] Roadside near Trewarder, between Polperro and Polruan, E. Cornwall, 1926, F. RILSTONE, as *hystrix*, teste RIDDELSDELL; Twelve O'clock Drive, Warwick, 1920, CUMMING, as *Radula*; coppice near Castle Place, Pulverbach, Salop, 1895, R. DE G. BENSON, comm. W. M. ROGERS, as *Borreri* forma; [Ref. No. 408], roadside near Sandplace Station on way to Dunloe, E. Cornwall, 1926, F. RILSTONE, as *Borreri*, teste RIDDELSDELL.

Var. *CURVIDENS* (Ley). Twelve O'clock Drive, Coombe Wood, Warwick, 1908, CUMMING, as an uncharacteristic form of *R. dasycyphyllus* W. M. R.; near Llanberis, Carnarvon, August 1892, J. E. GRIFFITH, as *pyramidalis* Kalt., teste W. M. R.; same place, 1899, DRUCE; Tidenham Chase, W. Gloster, July 28, 1917, RIDDELSDELL, as *leucostachys* × *rusticanus*.

Var. *VESTITIFORMIS* (Rogers). Woods, Dinmore, Hereford, September, 1892, A. LEY, as *pyramidalis* var. ?; in lane to Potterne, south of Devizes, N. Wilts, July 1893, C. BAILEY, as *pyramidalis*; [Ref. No. 584], Portmadoc, Carnarvon, September 6, 1922, W. C. BARTON, as *leucostachys*, var. *macrothyrsus* Lange; Moun-ton, Monmouth, October 1891, W. A. SHOOLBRED, as *adscitus* Génév.; Ulverscroft Lane, near Mill, Leicester, August 1, 1904, W. BELL, as *leucostachys*, teste W. M. R.; Glynhir,

Carmarthen, July 16, 1896, A. LEY, as *gymnostachys* Génév., teste W. M. R.; near Brynllwyd, Bangor, Carnarvon, September 1886, J. E. GRIFFITH, as *leucostachys* var.; Bolston Wood, Hereford, August 24, 1901, A. LEY, as near *Lettii*, teste W. M. R.; Nuneham, Oxon, DRUCE (confirms the doubtful record in *Fl. Oxon.*, 140, 1927); Harley Wood, Oxon, 1884; Bagley, Berks, 1882; Hunsbury Hill, Northants, DRUCE; Ashby St Ledgers, Northants, August 6, 1921, RIDDELSDELL, as *lasioclados*, going off towards this.

*185/84(2). R. BADIUS Focke. See Rep. B.E.C., 436, 1930. Coggs Wood, Oxon, DRUCE. "I suppose *hirtifolius* M. & W."—W. M. ROGERS *in lit.* *Hyde Heath, Bucks, DRUCE—"I suppose a bald-stemmed specimen of *R. pyramidalis* Kalt."—W. M. ROGERS *in lit.* Lane by Swithland Wood, and Cross Lane by Lea Lane, Leicestershire, August 5, 1899, W. M. R. as *R. Salteri*.

185/85. R. FURVICOLOR Focke. Dalmally, Argyll, 1898, DRUCE.

185/86. R. INFESTUS, var. VIRGULTORUM (Ley). Sutton Park, Warwick, 1895, DRUCE, as *infestus*, teste W. M. R.

185/88. R. BORRERI Bell Salt. [Ref. No. 404], Polperro, E. Cornwall, June 22, 1926, F. RILSTONE, as *mucronatoides* Ley, det. as forma by RIDDELSDELL; Tilehurst, Berks, DRUCE, "Recalls both *Boraeanus* and my *Griffithianus*, without appearing to quite suit either."—W. M. R.; Cave Hill, Antrim, 1898, DRUCE, as *pyramidalis*, det. W. M. R.; Osmaston, near Shirley, Derby, August 26, 1891, W. R. LINTON, as *vestitus* f.

Var. DENTATIFOLIUS Briggs. Perranarworthal, W. Cornwall, July 15, 1911, F. HAMILTON DAVEY, as *plinthostylus*.

185/89. R. DREJERI G. Jensen. Probably this, Barnwell Wold Wood, Northants, 1918, CUMMING, as *Bloxamianus*; Bradley, S. Derbyshire, September 20, 1888, W. R. LINTON, as *Purchasii*.

Var. LEYANUS (Rogers). *Dun's Dish, Angus, August 1927, CORSTORPINE. New to Scotland. Bank by stream, Polperro, E. Cornwall, July 28, 1922, F. RILSTONE, as *Gelertii*, det. RIDDELSDELL; Whiteleigh near Tamerton Folliott, S. Devon, August 1888, T. R. ARCHER BRIGGS, as *Purchasii*; Iver, Bucks, 1898, DRUCE, as *mucronatus*, det. W. M. R.; ? near Grasby, N. Lincoln, A. LEY, as *podophyllus* P. J. M.

Var. HIBERNICUS (Rogers). Durdham Down, Bristol, W. Gloster, J. W. WHITE, as *R. Drejeri*. New to England.

185/90. R. RADULA Weihe. South Newington Hill, Oxon, 1919, H. J. RIDDELSDELL, as sub-sp. *anglicanus* Rogers; Brewery Field, Penrith Road, Keswick, Cumberland, R. S. STANDEN, as *dasyphyllus*, teste W. M. R.; Kelso, Roxburgh, 1910; Clovenfords high-road near Plantation, Selkirk, 1910, Miss I. M. HAYWARD.

Var. *ECHINATOIDES* (Rogers). Sibford, Oxon, 1915, H. J. RIDDELSDELL, as *dumetorum* × *echinatus*.

185/91. *R. ERICETORUM* Lefèv. Between Woodford and Preston Capes, Northants, 1918; Somerleyton, E. Suffolk, 1899, CUMMING.

185/92. *R. ECHINATUS* Lindley. Ballards Copse, Heyford, and Hook Norton, Oxon, 1919, H. J. RIDDELSDELL, as *Radula*, var. *echinatoides* Rogers; Market Rasen Wood, N. Lincoln, 1907, CUMMING; *Heughead Den, Angus, July 1926, CORSTORPHINE.

185/93. *R. RUDIS* W. & N. Bishop's Wood Estate, Ross, Hereford, 1907, CUMMING.

185/94. *R. GENOMANENSIS* Sudre. [Ref. No. 431.] Rocky hillside, Langreek, Polperro, E. Cornwall, July 1926, F. RILSTONE, as *scaber*, det. by RIDDELSDELL as forma.

185/99. *R. MELANODERMIS* Focke. Budleigh Salterton, S. Devon, 1931, DRUCE.

185/99(2). *R. HETEROBELUS* Sudre. Bank above R. Lugg, near Aymestrey, Hereford, September 9, 1905, S. H. BICKHAM and A. LEY, as *anglosaxonicus* approaching *raduloides*. " = ' *R. praeruptorum* ' cit. Boulay, Wareham, Dorset, issued as No. 15 in Set of British Rubi, and considered by Rogers ' a very marked plant ' in *Journ. Bot.*, 82, 1895 (which it certainly is). It beats me how it came to be confused with the ' *R. praeruptorum* ' cit. Boulay of Babington Manual, ed. 8, which = *R. pygmaeus* of Bab. Brit. Rubi, and is really *R. hylonomus* M. & L., a Bellardian. In *Journ. Bot.*, 321, 1907, A. LEY records ' *R. praeruptorum* Boulay? ' for Herefordshire and Worcestershire, ' identical with the Dorset bramble. ' "—WM. WATSON, 1932, *in lit.*

185/100. *R. BABINGTONII* Bell Salt. Hurstmonceaux, Sussex, 1899, DRUCE.

185/100(2). *R. DIVERSUS* W. Watson. Abbey Wood, Okehampton, N. Devon, 1915, CUMMING, as *hirtus* agg.; Brandon Wood, Warwick, 1915, CUMMING, as *hirtus* forma; King's Wood, Yatton, N. Somerset, 1915, Miss I. M. ROPER, as *hirtus*, var. *Kaltenbachii* Metsch.

185/102. *R. LEJEUNEI* W. & N. Possibly this from Sligo, DRUCE; *Abbey Wood, Okehampton, N. Devon, CUMMING.

*185/104(2). *R. RADULICAULIS* Sudre. Grays, Oxon, DRUCE. The Rev. W. M. ROGERS thought it recalled *Gelertii*.

185/109(2). *R. HYLONOMUS* L. & M. *Todenham, E. Gloster, 1915, H. J. RIDDELSDELL, as *hostilis* M. & W.; Bognor Common near Fittleworth, W. Sussex, 1914, CUMMING, as *serpens*.

185/110. *R. fuscus* Weihe. [Ref. No. 1092.] Ardleigh, N. Essex, G. C. BROWN as ? *dumetorum* × *dasyphyllus*; *Badby, Northants, 1921, CUMMING, as *rudis*, det. as *rudis* (with hairy stem) by RIDDELSDELL; Stanford Park, Worcester, August 23, 1910, A. LEY, as *Boraeanus* Génév.

Var. *HYOSERICUS* Sudre. Okehampton, N. Devon, 1931, DRUCE; between Willenhall and Binley, Warwick, 1921, CUMMING, as *anglicanus*; near Chard, S. Somerset, August 19, 1892, R. P. MURRAY, as *macrothyrsus* Lange, teste FOCKE; Glynhir, Carmarthen, July 16, 1896, A. LEY, as *leucostachys*, var. *gymnostachys*; Upper Bangor, Carnarvon, September 10, 1905, S. H. BICKHAM and J. E. GRIFFITH, as *leucostachys*, var. *gymnostachys*.

185/111. *R. pallidus* Weihe, var. *leptopetalus* Rogers. Wood at Graines near Whitbourne, Hereford, 1907, A. LEY, as *viridis* Kalt.

185/114. *R. horridicaulis* P. J. M. Wood, Pontyclun, Glamorgan, August 8, 1908, H. J. RIDDELSDELL, as ? *scaber*.

185/115. *R. scaber* Weihe. Haydn, Lead Mine, Northumberland, Miss I. M. HAYWARD.

185/118. *R. longithyriger* Bab. Wood by Titley Station, Hereford, 1908, CUMMING.

185/120. *R. foliosus* Rogers. Haydn Bridge, Old Lead Mine, Northumberland, 1913, Miss I. M. HAYWARD.

Var. *SALTUUM* Focke. Harrow Weald Common, Middlesex, 1883, W. R. LINTON, as *R. Guntheri* Weihe; probably this, Burnham, Bucks, 1931, DRUCE.

185/122. *R. rosaceus* Weihe. Bedham to Fittleworth, W. Sussex, 1914, W. M. & F. A. ROGERS, as *durotrigum* R. P. M.

*Var. *PURCHASIANUS* Rogers. Lyndhurst, S. Hants, 1919, CUMMING, as *hirtus* forma.

*Var. *SCABRIPES* (Génév.) Sudre. Coombe Wood, Warwick, 1908, CUMMING, as *rosaceus*; *Seer Green, Bucks, DRUCE.

185/123. *R. hystrix* Weihe. Abbeywood, Okehampton, N. Devon, 1915, CUMMING, as *Bellardi*, "panicle not typical."—W. M. R.

Forma *UMBROSA*. Frankton Wood, Warwick, 1908, CUMMING.

Forma *INCANA*. Brandon Wood, Warwick, 1902, CUMMING, as *viridis*.

185/127. *R. hostilis* M. & W. Head's Nook, Cumberland, 1913, Miss I. M. HAYWARD.

185/128. *R. fuscoater* Weihe. Wood near Brandon, Warwick, 1913, CUMMING; Nuneham and Bladon, Oxon, DRUCE.

185/133. *R. Marshalli* F. & R. Near Shillingstone, Dorset, CUMMING, as *dumetorum*, var. *diversifolius*.

185/137. *R. ANGUSTIFERONS*, var. *PALLIDISETUS* Sudre. Doward Wood, Hereford, 1907, A. LEY and CUMMING, as *diveaxiramus*.

*185/145. *R. TERETICAULIS* P. J. M. Possibly this, Haywood, Warwick, 1877, J. E. BAGNALL, as *Briggsii*, var. *Bagnallii* Blox.; Weekley Hall Woods, Northants, 1916, G. CHESTER, as *flaccidifolius* P.J.M.; Berechurch, N. Essex, G. C. BROWN, as *viridis*, teste RIDDELSDELL. N.C.R. in each case.

185/149. *R. DUMETORUM*, var. *FEROX* Rogers. Near Preston Capes, Northants, 1908, CUMMING.

Var. *DIVERSIFOLIUS* (Lindl.). Doward Wood, Hereford, 1907, CUMMING.

Var. *CONCINNUS* Warren. Hook Norton, Oxon, 1919, H. J. RIDDELSDELL, as *Balfourianus* Blox.

185/151. *R. CORYLIFOLIUS* Sm., var. *CONJUNGENS* Bab. Bircholt, Lincoln, 1907, A. LEY and CUMMING, as *podophyllus* P. J. M. forma, det. W. M. R.; Clovenfords, Selkirk, Miss I. M. HAYWARD; *Will's Braes and Duntrune Den, near Dundee, Angus, September, 1926, CORSTORPHINE.

185/151. *R. CORYLIFOLIUS*, var. *SUBLUSTRIS* × *POLYANTHEMUS*. Brimpton Common, Berks, 1931, DRUCE. "I have not seen this cross before, but know that both species are a good deal given to crossing. The short, deep red prickles on the flowering branch and clothing of the leaves are evidence of *sublustris*; the leaflets of the stem, of *polyanthemus*."—W. Watson *in lit*.

185/152. *R. BALFOURIANUS* Blox. Limpsfield Common, Surrey, 1913, H. E. FOX, as *Drejeri*, teste LINTON.

185/153. *R. CAESIUS* L. × *CRYPTADENES*. [Ref. No. 440.] South Tawton Quarries, N. Devon, 1919, W. C. BARTON, as *dumetorum* × ?.

× *ULMIFOLIUS*. Between Kilsby and Watford, Northants, 1913, CUMMING.

*187/2. *GEUM INTERMEDIUM* Ehrh. Shebeek, Pembroke, C. OLDHAM and B. LLOYD.

190/8. *ALCHEMILLA ALPESTRIS* Schmidt. Dalnaspidal, E. Perth, DRUCE and CORSTORPHINE.

f. *VEGETA* Jaq. Melsetter; Hoy, Orkney, DRUCE.

†192/1. *ACAENA ANSERINIFOLIA* (Forst.) Dr. Naturalised at Budleigh Salterton, S. Devon, where it was shown to me by Major ORME, DRUCE; Trendlemere Down, S. Devon, E. D. MORGAN.

194/6. *ROSA CANINA* L., var. *SPURIA* (Puget). Untypical, Godstow, Oxon, DRUCE.

194/10. *R. DUMBTORUM* Thuill., var. *ERECTA* W.-Dod. Wytham, Berks, 1930, DRUCE.

194/16. *R. AGRÆSTIS* Savi. Birtley, Co. Durham, HESLOP-HARRISON.

194/19. *R. SCABRIUSCULA* Winch. Marlborough, N. Wilts, Mrs WEDGWOOD.

194/19. *R. TOMENTOSA* Sm. Frilford, Berks, DRUCE.

Var. *DIMORPHIA* (Déségl.). Princes Risborough, Bucks, 1902, DRUCE.

†194/26. *R. RUGOSA* Thunb. Sandy coast, Rock, E. Cornwall, DRUCE. The Rev. W. W. Mason had seen it there previously. Sand dunes, Formby, S. Lancs, R. E. D. BAKER.

195/5. *PYRUS AUCUPARIA* (L.) Ehrh., var. *GLABRA* (Gilib.) Trautv. Inverness, Mrs WEDGWOOD.

195/9. *P. INTERMEDIA* Ehrh. Melsetter, Hoy, Orkney, DRUCE; banks of Ness, Inverness, DRUCE and CORSTORPHINE.

195/10. *P. PORRIGENS* Hedl. ? Brightwell, Oxon. A rather distinct-looking form, practically barren, which DRABBLE says seems nearest to *porrigens* on leaf-characters, DRUCE.

195/13. *P. ARIA* (L.) Ehrh. Banks of Ness, Inverness, 1931, DRUCE and CORSTORPHINE. Less white under the leaf than our English plant.

195/14. *P. LATIFOLIA* (Lam.) Syme. Bank of the Ness, Inverness, DRUCE and CORSTORPHINE. We were kindly directed to this locality by Mrs Wedgwood.

†197/2. *COTONEASTER MICROPHYLLUS* Wall. Woody Bay, N. Devon, DRUCE.

199/24. *SAXIFRAGA UMBROSA* L. Woody Bay, N. Devon, DRUCE.

211/2. *SEDUM RUPESTRE* L. Betty Head, S. Devon, DRUCE.

*211/4. *S. FORSTERIANUM* Sm. Woody Bay, N. Devon, DRUCE. Det. DRABBLE.

*211/7. *S. ALBUM* L. Nether Bigging, Firth, Orkney, Col. H. H. JOHNSTON.

†211/20. *S. STOLONIFERUM* S. T. Gmel. Well established at Henfield, W. Sussex, E. PAYNE.

213/1. *DROSERÆ ANGLICA* Huds. Pegal Burn, Hoy, Orkney, 1931, DRUCE.

*213/1. *D. OBOVATA* M. & K. *D. ANGLICA* × *ROTUNDIFOLIA*. Holmsley, S. Hants, HALL.

- 217/1. *CALITRICHES STAGNALIS* Scop., var. *SERPYPHILIFOLIA* (Kuetz.). Gerrards Cross, Bucks, DRUCE. Det. DRABBLE.
- 219/2. *LYTHRUM HYSSOPIFOLIA* L. Near Farnham, Bucks, E. B. BASDEN. A rare plant in Bucks, last seen in the County fifty years ago. I was shown this plant by Mr Basden, DRUCE.
- 220/5. *EPILOBIUM TETRAGONUM* L. Hayle, W. Cornwall, DRUCE; Burnham, Bucks, BASDEN.
- 220/6. *E. LAMYI* F. Schultz, fide Drabble. Ewelme Churchyard, Oxon, DRUCE.
- 220/8. *E. ROSEUM* Schreb. Thames Bank, Middlesex; Symonds Yat, W. Gloster, Miss TODD.
- 221/1. *LUDVIGIA PALUSTRIS* (L.) Ell. Shown to me near Lyndhurst, S. Hants, in a new locality hitherto unrecorded, in great abundance, HALL.
- +223/1. *OENOTHERA BIENNIS* L. Newquay, W. Cornwall, DRUCE; Maulden, Beds, 1931, Miss M. BROWN and J. E. LITTLE.
- +240/1. *ASTRANTIA MAJOR* L. Chedworth, E. Gloster, J. E. SPOONER.
- +240/3. *A. MAXIMA* Pall. (*A. HELLEBORIFOLIA* Salisb.) Crianlarich, M. Perth, Mts WEDGWOOD.
- 245/3. *BUPLEURUM ROTUNDIFOLIUM* L. Newbold on Avon, Warwick, J. LAMB.
- 247/3. *A. NODIFLORUM* (L.) H. G. Reichb., var. *OCHEREATUM* (DC.) Dr. Hayle, W. Cornwall, DRUCE. A pretty form.
- 247/5. *A. INUNDATUM* (L.) H. G. Reichb. Rackwick, Hoy, Orkney, DRUCE.
- +249/2. *AMMI VISNAGA* Lam. Port Meadow, Oxon, GAMBIER PARRY.
- 250/3. *CARUM PETROSELINUM* (L.) B. & H. In great plenty in a lane at Rock, E. Cornwall, Rev. W. W. MASON.
- +252/1. *PRIONITIS FALCARIA* (L.) Dum. Newbold on Avon, Warwick, J. LAMB.
- 255/2. *PIMPINELLA SAXIFRAGA* L., var. *DISSECTA* With. Assenton, Oxon, DRUCE.
- 261/1. *CHAEREFOLIUM SYLVESTRE* (L.) S. & T., var. *ANGUSTISECTUM* Druce. This is the prevailing plant of Orkney, Sutherland, Caithness and Inverness. A curious form with narrow leaflets.

- 265/5. *OENANTHE SILAIFOLIA* Bieb. Glynde, Sussex, Miss PICKARD.
- 265/6. *O. LACHENALII* G. Gmel. Newbold on Avon, Warwick, J. LAMB.
- 269/1. *SILAUM SILAUS* (L.) S. & T. Guildford, Surrey, F. CLARKE.
- 271/1. *LIGUSTICUM SCOTICUM* L. Aith Head, S. Walls, Orkney, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL.
- †275/1. *ARCHANGELICA ARCHANGELICA* (L.). Canal-side, Warwick Square, N.W.3, Middlesex, DRUCE.
- 276/3. *PEUCEDANUM SATIVUM* (L.) B. & H., var. *EDULE* (DC.). Glynde, E. Sussex, Miss PICKARD.
- †276/4. *P. GRAVEOLENS* (L.). Welwyn, Herts, H. PHILLIPS.
- †277/1. *HERACLEUM MANTEGAZZIANUM* S. & L. Waste ground, Bideford, N. Devon, DRUCE.
- *283/2. *CAUCAULIS DAUCOIDES* L. Settle, Yorks, new to v.-c. 64, H. H. STURDY.
- 283/8. *C. LATIFOLIA* L. Maes Howe, Pomona, Orkney, 1931, DRUCE.
- 284/1. *HEDERA HELIX* L., var. *BOREALIS* Dr. Woody Bay, N. Devon, DRUCE.
- 287/2. *SAMBUCUS NIGRA* L., var. *OVALI-FRUCTU* Druce. Westcott Barton, Oxon, DRUCE.
 Var. *VIRIDIS* Ait. Tingley Wood, Herts, Miss M. BROWN and LITTLE.
 Var. *LACINIATA* L. Near Walsall, Staffs, ex Sir R. CURTIS.
- 287/3. *S. EBULUS* L. Rock, E. Cornwall, DRUCE.
- †289/1. *SYMPHORICARPOS SYMPHORICARPOS* (L.). Ilfracombe, N. Devon, DRUCE.
- 296/2. *GALIUM MOLLUGO* × *VERUM* = *OCHROLEUCUM* Wolf. Abundant on the shores of Slapton Lea, S. Devon, DRUCE.
- 296/8. *G. DEBILE* Desv. Chudleigh Heathfield, S. Devon, F. M. DAY. Named by R. F. TOWNDROW.
- †296/15. *G. VALANTIA* Weber. Splott, Cardiff, Glamorgan, 1931, Miss VACHELL.
- 306/3. *DIPSACUS SATIVUS* (L.). *D. FULLONUM* auct. Southwick, E. Sussex, E. PAYNE; Burton-on-Trent, Staffs, DRUCE.

312/1c. *SOLIDAGO VIRGAUREA* L., var. *PLUKENETIANA* Druce. Very fine specimens at the mouth of Pegal Burn, Hoy, Orkney; small plants at Rackwick, Hoy, Orkney; Saxevord, Lee of Setter, Zetland, DRUCE; Gap of Dramore, Donegal; Easedal, Westmorland, FOX.

318/19. *ASTER TRIPOLIUM* L., var. *GLABER* Bolzon. Plymouth, S. Devon, 1850, Mrs TOZER; Rock, E. Cornwall, DRUCE.

334/2. *PULICARIA PULICARIA* (L.) Karst. Wymondley, Herts, H. PHILLIPS.

†339/4. *AMBROSIA TRIFIDA* L. Dover, E. Kent, J. JACOB.

341/3. *XANTHIUM SPINOSUM* L. Hitchin, Herts, H. PHILLIPS.

†354/1. *GALINSOGA PARVIFLORA* Cav. Mudeford, S. Hants, Miss CAMPBELL; Welwyn, Herts, H. PHILLIPS.

365/7. *ACHILLEA NOBILIS* L. Avonmouth, W. Gloucester, J. EVANS.

368/1. *ANTHEMIS TINCTORIA* L. Henfield, W. Sussex, E. PAYNE.

370/8. *CHRYSANTHEMUM MAXIMUM* DC. Farnham Royal, Bucks, BADEN.

370/15. *C. SEROTINUM* L. Farnham Royal, Bucks, BADEN.

371/3. *MATRICARIA SUAVEOLENS* (Pursh) Buch. Stromness, Orkney, J. SINCLAIR.

378/3. *ARTEMISIA VULGARIS* L., var. *COARCTATA* Fors. Lydford, S. Somerset, 1850, Mrs TOZER; Slapton, S. Devon, DRUCE; Lostwithiel, E. Cornwall, DRUCE.

378/7. *A. SCOPARIA* W. & K. ? Avonmouth, W. Gloucester, J. EVANS.

378/15. *A. ANNUA* L. Dorsetshire, Miss ABELL.

378/16. *A. BIENNIS* Willd. Avonmouth, W. Gloucester, J. EVANS.

378/18. *A. GNAPHALOIDES* Nutt. Avonmouth, W. Gloucester, J. EVANS.

383/7. *SENECIO SQUALIDUS* L. Garston, Liverpool, S. Lancs, W. CHESHER.

383/26. *S. SMITHII* DC. Mouth of Mill Burn, Mill Bay, Hoy, Orkney, Hon. Mrs G. BARING.

395/3. *CARDUUS PYCNOCEPHALUS* L. Canvey Island, S. Essex, MELVILLE; Cardiff, Glamorgan, DRUCE.

*396/5. *CIRSIUM PRATENSE* (Huds.) DC. St Davids, Pembroke, B. LLOYD.

396/6. *C. TUBEROSUM* (L.) All. Abundant in a field at the foot of the Downs, near Rowde, N. Wilts, where I was shown it in situ by Miss Leake, DRUCE.

396/9. *C. PALUSTRE* × *PRATENSE* = *C. SPURIUM* Delastre. King's Nyampton, N. Devon. A root brought into my garden shows that this beautiful hybrid retains all its characters.

†397/2. *ONOPORDON TAURICUM* Willd. Hove, Sussex, ex DALGLEISH.

*405/8. *CENTAUREA OBSCURA* Jord., f. *RADIATA*. Marston Measey, N. Wilts, DRUCE.

405/11. *C. NEMORALIS* Jord., f. *RADIATA*. Rock, E. Cornwall, DRUCE.

405/12. *C. CYANUS* L. In an oat-field, Lyness, Hoy, Orkney, Miss OLIVIA BARING.

406/1. *CNICUS BENEDICTUS* L. Loudwater, Bucks, DRUCE.

407/1. *CARTHAMUS LANATUS* L. Avonmouth, W. Gloster, J. EVANS.

(The *HIERACIA* have been kindly determined by Dr K. H. ZAHN.)

419/1. *HIERACIUM PILOSELLA* L., var. *SUBPILOSUM* N. P. Walmer Beach, E. Kent, October 1879, CASTALIA, COUNTESS ~~of~~ GRANVILLE; Winch Bridge, Durham; Gention Hill, Galway; Beaumaris, Anglesey, DRUCE.

419/11. *H. ANGLICUM* Fr., var. *GENUINUM* Zahn, f. *NORMALE* Zahn in Engler, p. 186, fig. 17. Tarbert, Harris, 1928; Blackhead, Co. Clare; Loch an Larige, M. Perth; South Burn near Rackwick, Hoy, Orkney, 1931, DRUCE.

Var. *CERINTHIFORME* Backh. Burn of Quoys, and Mouth of Pegal Burn, Hoy, Orkney, 1931, DRUCE.

419/17. *H. CALEDONICUM* Hanbury. Near Aith Head, S. Walls, Orkney, 1931, DRUCE.

419/19. *H. BOSWELLI* Lint. Rannoch, W. Perth, 1930, DRUCE.

419/89. *H. SUBLEPISTOIDES* (Zahn). Boughrood, Radnor; Woodchester, W. Gloster; near Ross, Hereford, 1931, DRUCE.

419/101. *H. INTEGRATUM* Dahlst. Forbury Grove, Berks, 1930, DRUCE and Hon. Mrs G. BARING.

419/110. *H. SAGITTATUM* Lindeb., var. *SUBHIRTUM* (Hanb.). Riccaldale, Kirby Moorside, N.E. Yorks, FLINTOFF.

419/122. *H. DIAPHANOIDES* Lindeb., var. *APICULATUM* Linton. Cwm Dulas, six miles S.E. of Machynlleth, Montgomery, 1926, J. H. SALTER. "*(Est transitus eu-diaphanoides—Alfvengrenii* Dahlst.) involucris pedicellis panepilosis"—Zahn *in lit.*

Var. *GENUINUM* Zahn, f. *SUBMURORUM* Zahn in A. & G. Synopsis. Llyn Egnant, 1400 ft., Cardigan, 1926, J. H. SALTER.

419/125. *H. LACHENALII* Gmel. Chester, 1916, C. WATERFALL (Hb. Druce, ex Mason); Sandyrock, Worcester; Letton, Hereford, 1931; Burton-on-Trent, Staffs, 1930, DRUCE.

419/132. *H. PAUCIFOLIATUM* Jord. Railway bank, Cinderhill, Nottingham, 1930, R. BULLEY.

419/135. *H. DIAPHANUM* Fr., var. *PSEUDODIAPHANUM* (Dahlst.). Meavy, N. Devon, 1931, DRUCE.

419/171. *H. SUBRAMOSUM* Lönnr. Hawick, Roxburgh, 1930, DRUCE.

419/203. *H. GOTHICUM* Fr. (*EU-GOTHICUM* Zahn). Hermitage, Berks, 1931, DRUCE.

419/223. *H. SCABRESCENS* Dahlst. Hampstead Marshall, Berks, 1931, DRUCE.

419/232. *H. LATOBRIGORUM* Zahn. Loch an Larige, M. Perth, 1930, DRUCE.

419/242. *H. MARITIMUM* Hanbury. Aith Hope, S. Walls, Hoy, Orkney, 1931, DRUCE.

419/248. *H. ANGUSTUM* Lindb., f. *TYPICUM* Zahn. Southport, S. Lancs, 1927, DRUCE.

419/250. *H. DUMOSUM* Jord., var. *GENUINUM* Zahn, f. *NORMALE a VERUM* Zahn in A. & G. Synopsis. Glendalough, Co. Wicklow, 1928, DRUCE.

419/252. *H. OBLIQUUM* Jord., var. *GENUINUM* Zahn, *lusus DESCRESCENS* Zahn. Waters Meet, Lynton, N. Devon, 1929, DRUCE.

Var. *INDOLATUM* (Jord.) Sudre p.p. Boughrood, Radnor, 1931, DRUCE.

(See also Col. H. H. Johnston's paper on "Additions to the Flora of Orkney" (in this Report) for descriptions of four new British species of *Hieracia*.)

422/2. *LEONTODON AUTUMNALIS* L. Luxuriant specimens approaching var. *sordidus* Bab. Dundee, Angus, CORSTORPHINE.

Var. *PRATENSIS* Koch. Stenness, Pomona, Orkney, 1931, DRUCE.

(The *TARAXACA* have all been seen and determined by Dr H. DAHLSTEDT.)

423/1. *TARAXACUM BRACHYGLOSSUM* Dahlst. St Fagans, Glamorgan, Miss VACHELL; Grosmout, N.E. Yorks, FLINTOFF; Durdham Downs, W. Gloster, DRUCE.

423/4. *T. FULVUM* Raunk. Hitchin, Herts, Mrs WEDGWOOD, also a modification of the type from the same locality.

423/6. *T. LACISTOPHYLLUM* Dahlst. Brandon, W. Norfolk; Icklingham, W. Suffolk, H. PHILLIPS; Clifton and Durdham Downs, W. Gloster, 1930; Holyhead, Anglesey, 1930, DRUCE. Forma fol. latioribus brevius lobatis, Waldon Hill, S. Devon, DRUCE. Modif. Hitchin, Herts, Mrs WEDGWOOD; Icklingham, W. Suffolk, H. PHILLIPS; S. Walls, Hoy, Orkney, DRUCE.

423/7. *T. LAETUM* Dahlst. Allied to or a form of, Ivinghoe Beacon, Bucks, 1904, DRUCE.

423/10. *T. PROXIMUM* Dahlst. Probably this, Brean Downs, N. Somerset, Mrs SANDWITH.

423/10(2). *T. RUBICUNDUM* Dahlst. Cheddar, N. Somerset, Mrs WEDGWOOD.

423/12. *T. DISSIMILE* Dahlst., var. Facombe, Berks, 1931, DRUCE and Hon. Mrs G. BARING. A plant related to this [Ref. No. AA.233] from The Crescent, Oxford, 1923; modif., Swanage, Dorset, 1917, DRUCE.

423/23. *T. FAEROENSE* Dahlst. Widdy Bank and Winch Bridge, Durham, Miss VACHELL; Dalnaspidal, E. Perth, 1931, DRUCE and CORSTORPHINE; modif., Waldon Hill, S. Devon, DRUCE; forma, Teesdale, Durham, 1911, DRUCE.

423/26. *T. MACULIGERUM* Lindb. f. A very interesting form, near this, from St Fagans, Glamorgan, Miss VACHELL.

423/27. *T. NAEVOSIFORME* Dahlst., modif. Betty Hill, W. Sutherland, 1931, FOGGITT; Widdy Bank and Winch Bridge, Durham, Miss VACHELL.

423/28. *T. NAEVOSUM* Dahlst. St Martins, Jersey, 1851, PIQUET.

423/53. *T. DUPLIDENS* Lindb. f. Stevenage, Herts, H. PHILLIPS.

423/61. *T. HAMATUM* Dahlst. A form of this [Ref. No. Y.239], Ufton Wood, Warwick; Walmer, E. Kent, 1879; Helmdon and Byfield, Northants, DRUCE.

423/66. *T. LACINIOSUM* Dahlst. Near this, [Ref. No. D.34], Studley, Oxon, DRUCE.

423/67. *T. LAETICOLOR* Dahlst., forma. River bed near Brecon, Miss VACHELL.

423/72. *T. LONGISQUAMBUM* Lindb. f., forma. Waterworks, Oxford; Pitstone, Bucks; Adderbury, Oxon, DRUCE; Wymondley, Herts, H. PHILIPS. Forma *SAGITTATUM* Dahlst. Inchnadamph, W. Sutherland, DRUCE.

423/84(2). *T. SUBLAETICOLOR* Dahlst. A form related to this from Welwyn, Herts, 1824, W. J. BLAKE.

425/1. *LACTUCA VIROSA* L. Avonmouth, W. Gloster, J. EVANS.

*425/2. *LACTUCA SERRIOLA* L. Potter's Marston, Leicester, F. A. SOWTER.

431/2. *LOBELIA URENS* L. Plentiful in a wood near Flimwell Vicarage, E. Sussex, 1922, Mrs E. E. JOHNSON and Mrs TOMS. Sus.

435/3. *CAMPANULA TRACHELIUM* L., var. *URTICIFOLIA* Lej. & Court. Bix, Oxon, DRUCE.

†435/4. *C. RAPUNCULOIDES* L. Worcester Lodge, Forest of Dean, W. Gloster; railway-bank, Yarnton, Oxon, P. G. BEAK.

435/6. *C. PERSICIFOLIA* L. Probably native on gorse ground near Budleigh Salterton, S. Devon, discovered there by Major ORME, who kindly showed it me, DRUCE. D

435/8. *C. PATULA* L. Near Yattendon, Berks, August 1931, F. N. A. GARRY and Rev. E. C. CRUTWELL. A new station for this plant in the county. Pin's Farm, Wellow, S. Hants, coll. G. W. PIERCE; comm. HALL.

441/1. *ARCTOSTAPHYLOS UVA-URSI* (L.) Spreng., var. *ANGUSTIFOLIA* Druce. Rackwick, Hoy, Orkney, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL.

441/2. *A. ALPINA* Spreng. Plentiful on the hills of Hoy, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL.

†443/1. *GAULTHERIA SHALLON* Pursh. New Forest, S. Hants, G. HAYNES. Han

445/1. *CALLUNA VULGARIS* (L.) Hull, var. *ERIKAE* Asch. Aith Hope, S. Walls, Hoy, Orkney, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL. This pretty variety grew here as a white-flowered plant, like the one cultivated in the Edinburgh Botanic Gardens. The type, purple-flowered plant grew at Rackwick, Hoy, and in Glen Torridón, W. Ross, and also the var. *PUBESCENS*.

446/1. *ERICA CINEREA* L., var. *SPLENDENS* (Vigurs) Dr. Near Binley, N. Hants, PHILLIPS.

†446/7. *E. VAGANS* L. A few plants, appearing quite native, but of course introduced, occur in the heathy ground near Bagshot, Berks, where it was discovered by Major ORME, who directed me to the spot, DRUCE. Ber

447/1. *LOISELEURIA PROCUMBENS* (L.) Desv. On the Knap of Trowie Glen, Hoy, Orkney, Hon. Mrs G. BARING and Miss MEYNELL, who were directed to the locality by JAMES SINCLAIR.

453/1. *PYROLA ROTUNDIFOLIA* L., var. *MARITIMA* (Kenyon), teste DRABBLE. Dyserth, Flint, Miss NEILD. Previously found there by Dr HAYNES-THOMAS.

453/3. *P. MINOR* L. Woodchester, W. Gloster, DRUCE; *Prestatyn, Flint, Miss B. ALLEN.

454/1. *MONESSES UNIFLORA* (L.) A. Gray. Golspie, E. Sutherland, in beautiful flower, DRUCE, Hon. Mrs G. BARING and CORSTORPHINE.

456/1. *HYPOPITYS HYPOPITYS* (L.) Dr. Brock Hillwood, Colwall, Hereford, Mrs WOOLDRIDGE, ex F. M. DAY.

458/4. *STATICE MARITIMA* Mill. Berryhead, S. Devon, DRUCE.

460/2. *PRIMULA VULGARIS* Huds. An aberrant form in which one long-stalked Primrose is present with another one when there are three, Horton, Gloster, Mrs HARFORD. Monstr. *FOLIACEA*, near Hayle, W. Cornwall, R. KEMPTHORNE, sepals replaced by green leaves one inch long. On the Moorland, Penzance, W. Cornwall, E. REES. It has been breeding true for three years.

460/5. *P. SCOTICA* Hook. Aith Hope, S. Walls, Hoy, Orkney, in beautiful flower, DRUCE, Hon. Mrs G. BARING, Miss MEYNELL and Col. JOHNSTON, who directed us to the locality.

†463/1. *LYSIMACHIA THYRSIFLORA* L. Stoke Court, Farnham Royal, Bucks, E. B. BASDEN.

†463/3. *L. PUNCTATA* L. Hoy Village, Hoy, Orkney, 1931, DRUCE.

466/1. *GLAUX MARYTIMA* L. A diffuse form occurred at Aith Hope, S. Walls, Hoy, Orkney, DRUCE.

†470/1. *SYRINGA VULGARIS* L. Several large bushes at Melsetter, Hoy, Orkney, DRUCE.

471/1. *FRAXINUS EXCELSIOR* L., var. *DIVERSIFOLIA* Ait. A single tree near West Meon, S. Hants, coll. F. ESCOMBE; comm. HALL.

472/1. *LIGUSTRUM VULGARE* L. This was an especially prolific flowerer in 1931, and on Braunton Burrows the flowers were much larger than usual, producing a very showy effect.

Var. FLORE LUTEO, teste Kew. Duncombe Wood, East Meon, Hants, coll. F. ESCOMBE; comm. HALL.

†474/2. BUDDLEIA DAVIDI Franch. Ilfracombe, N. Devon, DRUCE.

478/1. CENTAURIUM CENTAURIUM (L.) Druce. As a tall, lax-flowered plant at Marazion, W. Cornwall, DRUCE; a tall plant with small flowers (an approach to *tenuiflorum*), Fishburn, I. of Wight, 1931, Lady DAVY.

Var. CAPITATUM (Koch) Dr. Hartland Point, N. Devon, Lady DAVY; fixed dunes, Huishnish, N. Harris, 1928, DRUCE.

Var. SUBLITORALE (W. & S.) Dr. Braunton Burrows, N. Devon, DRUCE.

478/4. C. PULCHELLUM (Sw.) Dr., var. SIMPLICISSIMUM (Schmidt). Hayle, W. Cornwall, DRUCE; a capitate form, Braunton, N. Devon, Dr ELLISTON-WRIGHT.

480/4. GENTIANA AMARELLA L. Large specimens, Freshwater, I of Wight, Lady DAVY; Coniston, N.W. Yorks, DRUCE, variable in size and colour; Bishopstone, E. Sussex; Cotswolds above Cheltenham, E. Gloster, Miss PICKARD.

480/9. G. CAMPESTRIS L. Strathorrin, E. Ross, DRUCE and CORSTORPHINE; Langdon Beck, Durham, DRUCE.

Var. BALTICA (Murb.). Alfriston near Lewes, Sussex, Miss PICKARD, teste DRABBLE.

†493/2. LAPPULA LAPPULA (L.). Avonmouth, W. Gloster, EVANS.

†497/4. SYMPHYTUM PEREGRINUM Ledeb. Ilfracombe, N. Devon, DRUCE.

†500/2. ANCHUSA OFFICINALIS L. In greater quantity than formerly at Hayle, W. Cornwall, with other species and hybrids, DRUCE.

†500/4. A. OCHROLEUCA M. Bieb. Dover, E. Kent, J. JACOB.

503/1. PULMONARIA OFFICINALIS L. Micheldever, N. Hants, coll. J. N. MILLS; comm. HALL.

505/1. PNEUMARIA MARITIMA (L.) Hill. In considerable quantity and very beautiful at Kirk Bay, S. Ronaldshay, Orkney, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL. We were directed to the locality by JAMES SINCLAIR.

506/1. MYOSOTIS PALUSTRIS Hill, var. HIRSUTA Braun. Reay, Caithness, DRUCE.

Var. STRIGULOSA (Reichb.) M. & K. Cothill, Berks, and as f. NEMOROSA Bess. Spiggie, Zetland; Coleman's Moor, Loddon Bridge, Berks; Scarmclett, Caithness, DRUCE.

Var. *NEMORALIS* Kittel. Arisaig, Easternness, 1903; Bullington, Oxon, DRUCE; Dunham, Cheshire, C. BAILEY; Wotton, Surrey, C. E. BRITTON. f. *PARVIFLORA*. Earn Shingle, M. Perth, DRUCE.

Var. *REICHENBACHIANA* Wade. Bladon, Oxon (previously under *COMMUTATA*); near Gairloch, W. Ross; Croxdale, Durham; Wytham, Berks, DRUCE; near Blundell, Lancs, Rev. W. W. MASON; Otterston, Fife, J. T. B. SYME.

Var. *SEROTINA* Wade. Bladon, Oxon, DRUCE. f. *LANCIFOLIA* Wade, Wytham, Berks, DRUCE.

506/3. *MYOSOTIS REPENS* (Don) Reichb. Rysa, Hoy, Orkney, 1931; Llyn Coron, Anglesey, 1930, DRUCE.

506/4. *M. CAESPITOSA* Schultz. Melmerby, Cumberland; Maybole, Ayr; Mortimer, Berks, 1930, DRUCE.

506/7. *M. SYLVATICA* Hoff. Malham, Mid-West Yorks, 1931, A. TURNER.

506/8. *M. ARVENSIS* (L.) Hill. Slapton Lea, S. Devon, 1931, DRUCE.

Var. *DUMETORUM* Crép. Hayle, W. Cornwall, 1931, DRUCE.

506/10. *M. VERSICOLOR* Sm., var. *BALBISIANA* (Jord.). Bucklebury, Berks, 1931, DRUCE and Hon. Mrs G. BARING.

Var. *LLOYDII* Corb. Bucklebury, Berks, 1931, DRUCE and Hon. Mrs G. BARING.

Var. *LUTEA* DC. Bucklebury, Berks, DRUCE and Hon. Mrs G. BARING.

Var. *BREVICALYX* Druce. Abbey Wood, Kent; Wicklow Sandhills, 1909, DRUCE.

517/1. *SOLANUM DULCAMARA* L. Slapton Lea, S. Devon, DRUCE.

*527/7. *VERBASCUM LYCHNITIS* L. Hayle, W. Cornwall, DRUCE.

532/1. *LINARIA LINARIA* Mill. A very narrow-leaved (var. *LINEARIS*) strict variety, Westcliff-on-Sea, S. Essex, Rev. W. W. MASON.

× *REPENS* = *SEPTUM* (Allm.). Cymnwyich, Cardigan, B. LLOYD.

532/3. *L. REPENS* (L.) Mill. A nearly pure white form, Newquay, W. Cornwall, DRUCE; Presthope, Salop, C. REA.

*535/1. *SCROPHULARIA VERNALIS* L. East Tytherley, S. Hants, coll. G. W. PIERCE; comm. HALL. Bucklebury Common, Berks, Miss NEILD; near Broughton, S. Hants, Miss SIDEBOTTOM, ex Miss SALMON.

535/5. *S. SCORODONIA* L. A small-fruited form, Marazion, W. Cornwall, DRUCE.

542/1. *ERINUS ALPINUS* L. Planted on Windsor Castle, Berks, DRUCE.

543/5. *VERONICA MONTANA* L. Horsted Keynes, Sussex, DALGLEISH.

543/7. *V. BECCABUNGA* L., f. *SUBMERSA*. All the leaves were submerged and translucent. Brompton, Scarborough, N.E. Yorks, FLINTOFF.

543/8. *V. SCUTELLATA* L. Glen Cahir, Co. Clare; Monlough, Co. Down, DRUCE.

543/8. *V. ANAGALLIS-AQUATICA* L., var. *AMBIGUA* Krösche. Budleigh Salterton, S. Devon, DRUCE.

Var. *GLANDULOSA* Druce. Potterne, N. Wilts, DRUCE.

543/9. *V. AQUATICA* Bernh., var. *ANAGALLIFORMIS* (Bor.). Wytham, Berks, DRUCE.

543/18. *V. TOURNEFORTII* Gmel., var. *ASCHERSONIANA* Lehm. Gangsdown, Oxon, DRUCE.

546/4. *BARTSIA VISCOSA* L. *In a rough grassy plot in a garden at Oker, near Matlock, Derby, Sir M. ABBOT ANDERSON; *Goodwick, Pembroke, B. LLOYD; Braunton, N. Devon, DRUCE.

(Mr W. H. PEARSALL has kindly determined the *EUPHRASIAE*.)

545/2. *EUPHRASIA BOREALIS* Wettst. Hayle, W. Cornwall; Rysa and Rackwick, Hoy, Orkney, DRUCE.

545/3. *E. BREVIPILO* Burnat & Gremli. Melsetter, Hoy, Orkney, DRUCE.

545/5. *E. NEMOROSA* Pers. Assenton, Oxon, 1931, DRUCE. Mr Pearsall refers this slender, small-flowered plant, which is often called *Kernerii*, to *nemorosa*. Rysa, Hoy, Orkney, DRUCE, as a large and strict form quite off type.

545/15. *E. MICRANTHA* Reichb. Rysa, Hoy, Orkney, DRUCE.

545/19. *E. ROSTKOVIANA* Hayne. Walmer, E. Kent, CASTALLA, COUNTESS OF GRANVILLE.

545/22. *E. SALISBURGENSIS* Funck. Both Mr W. H. Pearsall and Dr E. Drabble refer plants which I gathered on calcareous sea-sand, Slapton, S. Devon, in August 1931, to this species. New to the South of England and hitherto only known in England from two Yorkshire records of Dr Arnold Lees, DRUCE.

548/5. *RHINANTHUS STENOPHYLLUS* Schur. Stenness, Orkney, DRUCE.

550/2. *OROBANCHE VULGARIS* Poir. Near Farningham, Kent, growing on *Galium Mollugo* L., H. WALKER.

550/9. *O. AMETHYSTEA* Thuill. Berry Head, S. Devon, growing on *Daucus*, DRUCE.

552/5. *UTRICULARIA MINOR* L. Burnham, Bucks, E. B. BASDEN. Mr Pearsall detected fragments around *Potamogeton pectinatus*. *U. minor* is very rare in Bucks.

*553/4. *PINGUICULA LUSITANICA* L. Mallory, Pembroke, C. OLDHAM and B. LLOYD. New to Wales.

(The MENTHAE have been kindly determined by Mr J. FRASER.)

558/1. *MENTHA ROTUNDFOLIA* (L.) Huds. A pretty form from Pentewan, E. Cornwall, DRUCE.

558/2. × *M. NILIACA* Jacq., var. *ALOPECUROIDES* (Hull) Briq. Pentewan, E. Cornwall, DRUCE.

558/3. × *M. NILIACA* Jacq., var. *NEMOROSA* (Willd.). Melsetter, Hoy, Orkney, 1931, DRUCE.

558/4. *M. SPICATA* Huds. Rysa Lodge, Hoy, Orkney; waste ground, Bideford, N. Devon; Slapton, S. Devon, DRUCE.

558/6. × *M. PIPERITA* L. By the Humber, Tobyon, N. Lincs, Miss MARSDEN.

558/7. *M. AQUATICA* L., var. *MAJOR* Sole. Strathorrin, E. Ross, 1931, DRUCE and CORSTORPHINE.

558/9. × *M. VERTICILLATA* (L.), var. *OVALIFOLIA* (Opiz) Briq. Possibly this from Braunton, N. Devon, DRUCE.

558/10. × *M. GENTILIS* (L.), var. *GRATA* (Host) Briq. Hayle, W. Cornwall, DRUCE.

558/12. × *M. RUBRA* Huds. Stoke Court, Farnham, Bucks, E. B. BASDEN.

558/13. *M. ARVENSIS* L. Also as forma *ANGUSTIFOLIA* Fraser, Stoke Court, Farnham, Bucks, E. B. BASDEN.

Forma *HIRTIPES* Fraser. New Forest, S. Hants; Caistor-on-Sea, E. Norfolk, H. PHILLIPS.

(The THYMES have been kindly determined by Dr K. RONNIGER.)

561/1. *THYMUS PULEGIOIDES* L., var. *CHAMAEDRYIS* (Fr.) RONN., t. *DENTICULATUS* W. & Grab. Stow Wood, Oxon, DRUCE.

Var. *GLABER* (Mill.) RONN. Box Hill, Surrey, Mrs WEDGWOOD.

561/8. T. DRUCEI Ronn. Dalnaspidal, E. Perth, 1931, DRUCE and CORSTORPHINE.

561/10. T. NEGLECTUS Ronn. Crinnis, E. Cornwall, L. T. MEDLIN, ex THURSTON; Marlborough, N. Wilts, Rev. G. PEIRSON; Ilsley, Berks; *Minchinhampton and Selsley Commons, W. Gloster, DRUCE.

561/11. T. BRITANNICUS Ronn. Barnbarroch, Wigton, 1909, E. K. HIGGINS; Crinnis, E. Cornwall, L. T. MEDLIN, ex THURSTON; Harlech golf links, Merioneth, 1915, W. C. BARTON, as *Serpyllum*; golf course, Penard Castle, Glamorgan, T. J. FOGGITT; *Highton, S. Lancs, 1911, J. A. WHELDON, as *Serpyllum*; Ilsley, Berks; near Mells, N. Somerset; Drummore, Wigtown; Rock, E. Cornwall; The Lizard, Logan, Hayle, W. Cornwall; Slapton, S. Devon, DRUCE.

×PULGEOIDES, var. CHAMAEDRYIS = T. LANSDOWNELAE Druce et Ronniger. Minchinhampton, W. Gloster; Berry Head, S. Devon, DRUCE.

566/1. SALVIA PRATENSIS L. Near Goring, Oxon, E. MILNE-RED-HEAD.

566/2. S. VERBENACA L., teste Dr Schinz. Hayle, W. Cornwall, DRUCE; Lancing College, W. Sussex, DALGLEISH.

†566/17. S. VERTICILLATA L. Gloster Docks, E. Gloster, Miss TODD.

572/2. SCUTELLARIA MINOR Huds. Near Calgarry, Isle of Mull, J. S. L. GILMOUR.

*574/1. MELISSA MELISSOPHYLLUM L. Eglwyswrtw, Pembroke, B. REYNOLDS.

577/2. STACHYS GERMANICA L. Appeared in one of its old stations in Oxfordshire in some quantity and luxuriance after an absence of over twenty years, DRUCE.

577/3. S. SYLVATICA L., var. UMBROSA Druce. Burton Bradstock, Dorset, G. R. A. BRAITHWAITE.

577/2. ×S. AMBIGUA Sm. Hayle, W. Cornwall, DRUCE.

†577/7. S. ANNUA L. Dalby Marwood, N.E. Yorks, FLINTOFF.

577/13. S. OFFICINALIS (L.) Trevis, var. ALBA. Monmouth, C. T. AMHERST.

578/2. GALEOPSIS TETRAHIT L., var. NIGRESCENS Bréb. Glynde, E. Sussex, Miss PICKARD.

578/4. G. INTERMEDIA Vill. Avonmouth Docks, W. Gloster, EVANS.

581/1. LAMIUM PURPUREUM L., var. ALBUM (?). Glynde, E. Sussex, 1931, Miss PICKARD.

586/1. *TEUCRIUM SCORODONIA* L. With herbaceous flowers and variegated foliage, Rock, E. Cornwall, DRUCE.

586/3. *T. BOTREYS* L. Established between Canterbury and Ashford, E. Kent, H. PHILLIPS.

*586/4. *T. CHAMAEDRYIS* L. Lyminge, E. Kent, Mr WALTON, ex Mrs GIBBINGS.

†588/1. *PLANTAGO INDICA* L. Avonmouth, W. Gloster, EVANS.

(The following *PLANTAGO* have been determined by Dr PILGER, of Berlin, from my Herbarium.)

588/3. *PLANTAGO CORONOPUS* L., var. *LACINIATA* (Willk.) Pilger = *P. CORONOPUS* L., var. *CERATOPHYLLA* Rapin. E. G. Baker, 1900. Abbott's Cliffs, Dover, E. Kent, 1902, DRUCE, a tall plant nearly a foot high, with upright hairy leaves; Pagham, Chichester, W. Sussex, 1916; Kingsdown, Kent, Rev. H. E. FOX.

Var. *COLUMNÆ* (Gouan) Willd. The Lizard, W. Cornwall, 1904; Pwllheli, Abersock, Carnarvon, 1900, DRUCE; Freshwater, Isle of Wight, 1904, WOLLEY-DOD; Giant's Causeway, Bournemouth, S. Hants, Miss C. E. PALMER.

Var. *STRICTA* Pilger. Holy Island, Northumberland, 1901; Spiggie, Zetland, 1920; Great Orme's Head, Carnarvon; Holburn Head, Caithness; Clarsdon, Caithness, 1902 (Baker's var. *maritima*); Giant's Causeway, Antrim, 1912, DRUCE.

Var. *VULGARIS*, f. *PYGMAEA* Lange. Berry Head, S. Devon, 1900; Braunton Burrows, N. Devon, DRUCE; Whitechurch Head, Salop, 1901, WOLLEY-DOD; Hightown, S. Lancs, WHELDON; Scarth Hole, Dalton, N. Lancs, LUMB.

Var. *CERATOPHYLLON* (H. & L.) Rapin. Ballyvaghan, Co. Clare, 1916, DRUCE and O'KELLY; St Helier's, Jersey, 1906 (*multifida* Wirtg. of Baker); St Ouen's, Jersey; Newquay, W. Cornwall, DRUCE.

588/4. *P. SABRINÆ* (Bak. & Card.) Druce = *P. CORONOPUS* L., var. *SABRINÆ* Baker & Cardew. Steep Holme, N. Somerset. Most of our British Botanists who have seen it growing on the Steep Holme believe in its claims to specific rank. I cultivated it for several years and it retained its characters. Dr Pilger identifies it with *P. Coronopus* L., var. *columnæ* (Gouan) Willd.

Sub-var. *LATILoba* Pilger. Steep Holme, locus classicus, G. C. DRUCE; Bournemouth, S. Hants, Miss C. E. PALMER; Millook, Cornwall, 1914, DRUCE. Both these were named *crithmifolia* Willk. by Baker.

588/8. *P. LANCEOLATA* L., var. *ELLIPTICA* Druce. Farnham Royal, Bucks, E. B. BASDEN !; Hook, N. Hants; Potterne, N. Wilts; Helston, W. Cornwall, DRUCE.

588/9. *P. MEDIA* L., var. *URVILLEANA* Rapin. (*LANCEOLATIFORMIS* Druce). Frilford, Berks, 1913; near Andoversford, E. Gloster, 1929; Hardwick, Oxon, 1914, DRUCE.

588/10. *P. MAJOR* L., var. *VULGARIS* Pilger, f. *INTERMEDIA* (Gilib.) Pilger. Loch Leven side, Kinross; Pyrford golf links, Surrey, 1912, DRUCE.

600/2. *CHENOPODIUM CRASSIFOLIUM* Hornem. in Hort. Hafn., 254, 1813, var. *Degenianum* Aellen Ung. Bot. Blat., 62, 1926, as *Botryodes* Sm.

600/4. *C. HYBRIDUM* L. Thetford, W. Norfolk, Miss TODD; Hertford, H. PHILLIPS.

600/6. *C. MURALE* L. Yarmouth, E. Norfolk, H. PHILLIPS.

600/7. *C. OPULIFOLIUM* Schrad. Welwyn, Herts, H. PHILLIPS.

600/8. *C. ALBUM* L., var. *VIRIDE* (L.). Plymouth, S. Devon, 1850, Mrs TOZER.

600/13. *C. GLAUCUM* L. Welwyn, Herts, H. PHILLIPS.

*600/15. *C. POLYSPERMUM* L. In great plenty near Settle, Yorks, new to v.-c. 64, H. H. STURDY and J. N. FRANKLAND.

606/3. *ATRIPLEX PATULA* L., var. *BRACTEATA* Westerl. Darlington, Durham, J. E. NOWERS; Bideford, N. Devon, DRUCE; Yarmouth, E. Norfolk, H. PHILLIPS.

606/7. *A. GLABRIUSCULA* Edmondst. Keiss, Caithness, Mrs WEDGWOOD, as *pseudo-calotheca*, but Dr Schinz thinks it has no claim to a varietal name.

†606/10. *A. HORTENSIS* L. Waste ground, Reading, Berks, DRUCE.

606/17. *A. PORTULACOIDES* L. Plymouth, S. Devon, 1850, Mrs TOZER, as *Chenopodium Vulvaria* L.

611/4. *SALICORNIA EUROPAEA* L. Glynde, E. Sussex, Miss PICKARD.

611/5. *S. RAMOSISSIMA* Woods. Glynde, E. Sussex, Miss PICKARD.

†615/31. *POLYGONUM POLYSTACHYUM* Wallich. Stoke Court, Bucks, E. B. BADSEN.

†615/32. *P. CUSPIDATUM* S. & Z. Dover, E. Kent, J. JACOB.

†615/33. *P. SACHALINENSE* Schmidt. Barnstaple, N. Devon, DRUCE.

618/3. *RUMEX CRISPUS* L., var. *TRIANGULATUS* Syme. Gribon, Isle of Mull, J. S. L. GILMOUR.

618/3. *R. ACUTUS* L. *R. CRISPUS* × *OBTUSIFOLIUS*. Ilfracombe, N. Devon, DRUCE.

623/2. *DAPHNE MEZEREUM* L. Wood near Glynde, E. Sussex, in flower on January 29th, DALGLEISH.

628/5. *EUPHORBIA PLATYPHYLLOS* L. Cockayne Hatley, Beds, M. BROWN and LITTLE. W. D. Miller found this, one of our rarest Oxfordshire plants, in a new locality at Westcott Barton where, by his directions, I and Mr Chapple were able to see two or three plants, DRUCE.

628/8. *E. AMYGDALOIDES* L. In great abundance on grassy borders and on newly turned soil at Dashwood Hill, Bucks, DRUCE.

628/9. *E. VIRGATA* W. & K. Gogmagogs, Cambridge, Miss TODD; Hassocks sand-pit, Glynde, E. Sussex, Miss PICKARD; *Great Bedwyn, N. Wilts, DRUCE.

†628/11. *E. CYPARISSIAS* L. Sonning Common, Oxon, POWELL; St Anne's-on-Sea, S. Lancs, H. BRUNKER; Farr and Torrisdale, W. Sutherland, in plenty, D. GORDON, ex GILMOUR, named by WILMOTT; near East Meon, Hants, coll. F. ESCOMBE; comm. HALL.

632/2. *MERCURIALIS ANNUA* L., var. *AMBIGUA* (L.). Sea-shore, Herm, Channel Isles, 1931, J. FRANKLIN.

633/1. *ULMUS MONTANA* Stokes. Melsetter, Hoy, Orkney; Teesdale, Durham, DRUCE. Dr Lindquist is about to divide the Wych Elm.

633/6. *U. MINOR* Miller, 1768. *U. STRICTA* Lindley. Launceston, E. Cornwall, 1931, DRUCE. It is quite extraordinary how some botanists cling to an untenable name. Miller's *minor* is quite unmistakably the Cornish Elm; the description of upright branches at once cuts out Plot's Elm.

637/2. *URTICA URENS* L., var. *PARVIFOLIA* Druce. Town of Dorset, 1850, Mrs TOZER; Hitchin, Herts, H. PHILLIPS; Benson, Oxon, DRUCE.

†639/1. *HELIXINE SOLEIROLII* Req. Boscombe, S. Hants, W. BOUCHER. See an account in the *Gardeners' Chron.*, 226, 1930.

646/1. *QUERCUS ROBUR* L. "The leaves turn yellow at Malvern in the autumn, those of *Q. sessiliflora* copper-coloured, and this difference is especially noticeable if the two species are growing together, so that it is possible to tell them apart by the colour as much as fifty yards away. I wonder if this difference has been noticed elsewhere."—F. M. DAY.

650/3. *SALIX ALBA* L., var. *STENOPHYLLA* Fraser. Shrivenham, Berks, DRUCE.

650/4. *S. TRIANDRA* L., type. Port Meadow, Oxford, Lady DOUIE.

650/8. *S. CAPREA* × *VIMINALIS* = *S. MOLLISSIMA* Smith. Melsetter, Hoy, Orkney, 1931, DRUCE.

650/10. *S. CINEREA* L. Rysa Lodge, Hoy, Orkney, 1931; Hampstead Marshall, Berks, DRUCE.

650/11. *S. REPENS* L., var. *INCUBACEA* (L.), sub-var. *SERICEA* Fraser. Melsetter, Hoy, Orkney, 1931, DRUCE.

650/14. *S. ARBUSCULA* L. = *S. VACCINIFOLIA*. Ben Laoigh, M. Perth, 1500 ft., A. WILSON and J. A. WHEELDON.

650/18. *S. HERBACEA* L. Knap of Trowieglen, Hoy, Orkney, 1931, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL.

*651/3. *POPULUS NIGRA* L., var. *BETULIFOLIA* (Pursh) Torrey. Strathorrin, E. Ross, 1931, DRUCE and CORSTORPHINE.

656. *ELODEA*. Dr F. Marie Victorin argues in a paper that the name cannot be *Elodea* but *Anacharis* (founded by Planchon *Am. Sc. Nat.*, iii., 75, 1869), which Babington brought into use for it.

659/1. *MALAXIS PALUDOSA* (L.) Sw. Frequent in the marsh near Kinlochewe, W. Ross, where Prof. Fernald saw *Eriophorum alpinum*; bank of Lyrawa Burn, Hoy, Orkney, August 12, 1931, Col. H. H. JOHNSTON.

663/2. *LISTERA CORDATA* (L.) Br. Mouth of Pegal Burn, Hoy, Orkney, 1931, DRUCE, Hon. Mrs G. BARING and Miss MEYNELL, shown to us by Col. H. H. JOHNSTON.

664/2. *SPIRANTHES SPIRALIS* (L.) C. Koch. Huntercombe, Oxon, Lady SEVERN; Castle Martin, Pembroke, C. OLDHAM and B. LLOYD.

668/1. *HELLEBORINE PALUSTRIS* (Mill.) Schrank. There was a most magnificent growth on Braunton Burrows, N. Devon, last summer, many acres in extent and one mass of flower, DRUCE.

668/2. *H. HELLEBORINE* (L.) Druce. *Piston Park, Pembroke, REYNOLDS and B. LLOYD.

Var. *ANGUSTIFOLIA* (Dr.). Mongwell, Oxon, Dr HENDLEY.

Var. *ATROVIRIDIS* (W. R. L.). Foxcote, E. Gloster, Miss ABELL.

668/3. *H. LEPTOCHILA* (Godf.). Berwick Trench, Oxon, Dr HENDLEY.

668/4. *H. PURPURATA* (Sm.) Dr. Cornwood, S. Devon, 1854, Mrs TOZER.

*668/5. *H. ATROPURPUREA* (Rafn.) Dr. On limestone near Cardiff, Glamorgan, MISS LEAKE.

669/4. *ORCHIS USTULATA* L. Alluvial meadows near Bampton, Oxon, somewhat lax-flowered spikes, P. G. BEAK.

669/5. *O. MORIO* L. Atwick, E. Yorks, R. BULLEY; Great Bedwyn, N. Wilts, DRUCE.

669/7. *O. INCARNATA* L., var. *PULCHRIOR* Druce. Horton-in-Craven, N.W. Yorks, J. N. FRANKLAND; Sapcote, Leicester, BEMROSE.

×*PRAETERMISSA*. A rare hybrid, Hartland Point, N. Devon, Lady DAVY. Labellum pale, smaller than in *praetermissa*, leaves narrow.

669/8. *O. PRAETERMISSA* Druce. Aldborough, Hornsea Mere, E. Yorks, R. BULLEY; Hartland, N. Devon, with its hybrid, Lady DAVY; Birby Common, Somerset, HALL; Tresillian, Cornwall, NICHOLSON; small-flowered bracteate form, Welford, Berks, with the type, DRUCE.

*669/9. *O. PURPURELLA* Stephenson. In great abundance in a mountain bog near Austwick, Yorks, where I first discovered it in July 1931. I could make it out to be nothing but this, so sent specimens to Kew who confirmed it as this plant, and agreeing with form B from Ambleside. First record for v.-c. 64. Later I discovered it in another bog in the same district, J. N. FRANKLAND.

669/10. *O. MACULATA* L., vera. Near the Old Man of Hoy, Orkney, rather frequent and the only form noticed in the Island, August 1931, DRUCE. *Beanvale, Notts, unspotted leaves, R. BULLEY; monstrosity, narrow upper petals, slender spur, Cardiff, Glamorgan, Miss VACHELL.

Var. *MACROGLOSSUM* Dr. Cardiff, Glamorgan, Miss VACHELL; Beanvale, Notts, R. BULLEY.

×*PRAETERMISSA*. N.W. Yorks, J. N. FRANKLAND. Italy, Belgium, France, Le Haïac.

669/11. *O. FUCHSII* Druce. Type at Compton Wood, Berks, up to three feet high, lilac and dark-purple lip markings, DRUCE; Thrumpton Hills, Notts, R. BULLEY; Ashdown Forest, Sussex, with *eu-maculata*, DRUCE.

Var. *OVATA* Druce. Leaves broadly oval, 3.50×5 cm., slightly spotted, Horton-in-Craven, N.W. Yorks, J. N. FRANKLAND.

×*PRAETERMISSA* = *O. MORTONII* Druce. Marston Measey, N. Wilts, leaves narrow, scarcely spotted, flowers with strong purple markings, DRUCE.

×*INCARNATA* L. = *O. CURTISII* Druce. Southwick, S. Hants. Some specimens had faint ring spots, others had unspotted leaves. The labellum varied from a complete three-lobed labellum to a single strap-shaped petal, with intermediate forms, HALL.

*669/12. *O. O'KELLYI* Druce. Hucknall, Notts, R. BULLEY; marshy shore-pastures, Killean, Argyll, Mrs MACALISTER HALL.

669/14. *O. MASCUA* L. With fine large, dark-purple heads of flowers, Stoke Goldington, Bucks, May 1931, DRUCE.

669/18. *O. HIRCINA* Crantz. On a chalk bank bordering a wood, Loudwater, Bucks, F. ALDRED. The second Buckinghamshire locality. Branshley near Romsey, S. Hants, school-child, ex Rt. Hon. H. T. BAKER; near Stevenage, Herts, R. D. WORSTED, ex T. A. DYMES; six miles from Guildford, Surrey, North Downs, C. HOARE, ex F. CLARKE; a solitary specimen on the Berkshire Downs, Miss H. CROSS; Rutland, WAGSTAFFE, ex SOWTER.

672/3. *OPHRYS APIFERA* Huds. Pool Bottom, Oxon, one plant had labellum absent, DRUCE.

674/4. *HABENARIA (COELOGLOSSUM) VIRIDIS* (L.) Br. Near Sturminster Newton, Dorset, Miss YEATMAN and Miss RICHARDS.

Var. *VALLANTH* (Ten.) Fern. Braunton Burrows, N. Devon, DRUCE; near Stoke-on-Trent, Staffs, E. DEACON; Bishop's Camden, near Sherborne, Dorset, Miss YEATMAN, ex Miss L. RICHARDS.

674. *HABENARIA* hybrid. Mr Jacob, of Dover, sent me the drawing of an *Orchis* (about which Mr Walker wrote to me), which was exhibited in the Maidstone Museum and was thought by the finder to be a hybrid of *Habenaria virescens* with *Orchis praetermissa*. The specimen unfortunately was not preserved. It is just possible it may have been a *Serapias*.

676/2. *IRIS FOETIDISSIMA* L. Castle Martin, Pembroke, C. OLDHAM and B. LLOYD.

*680/1. *SISYRINCHIUM ANGUSTIFOLIUM* Mill. Waste ground by road, two miles E. of Fordwick by Canterbury, E. Kent, ELEANOR DAY; School road, Wellow, S. Hants, coll. G. W. PIERCE; comm. HALL.

†683/1. *TRITONIA CROCOSMIFLORA* Nich. Woody Bay, Bideford, N. Devon, DRUCE.

684/3. *NARCISSUS BIFLORUS* Curtis. Copeland Isle, Donaghadee, F. STOREY. See *Rep. B.E.C.*, 372, 1930.

*686/1. *LEUCOJUM VERNUM* L. Several clumps found by H. H. Sturdy in a wood near Settle in April 1931, growing amongst Wild Hyacinth, Dog's Mercury and other native plants. Although certainly introduced, these plants must have been here a considerable time for the wood has not been altered in any way for at least fifty years. Mr Sturdy noticed these plants at a distance many years ago and took them for Snowdrops so did not examine them. New record for v.-c. 6.

- 686/2. *L. AESTIVUM* L. Menabilly Wood, E. Cornwall, THURSTON.
- 702/4. *ALLIUM VINEALE* L., var. *COMPACTUM* (Thuill.). Much Hadham, Herts, Lady ALETHEA BUXTON.
- *702/7. *A. TRIQUETRUM* L. Milford-on-Sea, S. Hants, Mrs ELSIE KIRKBY.
- †702/13(2). *A. PORRUM* L. Hortal, a cultivated plant, found at Henfield, E. Sussex, by Mr E. PAYNE.
- †704/1. *HYACINTHUS COMOSUS* L. Bagnall Copse, Oxon, ex H. W. POWELL.
- 713/1. *COLCHICUM AUTUMNALE* L. Winter examples, wood near Bath, N. Somerset, and Warminster, S. Wilts, Miss LOCKYER.
- *718/14. *JUNCUS COMPRESSUS* Jacq. Fresh Water, Gribon, Isle of Mull (not *Gerardi*), J. S. L. GILMOUR.
- 718/15. *J. GERARDI* Lois., approaching and possibly may be var. *GRACILIS* Druce. Bysa, Hoy, Orkney, DRUCE.
- 718/16. *J. MACER* S. F. Gray. Burnham Beeches, Bucks, E. B. BADEN, a comparatively recent introduction; Moel Siabod, Carnarvon, HAINES.
- 718/17. *J. BUFONIUS* L. Type, but variable, Hoy, Orkney, DRUCE; Kinlochewe, W. Ross, CORSTORPHINE and DRUCE.
Var. *FASCICULARIS* Koch. The Lizard, W. Cornwall, DRUCE.
- 721/2. *TYPHA ANGUSTIFOLIA* L. Shoreham, W. Sussex, DALGLEISH.
- 722/4. *SPARGANIUM ANGUSTIFOLIUM* Michx. Flowerdale, W. Ross, DRUCE and Hon. Mrs G. BARING.
- 723/1. *ARUM ITALICUM* Mill, type. Near Southwick, E. Sussex, PAYNE.
Var. *IMMACULATUM* DC. Swanage, Dorset, Sir M. ABBOT-ANDERSON.
- 727/1. *LEMNA MINOR* L. A pond, fifty or sixty feet across, in Sussex was estimated to have twenty-five million plants on it.
- 727/3. *L. TRISULCA* L. Flowering near Glastonbury, N. Somerset, DRUCE.
- 727/4. *L. GIBBA* L. Heyshott, W. Sussex, extremely gibbous, DALGLEISH.
- 729/1. *ALISMA LANCEOLATUM* With. Arnold's *Flora of Sussex* gives three localities—Birdham, Earnley, and near Sidlesham. The plant grows quite plentifully in Lewes Levels. Regarded in Arnold's time

merely as a variety of *Alisma Plantago-aquatica*, the plant is now accepted as a good species by some botanists (*L.C.*, 11th ed., 1925; R. W. Butcher, Further Illustrations of Brit. Plants, Fig. 379), DALGLEISH.

731/1. *ELISMA NATANS* (L.) Buch. In abundance between two locks near the railway station of North Rode, Cheshire, D. H. VALENTINE; St David's, Pembroke, C. OLDHAM and B. LLOYD.

733/1. *DAMASONIUM ALISMA* Mill. The Starfruit was, in T. Hilton's time, known to occur on a certain pond on Chailey Common, Sussex. During recent years it has not been found there, but in August 1928 it again turned up at Chailey in a different spot, on a small and very dirty muddy cattle pond. One authority gives the habitat as "gravelly pools," but as above stated, this last find was in mud, DALGLEISH.

(Most of the *POTAMOGETON* have been kindly determined by Mr W. H. PEARSALL.)

737/1. *POTAMOGETON GESSNACENSIS* Fisch., var. *RICHTSFELDII* Fisch., f. *HIBERNICUS* Hagström. (*P. NATANS* × *POLYGONIFOLIUS*). In the deepest part of the Basingstoke Canal near Byfleet, Surrey [Ref. K.], LOUSLEY.

737/2. *P. POLYGONIFOLIUS* POUPT., var. *LANCIFOLIUS* (Cham. & Schlecht.). In a still water pond at Bratton Fleming, 1000 ft., N. Devon, Dr ELLISTON WRIGHT.

Var. *AMPHIBIUS* (Fr.). In moss by rill leading into Llyn Idwal, Carnarvon, LOUSLEY.

737/4. *P. COLORATUS* Hornem. Ham Ponds near Dover, E. Kent, LOUSLEY.

737/5. *P. ALPINUS* Balb. Basingstoke Canal near Deep Cut Bridge, Frimley, Surrey, LOUSLEY.

Var. *PALMERI* Druce. Basingstoke Canal near Ash Vale Station, Surrey, bearing fruits undoubtedly those of *P. alpinus*, LOUSLEY. Also from same canal at Odiham, N. Hants, with fruits well developed, E. C. WALLACE.

737/9. *P. GRAMINEUS* L., var. *LACUSTRIS* Fries. By Deep Cut Bridge, Frimley, Surrey [Ref. U.], LOUSLEY.

737/11. × *P. NITENS* Weber, var. *SUBGRAMINEUS* (Raunk.) Hagstr. and var. *SUBINTERMEDIUS* Hagstr. Basingstoke Canal, about $\frac{1}{4}$ mile west of Byfleet, Surrey [Ref. A.], LOUSLEY.

737/13. *P. LUCENS* L. Near Ilford, and in Cuckmere, Alfriston, E. Sussex; River Lark, Fornham St Genevieve, W. Suffolk, LOUSLEY.

Var. *ACUMINATUS* (Schum.) Fr. [Ref. E.] and var. *OVALIFOLIUS* M. & K. Basingstoke Canal $\frac{1}{4}$ mile west of Byfleet, Surrey, LOUSLEY.

737/16. *P. PERFOLIATUS* L., var. *OVALIFOLIUS* Wallr. Wey Navigation Canal near Send [Ref. C.]; Basingstoke Canal near Woking, Surrey, LOUSLEY.

737/17. *P. CRISPUS* L., small simple leaved form, \times *MUCRONATUS* = \times *P. LINTONI* Fryer. Bath, N. Somerset, T. H. GREEN.

737/20. *P. OBTUSIFOLIUS* M. & K. Virginia Water, Surrey and Berks; Basingstoke Canal near Frimley and near Byfleet, Surrey, LOUSLEY.

737/22. *P. MUCRONATUS* Schrad. Levels near Iford, E. Sussex, LOUSLEY.

737/23. *P. PUSILLUS* L., var. *TENUISSIMUS* M. & K. Brograve Level, Norfolk, 1909, C. E. MOSS.

737/25. *P. PARNORMITANUS* Biv.-Bern. Lewes Levels in company with *Potamogeton acutifolius* Link and *Potamogeton pusillus* L. Plant identified by Dr Druce, who recorded it (*Rep. B.E.C.*, 900, 1925) from this place. Not recorded in Arnold's *Flora of Sussex*, DALGLIESH.

737/27. *P. TRICHOIDES* Cham. & Schlecht. Levels near Iford, E. Sussex, LOUSLEY.

737/28. *P. PECTINATUS* L., var. *DIFFUSUS* Hagstr., forma *PROTENSIS* Wallr. Southill Lake, Beds, LITTLE.

Forma *INTERRUPTUS* (Kit.) Aschers. Wey Navigation Canal near Send, Surrey [Ref. B.], LOUSLEY.

†744/1. *CYPERUS LONGUS* L. Escape from a garden, Colwall, Hereford, DAY.

745/1. *ELEOCHARIS PALUSTRIS* (L.) Br. An extraordinary form in which the strongly creeping rootstock has at intervals the flower-stem rising direct from it, which is nearly leafless. Formby Sands, S. Lancs, Hon. Mr JUSTICE TALBOT.

*746/2. *SCIRPUS MARITIMUS* L., var. *MACROSTACHYS* (Willd.). Shalford, Surrey, J. G. LAWN, excellent specimens, new to the Surrey Flora.

746/7. *S. CAESPITOSUS* L. (See *Rep. B.E.C.*, iii., 180, 1912). Marshy slope on hillside south-west of Kinlochewe Hotel, W. Ross (Fernald's locality for *Eriophorum alpinum*), small specimens 4-6 inches high, DRUCE and CORSTORPHINE.

746/8. *S. PAUCIFLORUS* Lightf. Lough Neagh, Antrim; Hoy, Orkney, DRUCE.

747/2. *ERIOPHORUM ANGUSTIFOLIUM* Roth, var. *ALPINUS* Gaud. Ben Eay, W. Ross, DRUCE and CORSTORPHINE.

Var. *ELATIUS* Koch. Lerwick, Zetland, DRUCE; Pegal Burn, Hoy, Orkney, DRUCE and Hon. Mrs G. BARING.

747/3. *E. GRACILE* Roth. Reappeared in fair quantity at Holmesly Bog, S. Hants, where it has been sought for in vain for many years, HALL.

747/4. *E. VAGINATUM* L. Slender form, Ben Eay, W. Ross; Dalnaspidal, E. Perth, DRUCE and CORSTORPHINE.

749/1. *SCHOENUS NIGRICANS* L. N.W. Slope of Ben Eay, W. Ross, DRUCE and CORSTORPHINE, and as the forma *NANUS* Lange.

(Most of the *CARICES* have been kindly determined by Dr GEORGE KÜKENTHAL.)

753/1. *CAREX PSEUDO-CYPERUS* L., approaching var. *MINOR* Hampe. Near Bampton, Oxon, P. G. BEAK.

753/2. *C. RIPARIA* Curtis. Gainsborough, N. Lincs, Dr WILLOUGHBY SMITH.

753/3. *C. ACUTIFORMIS* Ehrh. Widdy Bank, Durham; bank of Tees near Cronkley, N.W. Yorks, a two stigmated form, DRUCE; near Wicken, Cambridge, GILMOUR.

753/7. *C. INFLATA* Huds. Gainsborough, N. Lincs, Dr WILLOUGHBY SMITH; near Muirkirk, Ayr, 1930, DRUCE.

Var. *UTRICULATA* (Boott) Bailey. Near Woodvale, S. Lancs, 1928, TRAVIS.

753/10. *C. PENDULA* Huds. Budleigh Salterton, S. Devon, Major ORME and DRUCE.

753/15. *C. BINERVIS* Sm. Plentiful and variable, especially on the west coast of Scotland; rare in Oxford, Berks, Bucks and Northants.

Var. *ALPINA* Drej. = *C. SADLERI* Linton, teste Kükenthal. Ben Laoigh, M. Perth, 3000 ft., 1916; Leverborough, S. Harris; Loch Langavat, N. Harris, 1928, DRUCE; N.W. slope of Ben Eay, W. Ross, CORSTORPHINE and CHAPPLE; ad var. *ALPINA* Drej. vergens, Corrie Ennich, Easternness, 1887, DRUCE.

753/17. *C. DISTANS* L. Stoke Bruern, Northants, 1907, F. COX; Wicken Fen, Cambridge, GILMOUR; Burnham, Bucks, BADSEN; Rock, E. Cornwall, DRUCE.

Forma *MAJOR* Kneucker, squamis ruficis utriculis pluricostatis. Loch Langavat side, N. Harris, 1928, DRUCE.

753/19. *C. FULVA* Host. Loch Langavat, N. Harris; Callinish, Lewis, 1928, DRUCE.

753/19. *C. FULVA* Host. (HORNSCHUCHIANA) × *OEDERI* = *C. FULVA* Good. Loch Langavat, N. Harris, 1928, DRUCE, teste KÜKENTHAL. A good hybrid.

753/21. *C. LEPIDOCARPA* Tausch. Loch an Larige, M. Perth; High Force, Durham; Winch Bridge, N.W. Yorks, DRUCE; Little Coates, Essex, BROWN.

753/22. *C. OEDERI* Retz. Hoy, Orkney, 1931; Loch Langavat, N. Harris, 1928, DRUCE; Ashdown Forset, E. Sussex, MISS PICKARD.

Var. *ELATIOR* Anders. Wicken Fen, Cambridge, F. BELLAMY.

753/32. *C. PILULIFERA* L. Fruit deformed with an *Ustilago*, Painswick, Gloster, Major ORME.

753/33. *C. DIVERSICOLOR* Crantz. A form with large fruits and spikelets, Loch Langavat, N. Harris, in the locality where Duncan found *C. hebridensis* A. Benn., which has not been found there since.

753/44. × *C. SPICULOSA*, var. *HEBRIDENSIS* (A. Benn.). Mr Arthur Bennett so named a specimen found by Mr Duncan, of Scarp, in the Island of Harris. In 1928 I spent several days searching for it. After I had returned from Harris I had a specimen from Mr Bennett and a more precise localisation of the plant, but although I had worked over the spot, I saw nothing like it in Harris, nor should I have thought *salina* would have grown by an inland freshwater loch two or three hundred feet above sea-level. Dr Kükenthal, however, thinks that the specimen collected by Duncan is *Goodenowii* × *salina* = *spiculosa*, but goes no further.

753/45. *C. ELATA* × *GOODENOWII*. Stow Bedon, W. Norfolk, DRUCE.

753/46. *C. GRACILIS* Curt., var. *FLUVIATILIS* (Hartm.). Rhydd, Worcester, TOWNDROW; Clattercote Reservoir, Oxon, DRUCE.

753/49. *C. GOODENOWII* Gay. One of the most variable of our Sedges, of which eleven varieties are included in the List and two hybrids. I have recently submitted a large number of sheets from my Herbarium to Dr Kükenthal, and find that we practically agreed in their determination.

Var. *RECTA* (Fleisch.) A. & G. Quirang, Skye, LINTON; Gainsborough, N. Lincs, Dr WILLOUGHBY SMITH; Methuen, E. Perth; Glen Fee, Angus; Amhuinnsuidh, N. Harris; Altnaharra, W. Sutherland, DRUCE; Forfar Loch, Angus, DRUCE and CORSTORPINE.

Var. *STENOCARPA* Kük. Clova Mountains, Angus, Fox; Ben Lawers, M. Perth, CUMMING; Methven, M. Perth, DRUCE.

Var. *STRICTIFORMIS* Bailey. A tall, upright form, resembling a slender *elata*. This is the *C. trinervis* Dégl. (teste Kükenthal) that Mr Marsden Jones is cultivating at Potterne.

Var. *FULIGINOSA* (A. Br.). An upright form with very dark spikelets, Burnham, Bucks; Altnaharra, W. Sutherland; Muirkirk, Ayr, DRUCE.

Var. *CHLOROSTACHYA* (Reichb.) Asch. Boat of Garten, Easternness; Tarbert, N. Harris; Bullingdon, Oxon, DRUCE.

753/61. *C. PAIRAEI* F. Schultz. Slapton Lea, S. Devon, 1931, DRUCE.

753/62. *C. DIVULSA* Stokes. Near Fareham, S. Hants, HALL; Downham Market, Norfolk, GILMOUR and E. P. PETCH, a curious plant.

753/63. \times *C. BOENNINGHAUSIANA* Weihe. Littlefield Common, Surrey, J. G. LAWN, a new locality.

753/68. *C. DIVISA* Huds., f. *RIVULARIS* Kük., teste Kükenthal. Grimsby, N. Lincs, Rev. W. W. MASON.

765/1. *PHALARIS MINOR* Retz. Roadside, Heyghnam, W. Gloster, GAMBIER PARRY.

765/7. *P. PARADOXA* L. Sharpness, W. Gloster, J. EVANS, teste HOWARTH.

†765/8. *P. ANGUSTA* Nees. Sapey, E. Sussex, close to the Kent border, Hon. Mr JUSTICE TALBOT.

767/1. *SAVASTANA ODORATA* (L.) Scribner. *HIEROCHLOE BOREALIS* R. & S. A small patch, well established, on the bank of the river Cart, Blythwood, Renfrew, J. R. LEE. The old church of Inchinnan is only half a mile away, but on the opposite side of the river, and Paisley Abbey is five or six miles distant. Mr Lee thinks that the plant can hardly have been there long, for the locality was formerly well known to local botanists, and suggests that it is a casual introduced with ship's ballast. It is a good county record for Renfrew, and Mr Lee, who has done so much for this area, is to be warmly congratulated on his discovery.

*770/4. *ALOPECURUS BULBOSUS* Gouan. Altnaharra, W. Sutherland; marsh by the river Wick, Caithness, 1931, T. J. FOGGITT. New to Scotland. Specimen seen by W. O. HOWARTH.

780/2. *AGROSTIS ALBA* L., var. *STOLONIFERA* (L.). Saunton, N. Devon, DRUCE.

780/6. *A. CANINA* L., sub-var. *NIGRESCENS*. Loch an Lairige, M. Perth, 1930, DRUCE, teste HOWARTH.

782/1. *POLYPOGON MONSPELIENSIS* (L.) Desf. This species has not been seen for several years in this well-known station at Porchester, S. Hants. This year it occurred in great abundance with \times *P. littoralis* in Farlington Marshes, about four miles further east. This is not the station referred to in Townsend's *Flora of Hampshire*, "half a mile due

South of Farlington Church," but appears more likely to be the original station of Lobel recorded in 1605, "proxime salinas et antiquas aedes Drayton." Farlington and Drayton are contiguous and nowadays practically synonymous both being merged into one and the same suburb of Portsmouth. Strictly speaking Drayton is about half-a-mile west of Farlington. These grasses are, of course, indigenous in this locality and cover several acres of ground, HALL.

783/1. *CALAMAGROSTIS EPIGEIOS* (L.) Roth. (? var. *DENSIFLORA* Ledeb. E. Drabble). Little Park, Ampthill, Beds, C. CROUCH, ex LITTLE; Wicken Fen, Cambridge, Miss TODD; Castle Eden Dene, Durham, H. E. FOX.

783/4. *C. BOREALIS* Laest. Holkham, W. Norfolk, Miss TODD.

785/1. *APERA SPICA-VENTI* (L.) Beauv., var. *PURPUREA* (Gaud.) Dr. Marston Brickyards, Oxon, DRUCE.

787/1. *AMMOPHILA ARENARIA* (L.) Link. Rock, E. Cornwall, DRUCE.

†788/1. *LAGURUS OVATUS* L. Dawlish Warren, S. Devon, Miss LEY, ex Miss L. E. RICHARDS.

791/1. *DESCHAMPSIA CAESPITOSA* (L.) Beauv., var. *PARVIFLORA* A. & G. Farnham Common, Bucks, BASDEN, teste HOWARTH.

793/4. ? *TRisetum PANICEUM* (L.) Pers. Burton-on-Trent, Staffs, 1930, DRUCE, teste HOWARTH.

795/1. *ARRHENATHERUM ELATIUS* (L.) M. & K., var. (monstr.) *VEGETA*. Glynde Goods-yard, E. Sussex, Miss PICKARD.

809/3. *KOELERIA BRITANNICA* (Domin). *Lincoln, N. Lincs, Rev. W. W. MASON; *near South Stack, Anglesey, 1930; *Marston Measey, N. Wilts, 1931, DRUCE, teste HOWARTH.

818/2. *MELICA UNIFLORA* Retz., var. *ALBIFLORA*. Colwall, Hereford, R. F. TOWNDROW, white glumes, ? shade-grown.

824/1. *POA CHAIXII* Vill. Vernham Dean, N. Hants, probably introduced with Cherry Laurels, DRUCE.

824/5. *P. PALUSTRIS* L. Edge of allotment garden, Byfleet, Surrey, Lady DAVY.

824/7. *P. NEMORALIS* L. Dinton, S. Wilts, GODDARD.

? Var. *COARCTATA* Gaud. Teesdale, Durham, 1873, Rev. H. E. FOX; Banchory, Kincardine, 1929, DRUCE, teste HOWARTH.

824/14. *P. ANNUA* L., var. *PERENNIS* Druce. Not rare in Orkney, Rysa, Hoy, etc., DRUCE.

Var. AQUATICA A. & G. Dinton, S. Wilts, GODDARD.

825/1. GLYGERIA. Mr Howarth remarks on a plant gathered by G. C. DRUCE at Wytham, Berks, 1931, "nearest to *Glyceria aquatica* Wahlb., but possibly a hybrid between *G. aquatica* and one of the forms of *G. fluitans*, such as *G. plicata* Fr."

825/3. G. DECLINATA Bréb. Wytham, Berks, 1931, DRUCE, teste HOWARTH.

*825/4. G. DISTANS (L.) Wahl., var. PROSTRATA Beeby. Abundant at Gribon, Isle of Mull, GILMOUR.

825/5. G. MARITIMA (L.) M. & K., var. HIBERNICA Druce, in *Rep. B.E.C.*, 431, 1916. Fishbourne near Chichester, W. Sussex, 1931, Miss PICKARD.

825/7. G. BORRERI Bab. Shoreham, W. Sussex, 1931, Miss PICKARD, teste HOWARTH.

*825/8. G. PROCUMBENS Dum. Grimsby, N. Lincs, 1931, ex Dr WILLOUGHBY SMITH, teste HOWARTH.

826/3. FESTUCA ARUNDINACEA Schreb., forma. Barry, Glamorgan. 1930, DRUCE, teste HOWARTH.

Var. STRICTIOR Hack. Budleigh Salterton, S. Devon, 1931, DRUCE, teste HOWARTH.

826/4. F. ELATIOR × LOLIUM PERENNE = ADSCENDENS (Retz.). Egloshayle Marsh near Wadebridge, E. Cornwall, 1931, E. THURSTON, teste HOWARTH.

826/7. F. RUBRA L., var. PRUINOSA (Hack.) Howarth. Rock, E. Cornwall, 1931, DRUCE; Valley, Anglesey, 1930, DRUCE, merging into var. GLAUDESCENS (Hack.) How., teste HOWARTH.

826/14. F. GLAUCA Lam. Aberfraw Common, Anglesey, 1930, DRUCE, teste HOWARTH.

*826/16. F. AMBIGUA Le Gall. Sandy bay, Woolacombe, N. Devon, Lady DAVY, an interesting extension of its range.

827/16. BROMUS SECALINUS L. Cothill and Basildon, Berks, DRUCE; Glynde, E. Sussex, Miss PICKARD, teste HOWARTH.

827/17. B. PRATENSIS Ehrh. Basildon, Berks; Pixey's Mead, Oxon, DRUCE, teste HOWARTH.

827/19. B. HORDEACEUS L., ? var. LEPTOSTACHYS (Pers.) Beck. Burton-on-Trent, Staffs, DRUCE, teste HOWARTH.

827/19(2). *B. BRITANNICUS* I. A. Will. (PSEUDO-RACEMOSUS A. & G.). Cathay's Park, Glamorgan, Miss VACHELL; Glynde, E. Sussex, Miss PICKARD.

827/21. *BROMUS INTERRUPTUS* Druce. With Sainfoin, Glynde, E. Sussex, Miss PICKARD; Taynton, Oxon, 1931, DRUCE.

827/22. *B. ARVENSIS* L. Port Meadow, Oxford, GAMBIER PARRY.

827/27. *B. SQUARROSUS* L. Avonmouth, W. Gloster, J. EVANS, teste HOWARTH.

†827/29. *B. JAPONICUS* Thunb. Burnham-on-Sea, N. Somerset, Lady DAVY and W. D. MILLER, as *B. patulus*.

828/2. *BRACHYPODIUM PINNATUM* (L.) Beauv. Thorncomb, Dorset, GODDARD.

†829/4. *LOLIUM ITALICUM* A. Br., var. *COMPOSITUM* Mutel. Shamley, Surrey, LAWN.

830/1. *AGROPYRON JUNCEUM* Beauv. Rock, E. Cornwall, fine specimens approaching var. *MEGASTACHYUM* (Fr.) Dr., DRUCE.

×*REPENS* = *A. HACKELII* Druce. Rock, E. Cornwall, 1931, DRUCE.

830/4. *A. REPENS* L., var. *LASIORACHIS* Hack. Kirkwall, Orkney, 1931, DRUCE.

832/12. *TRITICUM VENTRICOSUM* (Tausch) Ces. Sharpness, W. Gloster, Miss TODD; Burton-on-Trent, Staffs, DRUCE and Sir R. CURTIS.

835/12. ?*HORDEUM DISTICHON* L., var. *NUDUM* L. Burton-on-Trent, Staffs, 1930, DRUCE.

839/2. *JUNIPERUS SIBIRICA* Burgs. Near Rackwick, Hoy, Orkney, DRUCE and Hon. Mrs G. BARING.

844/7. *EQUISETUM HYEMALE* L. Boat of Garten, Easternness, 1931, DRUCE and CORSTORPHINE. Spread over a larger area than when I discovered it there in 1884, DRUCE.

847/1. *EUPTERIS AQUILINA* (L.) Newm. A small specimen growing on a wall, Louth, N. Lincs, Miss MARSDEN.

854/1. *POLYSTICHUM SETIFERUM* (Forsk.) Woyнар. A subtripinnate form, Woody Bay, N. Devon, DRUCE, teste STANSFIELD.

865/1. *BOTRYCHIUM LUNARIA* (L.) Sw. W. Grinstead, S. Wilts, Miss GULLICK.

876/5. *CHARA HISPIDA* L. Hickling, E. Norfolk, Miss TODD.

876/17. *C. DELICATULA* Ag. Pegal Burn, Hoy, Orkney, 1931, DRUCE.

THE FLORA OF SURREY.

G. CLARIDGE DRUCE.

While some parts of this important Flora are exceptionally good, especially those dealing with our native species, the treatment is by no means uniform. Changes of citation are frequent and researches into ancient literature are by no means exhaustive. Mr Salmon has frequently chosen later names than the earlier published ones, thus, often Britten appears as the authority for plants previously recorded by Irvine. Obviously proper citation is to take the oldest reference first, and to work in the others when given in sequence. Surrey was almost snowed under by workers and this made it a most difficult task to carry out, but one cannot say it has been satisfactorily done.

The title and history of our Reports are incomplete and misleading, since under the principal works cited my name does not appear, and as regards our Report the information is inaccurate. It should be:—The Botanical Society of London was founded on July 27, 1836, under the Presidency of Dr J. E. Gray. Its first Distributor in 1844 was H. C. Watson. In 1857 it was reformed as the Thirsk Natural History Society, which carried on till 1866, when on Mr Baker's removal to London it became in 1869 "The Botanical Exchange Club," continuing as such till 1878. In 1879 it appeared as the Botanical Exchange Club of the British Isles under the Secretaryship of Mr C. Bailey, who continued as its sole officer till his resignation in 1902, when I consented to manage its affairs. In 1909 the name was varied to the Botanical Society and Exchange Club of the British Isles, which led to a satisfactory increase of membership from 30 to over 600. Since 1902, I have been manager and prepared the whole of the Secretary's Reports.

The article by Mr Will. F. Taylor on Topography supplies a much needed want. So, too, does that by Margaret Chorley Crosfield on the Geology of the County, but these were printed off ten years ago.

Prof. G. S. Boulger wrote in his usually excellent manner on the Outlines of the Botanical History of Surrey. The History began in the early days, for the Father of English Botany, W. Turner, for a time lived at Kew and supplied 15 of the 100 species which Christopher Merrett mentioned for Surrey in his "Pinax." Gerard, 2nd edition, edited by Thomas Johnson, added nine more, one of which at least was due to John Goodyer of Maple Durham. Parkinson, in his "Theatrum" of 1640, had 18 Surrey notes. William How, 1650, in his "Phytologia," and Robert Turner in his "Botanologia" have a few more—both writers citing *Dentaria* from near Croydon. Merrett's list I have alluded to, but there are 15 more in MS. in the author's copy in the British Museum: they include *Ajuga Chamaeepitys*. Boulger says that Charles Du Bois had a Botanical Garden at Mitcham and made collections "mostly of Indian plants," now preserved at Oxford. Something

more might have been said about Du Bois and his work, but this part of the Flora was written prior to my article on him in *Rep. B.E.C.*, 1927. The Du Bois' Indian plants are remarkably good and are among the earliest ones sent to Britain, but the African and American specimens are also fine. The English collection is very good and offers a score of the earliest Surrey records. One would have wished that Prof. Boulger could have completed the *Botanologia* so that the notes on Beeby, Bennett, Marshall and Rev. H. E. Fox could have been done by the same hand. Mr Salmon was especially fortunate in having such able workers to lighten the task of preparing his County Flora.

The text, especially in the earlier portion, abounds with interesting and critical notes, and botanical information is given in an excellent manner. Surrey had a large array of critical workers, but in Beeby, Bennett and Salmon, it had a trio who outshone their compeers and each of them has done much to build up so large a structure. Each of these had meant to have compiled a Flora of the County, and we can judge from the *Botany for the Victoria County History*, which Beeby wrote, how qualified he was for the task. One feels that much valuable material perished with his untimely death.

In going through the Flora for the purpose of this Review, one has derived great pleasure from reading so much that was excellent. In studying what were the constituents of so rich a Flora one has missed in what is usually supplied the usual statistics of native and introduced species, and of the total number of species, varieties and hybrids. One was also sadly impressed with the large number of records omitted which had been printed in the Reports of the Botanical Exchange Club, and of those which Lady Davy and myself had sent in correspondence. Many of these, of course, were too late for insertion. As the omissions are so numerous it seems well to bring together these records (and I practically limit them to new species or varieties) so that subscribers to the Flora may insert a print in their copy, and thus be spared the trouble and worry of recording plants already on record or in hunting up their history. Most of them are adventives but, as the text freely includes aliens (e.g., *Trifolium spinosum* is included but *T. aleana* is omitted), they should find a place. It has been a task, but one trusts that it may be found useful. Again, it may be said that many are microforms, but if *Bursa Brittonii* is included, why exclude *B. turoniensis*? If *Taraxacum Nordstedtii* is given, why not *T. faeroense*? There are many more in the Rubi but this genus will need to be rewritten. Over 20 species are not noticed. These remarks are not meant to refer to the latter part of the work which has been so well edited by Mr Pearsall. The former part had been printed off—and it had been done regardless of cost and space—so that Pearsall's work was greatly taken up with the difficult task of cutting down, but it was especially in this portion of the Flora that one wanted details and plenty of localities. We are grateful to him for doing so much by the making of bricks without straw.

The possessor will have a handsome volume which contains a vast mass of material though, it may be, an Oliver might want more.

- 1/3. *CLEMATIS VITICELLA* L. Alien. Esher, *Beeby* in *Rep. B.E.C.*, 8, 1914.
- 2/1. *THALICTRUM FLAVUM* L., var. *SPHAEROCARPUM* (L. & C.). Blackwater, *Beeby* in *Rep. B.E.C.*, 102, 1884.
- 6/3. *RANUNCULUS ACER* L. First evidence, Dulwich, *Hb. Du Bois*, 1699, as a form whose petals turn white.
- 7/7. *R. FLAMMULA* L., var. *ALISMIFOLIUS* Glaab. Sheen Common, *Druce* in *Rep. B.E.C.*, 1, 1911.
- 7/10. *R. SARDOUS* Cr., var. *TUBERCOLATUS* Celak. Woking, *Druce* in *Rep. B.E.C.*, 81, 1927.
- 7/14. *R. TRILOBUS* Desf. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 7/15. *R. MURICATUS* L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 9/1. *HELLEBORUS VIRIDIS* L., var. *GUTTATUS*. *Druce* in *Rep. B.E.C.*, 762, 1925, is earlier.
- 12/3. *NIGELLA SATIVA* L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 23/2. *GLAUCIUM CORNICULATUM* Curt. (PHOENICEBUM). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 32/4. *FUMARIA PURPUREA* Pugsf. "Pictus saturate purpureo," Mitcham, *Hb. Du Bois*, c. 1700. See *Rep. B.E.C.*, 467, 1927.
- 32/14. *F. AGRARIA* Lag. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859; Limpsfield, *Rev. H. E. Fox* in *Rep. B.E.C.*, 387, 1927.
- 35/4. *RADICULA ISLANDICA* Druce. (*NASTURTIUM PALUSTRE*). First evidence, Peckham Field, *Hb. Du Bois*, c. 1700.
Var. *MICROCARPA*. West Barnes, *C. E. Britton* in *Rep. B.E.C.*, 806, 1919.
- 37/13. *ARABIS ARENOSA* Scop. ? Wandsworth, *Irvine* in *Phyt.*, 1854. P. 125. The Headley *ARABIS* is not *GERARDI*.
- 42/10. *ALYSSUM MARITIMUM* Lam. (KONIGA). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 44/1. *EROPHILA VERNA* (L.) Meyer. Witley, *Rev. E. S. Marshall* in *Rep. B.E.C.*, 434, 1894; Wokingham, Gomshall, *C. E. Salmon* in *Journ. Bot.*, 234, 1928.
Var. *SPARSIPILA* (Jord.) O.E.S. Reigate, *C. E. Salmon* in *Journ. Bot.*, 236, 1928.
Var. *INCONSPICUA* (Ros.) O.E.S. Richmond, *C. B. Clarke* in *Rep. B.E.C.*, 183, 1929.
Var. *RADIANS* (Ros.) O.E.S. Wisley [O.18], *Druce* in *Rep. B.E.C.*, 183, 1929.
Var. *CABILLONENSIS* O.E.S. Wimbledon, 1820, *Blake* in *Hb. Druce*; Farnham, *Clarke*; Reigate, *C. E. Salmon* in *Journ. Bot.*, 236, 1928; Milford, *E. S. Marshall*; Pyrford, *Druce*.
Var. *AMERICANA* O.E.S. Chilworth, *C. E. Salmon* in *Journ. Bot.*, 237, 1928.

- Var. *KROCKERI* O.E.S. (as *STENOCARPA*). Milford, *E. S. Marshall* in *Rep. B.E.C.*, 188, 1929; Wisley [O.18], 1915, *Druce*; Byfleet, 1929, *Druce* in *Rep. B.E.C.*, 181, 1929.
- Var. *AGROCARPA* O.E.S. Milford, *Comber*; Chilworth, *C. E. Salmon*; Byfleet, Newark, Wisley, *Druce* in *Rep. B.E.C.*, 188, 1929.
- Var. *SESSILIFLOBA* O.E.S. Milford, as "perhaps *virescens*" in *Hb. Druce, E. S. Marshall* in *Rep. B.E.C.*, 189, 1929.
- 44/1(2). *E. BOERHAAVII* Dum. Reigate, *C. E. Salmon* in *Journ. Bot.*, 239, 1928.
- Var. *MACROPHYLLA* O.E.S. Croydon, *A. Bennett* in *Rep. B.E.C.*, 609, 1928.
- Var. *CRASSICARPA* O.E.S. Head'ey, *C. E. Salmon*; Milford, *E. S. Marshall* in *Journ. Bot.*, 239, 1928.
- Var. *INFLATA* (Wats.). Milford, as *virescens*, *E. S. Marshall* in *Rep. B.E.C.*, 192, 1929.
- Var. *DECIPIENS* O.E.S. Milford, Witley, *E. S. Marshall*; Reigate, *C. E. Salmon* in *Rep. B.E.C.*, 192, 1929.
- Sub-var. *LINEARIFOLIA* O.E.S. Reigate, *C. E. Salmon* in *Journ. Bot.*, 240, 1928.
- Var. *BRACHYCARPA* (Jord.) O.E.S. Reigate, *C. E. Salmon* in *Rep. B.E.C.*, 194, 1929.

Mr Salmon sent a valuable paper on the genus *Erophila* to the *Journal of Botany*, 239, 1928.

- 48/1. *WILCKIA MARITIMA* Scop. (*MALCOMIA*). Alien. Wandsworth, *Irvine* in *Phyt.*, 1859; Thames Bank in Kew, *J. G. Baker* in *Rep. B.E.C.*, 40, 1880; Richmond and Kew, *Rep. B.E.C.*, 12, 1877.
- 48/3. *W. AFRICANA* (L.) Muell. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 48/4. *W. LITTOREA* (L.) Dr. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 49/3. *SISYMBRIUM ALTISSIMUM* L. (*PANNONICUM* Jacq.) Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859, vice 1877.
- 49/4. *S. ORIENTALE* (L.). (*COLUMNÆ* Jacq.) Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859, vice 1877.
- 49/11. *S. PYRENAICUM* (L.) Vill. (*AUSTRIACUM* Jacq.) Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 49/25. *S. RICHARDSONII* Sweet. (*DESCURAINIA*.) Alien. Byfleet, *Lady Davy* in *Rep. B.E.C.*, 433, 1924.
- 54/6. *BRASSICA CHEIRANTHOS* Vill. Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.
- 54/17. *B. DISSECTA* Boiss. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 54/18. *B. HISPIDA* Boiss. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 54/20. *B. GALLICA* (Willd.) Dr. (*POLLICHI*). Merton, *C. E. Britton* in *Rep. B.E.C.*, 895, 1928.
- 54/21. *B. ERUCASTRUM* L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.

- 54/22. *B. INCANA* Schultz. (ADPRESSA). Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 55/3. *DIPLOTAXIS ERUCOIDES* DC. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- D. BRACTEATA. See *BRASSICA ERUCASTRUM*.
- 56/1. *ERUCA SATIVA* Mill. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 57/1. *MORICANDIA ARVENSIS* DC. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 58/1. *CARRICHTERA ANNUA* Ger. (*VELLA ANNUA* L.). Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 59/2. *BURSA ABCISSA* (E. At.). Byfleet, *Druce in Rep. B.E.C.*, 103, 1929.
- 59/7. *B. BRITONII* (E. At.) Oxted, *J. E. Lousley in Rep. B.E.C.*, 564, 1927.
- 59/9. *B. DRUCEANA* (E. At.). Wimbledon, *Druce in Rep. B.E.C.*, 725, 1928.
- 59/20. *B. PATAGONICA* (E. At.). Kew, *Miss Todd in Rep. B.E.C.*, 169, 1923.
- 59/24. *B. ROBUSTA* (E. At.). Byfleet, *Druce in Rep. B.E.C.*, 104, 1929.
- 59/24(2). *B. RUBELLA* Reuter. ? adventive. Guildford, *Druce in Rep. B.E.C.*, 609, 1928.
- 59/25. *B. SINUOSA* (E. At.). Putney, *Fox in Rep. B.E.C.*, 106, 1926; Oxted, *Lousley*.
- 59/27. *B. TURONIENSIS* (E. At.). Pyrford, Byfleet, *Druce in Rep. B.E.C.*, 208, 1920; Oxted (as *mediterranea*), *Lousley in Rep. B.E.C.*, 104, 1929.
- 61/1. *LEPIDIUM GRAMINIFOLIUM* L. Alien. Kew Bridge, *Irvine in Phyt.*, 1859; Kew Bridge, *H. C. Watson in L.B.E.C.*, 10, 1872-4; Warlingham, *Beadell in Rep. B.E.C.*, 170, 1923.
- 61/22. *L. DENSIFLORUM* Schrad. Alien. Pyrford, *Lady Davy and Druce in Rep. B.E.C.*, 49, 1910; Mickleham, 1920, *Bishop*.
- 76/1. *RAPISTRUM PERENNE* All. Alien. Wandsworth, *Irvine in Phyt.*, 1859; Guildford, 1920, *Druce*.
- 76/3. *R. RUGOSUM* All. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 78/1. *ENARTHROCARPUS LYRATUS* DC. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 80/3. *RAPHANUS LANDRA* Moretti. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 85/7. *RESEDA GRACILIS* Ten. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 88/8. *VIOLA ODORATA* L., var. *TENERRIMA* (Wiesb.). *Beeby in Journ. Bot.*, 67, 1892.
- 88/9. *V. HIRTA* L., var. *INCONCINNA* J. Briq. *Rev. H. E. Fox*, 1926.
- 88/14. *V. CONTEMPTA* Jord. Shere, Wisley, *Rep. B.E.C.*, 195, 1926.
Var. *PATULA* Drabble. Shere, *Drabble in Journ. Bot.*, 74, 1929.
- 88/16. *V. CANTIANA* Drabble. Brockham, 1840, *Rep. B.E.C.*, 195, 1926.
- 88/17. *V. MONTICOLA* Jord. Gomshall, *Drabble*; Godalming, *Bishop in Rep. B.E.C.*, 195, 1926.

- 88/19. V. LEJEUNEI Jord. Witley, *Chittenden* in *Rep. B.E.C.*, 194, 1926; Claygate, Thames Ditton, *Drabble* in *Rep. B.E.C.*, 195, 1926.
- 88/25. V. LATIFOLIA Drabble. Pyrford, *Druce*; Cobham, *Drabble*; Epsom, *Lousley* in *Rep. B.E.C.*, 458, 1930.
- 88/27. V. ANGLICA Drabble. Cobham, Godstone, *C. E. Salmon* in *Rep. B.E.C.*, 194, 1926.
- 88/31. V. LEPIDA Jord. Godalming, *Bishop*; Gomshall, *C. E. Salmon* in *Rep. B.E.C.*, 195, 1926.
- 95/2. SAPONARIA VACCARIA L. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.
- 96/7. SILENE GALLICA L. Alien. First record, Thames-side, *Baker* in *Rep. B.E.C.*, 4, 1880.
- P. 173. The SILENE DUBIA Herb. is really the Linnean NUTANS which needs a new name.
- P. 184. The correct name of 154 is STELLARIA DILLENIANA Moench; our PALUSTRIS, with glaucous leaves, coming under it as a var. First evidence, Peckham Fields, *Hb. Du Bois*, c. 1700.
- P. 189. The double form of SAGINA PROCUMBENS referred to is var. DAVIESII *Druce* in *Rep. B.E.C.*, 279, 1918.
- 112/7. HYPERICUM MONTANUM L. No allusion is made to var. SCABRUM Koch in *Rep. B.E.C.*, 20, 1926, from White Down, *Biddiscombe*.
- 115/2. ALTHAEA HIRSUTA L. Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.
- 116/2. LAVATERA CRETICA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 116/4. L. OLBIA L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 116/10. L. PUNCTATA All. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 117/6. MALVA AMBIGUA Guss. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 117/9. M. PARVIFLORA L. Alien. Shelford, *D. Chase* in *Rep. B.E.C.*, 568, 1924.
- Var. MICROCARPA F. & P. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 117/11. M. HISPANICA L. Alien. Pyrford, *Lady Davy* and *Druce* in *Rep. B.E.C.*, 16, 1920.
- 122/1. HIBISCUS TRIONUM L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 123/1. TILIA PLATYPHYLLOS Scop. Alien. Streatham, *Hb. Du Bois*, c. 1700.
- 125/5. LINUM GRANDIFLORUM Desf. Alien. Thames, near Kew, *J. G. Baker* in *Rep. B.E.C.*, 49, 1880.
- 127/6. GERANIUM ENDRESSI Gay. Alien. Wokingham, *Beadell* in *Rep. B.E.C.*, 175, 1923.
- 127/19. G. NODOSUM L. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 64, 1914.

- 127/23. *G. CAROLINIANUM* L. Alien. Mitcham, *C. E. Britton in Rep. B.E.C.*, 406, 1916.
- 128/3. *ERODIUM COMMIXTUM* Jord. Pyrford, *Lousley in Rep. B.E.C.*, 568, 1929.
- 128/8. *E. LITTOREUM* Lem. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 128/11. *E. CICONIUM* Willd. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 136/1. *ILEX AQUIFOLIUM* L., var. *LAURIFOLIUM* Lej. Thursley, *Mrs Wedgwood in Rep. B.E.C.*, 109, 1929.
- 142/3. *ACER PLATANOIDES* L. Boxhill, *Druce in Rep. B.E.C.*, 110, 1926.
- 145/4. *LUPINUS ANGUSTIFOLIUS* L. Alien. Oxted, *Rev. E. C. Crutwell in Rep. B.E.C.*, 279, 1921.
- 152/9. *TRIGONELLA PROCUMBENS* Reichb. (CAERULEA). Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 153/6. *MEDICAGO MINIMA* Desr., var. *LONGISETA* DC. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
Var. *RECTA* Willd. Wandsworth, *Irvine in Phyt.*, 1859.
- 153/11. *M. ITALICA* Steud. (ORBICULARIS ALL.). Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 153/12. *M. SCUTELLATA* Mill. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 153/21. *M. SPHAEROCARPA* Bert. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 153/25. *M. TENOREANA* Ser. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 153/28. *M. ECHINUS* DC. Alien. Putney, *H. E. Fox in Rep. B.E.C.*, 110, 1926.
- 154/5. *MELILOTUS SICULA* Jackson. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 154/7. *M. SULCATA* Desr. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 155/1. *TRIFOLIUM MEDIUM* Huds., var. *BRACHYCALYXINUM* Rouy. Buri-ton, *Biddiscombe in Rep. B.E.C.*, 303, 1927.
- 155/6. *T. STELLATUM* L. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 155/8. *T. MARITIMUM* Huds. Doubtless alien. Earliest record, Wandsworth, *Irvine in Phyt.*, 1859.
- 155/32. *T. CONSTANTINOPOLITANUM* Ser. Alien. Kew and Richmond, *Beadell in Rep. B.E.C.*, 407, 1916.
- 155/36. *T. TENUIFOLIUM* Ten. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 155/50. *T. AUREUM* Poll. Alien. Kew, Thames Bank, *J. G. Baker in Rep. B.E.C.*, 47, 1881.
- 169/1. *SCORPIURUS SULCATA* L. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 171/1. *ORNITHOPUS COMPRESSUS* L. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 176/2. *VICIA TENUIFOLIA* Roth. Alien. Wandsworth, *Irvine in Phyt.*, 1859; Warlingham, *Beadell in Rep. B.E.C.*, 180, 1923.
- 176/6. *V. VARIA* Host. (DASYCARPA). Alien. Wandsworth, *Irvine in Phyt.*, 1859; Warlingham, *Beadell in Rep. B.E.C.*, 180, 1923.

- 176/7. V. BITHYNICA L. Alien. Woking and Weybridge, *Lady Davy* in *Rep. B.E.C.*, 180, 1923.
- 176/17. V. PSEUDO-CRACCA Bert. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 176/25. V. NARBONENSIS L. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 1923.
- 176/32. V. BIVONEA Rafin. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 176/38. V. PUBESCENS Link. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 178/8. LATHYRUS NISSOLIA L., var. GRAMIMEUS Beck. Lower Morden, *C. E. Britton* in *Rep. B.E.C.*, 34, 1923.

Surrey specimens of *L. SYLVESTRIS* and *L. PALUSTRIS* are in the *Herb. Du Bois*, c. 1700.

- 183/9. PRUNUS SEROTINA Ehrh. Alien. Peper Harrow, *J. E. Little* in *Rep. B.E.C.*, 769, 1925.
- 183/9(2). P. LUSITANICUS L. Alien. Cranley, *Grierson* in *Rep. B.E.C.*, 20, 1929.

Many new records of *RUBUS* have been made since the text was printed, and there is a great change of names. Mr Wm. Watson has done much intensive work on the group.

- P. 283. A *POTENTILLA* in Bennett Hb. is said "ad *dacicum* accedens." The obsolete name *P. TORMENTILLA* is retained.
- 189/12. *POTENTILLA SUPINA* L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 189/16. P. *HIRTA* L. Alien. Kew Green, *J. G. Baker* in *L.B.E.C.*, 15, 1867.
- 196/7. *CRATAEGUS ARONIA* Bosc. Alien. Leatherhead, *C. E. Britton* in *Rep. B.E.C.*, 25, 1926.
- P. 317. Prof. Graebner still believes his *SEDUM DRUCEI* to be distinct, and Prof. Domin of Prague, who is testing it, also considers it has claims, but he is still testing it.
- 216/1. *MYRIOPHYLLUM SPICATUM* L. Early specimens are in *Herb. Du Bois* from Clapham, c. 1700.
- 217/2. *CALLITRICHÉ OBTUSANGULA* le Gall. First record, Barns Common, *L.B.E.C.*, 19, 1876.
- 219/2. *LYTHRUM HYSSOPIFOLIA* L. Earliest record, Wandsworth, *Irvine* in *Phyt.*, 1859.
- 220/6. *EPILOBIUM LAMYI* × *LANCEOLATUM*. Milford, *E. S. Marshall* in *Journ. Bot.*, 449, 1894.
- 239/1. *ERYNGIUM CAMPESTRE* L. Alien. Guildford, *Clarke* in *Rep. B.E.C.*, 839, 1929.
- 245/4. *BUPLEURUM OPACUM* Lange. (*ARISTATUM*). Wandsworth, *Irvine* in *Phyt.*, 1859.
- 245/6. B. *LANCEFOLIUM* Hornem. (*PROTRACTUM*). Wandsworth, *Irvine* in *Phyt.*, 1859.
- 247/3. *APIUM NODIFLORUM* Reichb., var. *PSEUDO-REPENS* (Wats.) Dr. Shalford, *Burdon* in *Rep. B.E.C.*, 515, 1930.

- 276/4. PEUCEDANUM (ANETHUM) GRAVEOLENS L. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 287/1. SAMBUCUS RACEMOSA L. Alien. Warlingham, *Beadell in Rep. B.E.C.*, 187, 1923.
- 295/5. ASPERULA ARVENSIS L. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 304/2. VALERIANELLA ERIOCARPA Desf. Staines Lane, *Lady Davy in Rep. B.E.C.*, 287, 1923.
- 308/3. SCABIOSA SUAVEOLENS Desf. (VIRGAPASTORIS). Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 312/1. SOLIDAGO VIRGAUREA L., var. INTERRUPTA Druce. Holmbury, *Countess Granville in Rep. B.E.C.*, 335, 1930.
- 312/5. S. SEROTINA Ait. Milford, *Rev. S. Laing in Rep. B.E.C.*, 575, 1924.
- 318/6. ASTER LANCEOLATUS Willd. Pyrford, *Lady Davy and Druce in Rep. B.E.C.*, 35, 1914.
- 341/1. XANTHIUM STRUMARIUM L. Wandsworth, *Irvine in Phyt.*, 1859.
- 368/4. ANTHEMIS COTULA L. First record, Peckham Field, *Stonestreet in Hb. Du Bois*, c. 1700.
- 371/3. MATRICARIA SUAVEOLENS Buch. Earliest record, as *M. Chamomilla*, var. *discoidea*, Kew, 1871, *J. G. Baker*.
- 371/10. M. TCHICHATCHEWI (Boiss.). Alien. Byfleet, *Lady Davy in Rep. B.E.C.*, 281, 1921.
- 385/1. CALENDULA OFFICINALIS L. Alien. Byfleet, *Druce*.
- 385/2. C. ARVENSIS L. Alien. Pyrford, *Mrs Wedgwood in Rep. B.E.C.*, 388, 1921.
- 385/4. C. PERSICA C. A. Mey. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 393/1. ARCTIUM MINUS × NEMOROSUM. Lower Morden, *C. E. Britton in Rep. B.E.C.*, 571, 1910.
- 395/2. CARDUUS CRISPUS L. The true plant, Dorking, *H. W. Monckton in Rep. B.E.C.*, 385, 1921.
- 396/8. CIRSIUM ARVENSE × LANCEOLATUM. Bramley, *J. Comber in Rep. B.E.C.*, 573, 1916.
- The untenable name CNICUS is retained instead of CIRSIUM.
- 405/12. CENTAUREA CYANUS L. Earliest record, Mitcham, *Hb. Du Bois*, c. 1700.
- 405/13. C. SCABIOSA L. Earliest record, Mitcham, *Hb. Du Bois*, c. 1700.
- 405/16. C. ASPERA Willd. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 405/40. C. IBERICA Trev. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 407/3. CARTHAMUS TINCTORIUS L. Alien. Guildford, *Clarke*; Warlingham, *Beadell in Rep. B.E.C.*, 192, 1923.
- 416/9. CREPIS FOETIDA L. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 419/83. HIERACIUM PELLUCIDUM Laest. Native. Dorking, *J. Sherard in Hb. Du Bois*, c. 1700.
- 419/229. H. CANTIANUM F.J.H. New locality, Pyrford, *Druce in Rep. B.E.C.*, 580, 1924.

There are several other changes in the Hawkweeds necessary, and a few additions.

- 423/3. *TARAXACUM DECIPIENS* Raunk. Byfleet, *Druce in Rep. B.E.C.*, 580, 1914.
- 423/6. *T. LACISTOPHYLLUM* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 123, 1929.
- 423/15. *T. PALUDOSUM* Schlecht. Devil's Punch Bowl, *Beeby in Rep. B.E.C.*, 52, 1882.
- 423/23. *T. FAEROENSE* Dahlst. Sandhurst, *Druce in Rep. B.E.C.*, 121, 1926.
- (*T. UDUM*. I have sent many hundreds of plants to Dr Dahlstedt, and not one of them has he named *T. UDUM*.)
- 423/38. *T. ALIENUM* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 30, 1926.
- 423/47. *T. CHLOROLEUCUM* Dahlst. Barnes, *Miss Todd in Rep. B.E.C.*, 295, 1921.
- 423/49. *T. COPIDOPHYLLUM* Dahlst. Bradmore Green, *Miss Todd in Rep. B.E.C.*, 724, 1923.
- 423/54(3). *T. EXPALLESCENS* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 30, 1926.
- 423/59. *T. GELERTII* Raunk. Gt. Burgh, *Miss Todd*; Byfleet, *Druce in Rep. B.E.C.*, 295, 1921.
- 423/64. *T. KJELLMANII* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 124, 1929.
- 423/72. *T. LONGISQUAMEUM* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 122, 1926.
- 423/73. *T. MACROLOBUM* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 31, 1926.
- 423/75. *T. MUONATUM* Lindb. f. Putney Hill, *Fox in Rep. B.E.C.*, 122, 1926.
- 423/78. *T. PERLACINIATUM* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 124, 1929.
- 423/85. *T. SUBLACINIOSUM* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 122, 1926.
- 423/83(2). *T. SUBPALLESCENS* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 29, 1929.
- 423/84(5). *T. STENOGLOSSUM* Dahlst. Byfleet, *Druce in Rep. B.E.C.*, 124, 1929.

Two or three fresh localities may be included from Dahlstedt's recent work.

- 427/3. *SONCHUS ASPER* Hill, var. *INTEGRIFOLIUS* Lej. Newington and Camberwell, *Hb. Du Bois*, c. 1700; Guildford, *Druce in Rep. B.E.C.*, 746, 1928.
- 427/4. *S. OLERACEUS* L., var. *LACERUS* Willd. Kew, *J. G. Baker, L.B.E.C.*, 8, 1878; Kingswood, *Rep. B.E.C.*, 204, 1926.
- 435/3. *CAMPANULA TRACHELIUM* L. The rare, glabrous calyx plant, Holmbury, *Castalia, Countess of Granville in Rep. B.E.C.*, 360, 1930.
- 435/11. *C. PYRAMIDALIS* L. Alien. Addington, *Griffin in Rep. B.E.C.*, 24, 1911.

- 440/2. *ARBUTUS ANDRACHNE* L. Alien. Leith Hill, *Carter* in *Rep. B.E.C.*, 17, 1914.
- 451/2. *LEDUM GROENLANDICUM* Retz. (*LATIFOLIUM* Ait.). Alien. Naturalised in some quantity in a few places at Henley Park where it was shown me by Mr Marks, *Druce* in *Rep. B.E.C.*, 361, 1930.
- 471/2. *FRAXINUS ORNUS* L. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 17, 1914.
- 474/3. *BUDDLEIA SPECTABILIS* K. & B. Alien. Pyrford, *Lady Davy* in *Rep. B.E.C.*, 446, 1924.
- 488/2. *PHACELIA PARVIFLORA* Pursh. (*DUBIA* (L.) Small). Alien. Thames-bank, near Kew, *J. G. Baker* in *Rep. B.E.C.*, 40, 1880.
- 489/4. *HELIOTROPIMUM CURASSAVICUM* L. Alien. Mortlake, *B. Reynolds* in *Rep. B.E.C.*, 125, 1926.
- 496/5. *BENTHAMIA* (*AMSINCKIA*) *MENZIESII* (Lehm.). Limpsfield, *Rev. E. C. Crutwell* in *Rep. B.E.C.*, 738, 1929.
- 503/4. *PULMONARIA SACCHAROIDES* Mill. Alien. Ranmore, *Burkill* in *Rep. B.E.C.*, 362, 1930.
- 506/10. *MYOSOTIS VERSICOLOR* Sm., var. *LLOYDII* (Jord.). Banstead, *C. E. Britton* in *Rep. B.E.C.*, 633, 1928.
- 509/3. *ECHIMUM VIOLACEUM* L. Alien. Thames-bank, near Kew, *J. G. Baker* in *Rep. B.E.C.*, 40, 1880.
- 509/5. *E. ITALICUM* L. Alien. Shere, *Lady Victoria Russell* in *Rep. B.E.C.*, 201, 1903.
- 510/2. *CERINTHE MINOR* L. Alien. Guildford, *Clarke* in *Rep. B.E.C.*, 585, 1924.
- 513/1. *CONVOLVULUS ARVENSIS* L., var. *INTEGRATA* Dr. Mortlake, *B. Reynolds* in *Rep. B.E.C.*, 31, 1929.
- 513/3. *CUSCUTA EPITHYMUM* DC., var. *ALBIFLORA* Dr. Caterham, *Richards* in *Rep. B.E.C.*, 311, 1927.
- 515/8. *C. RACEMOSA* Mart., var. *CHILIANA* Engelm. Alien. Colly Hill, *Rep. B.E.C.*, 422, 1926.
- 517/1. *SOLANUM DULCAMARA* L., var. *VILLOSISSIMUM* Desv. Banstead, *C. E. Britton* in *B.E.C.*, 1054, 1925.
- 517/7. *S. ROSTRATUM* Dunal. Alien. Warlingham, *Beadell* in *Rep. B.E.C.*, 21, 1923.
- 524/2. *HYOSCYAMUS ALBUS* L. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 532/29. *LINARIA CANADENSIS* D.-Court. Alien. Thames-bank, near Kew, *J. G. Baker* in *Rep. B.E.C.*, 40, 1880.
- 535/2. *SCROPHULARIA AQUATICA* L., var. *PUBESCENS* Bréb. Thames-side, Kew, *Drabble* in *Rep. B.E.C.*, 126, 1926.
- 543/8. *VERONICA AQUATICA* Bernh. Pyrford, *Druce* in *Rep. B.E.C.*, 313, 1927.
- 543/18. *V. TOURNEFORTII* Gmel., var. *CORRENSIANA* Lehm. Hook, Ashstead, *C. E. Britton* in *Rep. B.E.C.*, 917, 1928; 534, 1930.
Var. *ASCHERSONIANA* Lehm. Hindhead, *Rep. B.E.C.*, 314, 1927.

- 543/19. *V. AGRESTIS* L., var. *GARCKIANA* Fourn. Malden, *C. E. Britton* in *Rep. B.E.C.*, 918, 1928.
- 543/20. *V. POLITA* Fries is a more correct name than *DIDYMA* Ten.
Var. *THELLUNGIANA* Lehm. Ashtead, *C. E. Britton*; Walton-on-the-Hill, *Rep. B.E.C.*, 918, 1928.
- The new *EUPHRASIAS* are not, with one exception, given here. They are in great confusion.
- 545/14. *EUPHRASIA ATROVIOLACEA* D. & L. Merrow Downs, *H. E. Fox* in *Rep. B.E.C.*, 411, 1927; teste LUMB.
- 549/4. *MELAMPYRUM VULGATUM* Pers., var. *DIGITATUM* (Beauv.). Farley, Horsley, *H. E. Fox* in *Rep. B.E.C.*, 411, 1927.
- 552/2. *URTICULARIA MAJOR* Schmid. Felbridge, *Beeby* in *Rep. B.E.C.*, 94, 1883.
- 556/2. *VERBENA SUPINA* L. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 558/3. *MENTHA LONGIFOLIA* Huds., var. *PULVERULENTA* (Strall). Tadworth, *Lousley* in *Rep. B.E.C.*, 919, 1928.
- 558/7. *M. AQUATICA* L., var. *MINOR* Sole. Holmwood, *Beeby* in *Rep. B.E.C.*, 412, 1927.
- 558/8. *M. HIRCINA* (Hull). Holwood, Chiddingfold, *Beeby* in *Rep. B.E.C.*, 133, 1885 (put under *PIPERITA* on p. 508).
- 558/12. *M. RUBRA* (Huds.), var. *VARIEGATA* (Sole). Barnes, *Fraser* in *Rep. B.E.C.*, 239, 1926.
- 558/13. *M. ARVENSIS* L., var. *HIRTIPES* Fraser. Cooper's Hill, etc., *Fraser* in *Rep. B.E.C.*, 242, 1926.
Var. *ALBIFLORA*. Walton Bridge, *Fraser*; Cutt Mill, *Lousley* in *Rep. B.E.C.*, 242, 1926.
Var. *AUSTRIACA* (Jacq.). Mitcham, *Du Bois*, c. 1700; Woking, Virginia Water, *Druce* in *Rep. B.E.C.*, 890, 1925.
- 561/1. \times *THYMUS CELAKOVSKYANUS* Schulz. (*PULEGIOIDES* \times *SERPYPILLUM*). Kew, *Rep. B.E.C.*, 238, 1923. Several fresh localities have recently come to hand which are not given here.
- 566/16. *SALVIA VIRIDIS* L. Alien. Battersea, *Irvine* in *Phyt.*, 1859.
- 570/3. *DRACOCEPHALUM PARVIFLORUM* Nutt. Alien. Byfleet, *Lady Davy* in *Rep. B.E.C.*, 590, 1924; Chilsham, *Rep. B.E.C.*, 73, 1914.
- 578/1. *GALEOPSIS SPECIOSA* Mill. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 588/22. *PLANTAGO PATAGONICA* Jacq. Woking, *Biddiscombe* in *Rep. B.E.C.*, 1921.
- 600/7. *CHEENODIUM OPULIFOLIUM* Schrad. Alien. Wandsworth, *Irvine* in *Phyt.*, 1859.
- 600/12. *C. PICIFOLIUM* Sm. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.
- 600/21. *C. HIRCINUM* Schrad., var. *DEMINUTUM* Ludw. Alien. Byfleet, *Druce* in *Rep. B.E.C.*, 134, 1929.
- 600/24. *C. ZSCHACKEI* Murr. Alien. Pyrford, *Druce* in *Rep. B.E.C.*, 134, 1929; Byfleet, *Rep. B.E.C.*, 368, 1921.
- 613/1. *SALSOLA KALI* L. Alien. Raynes Park, *C. E. Britton* in *Rep. B.E.C.*, 134, 1929.

- 615/6. *POLYGONUM SCABRUM* Moench. (*LAPATHIFOLIUM* × *PERSICARIA*).
Wisley, *C. E. Britton* in *Rep. B.E.C.*, 522, 1930.
Var. *TOMENTOSUM* Beck. Whitmoor, *C. E. Britton* in *Rep. B.E.C.*, 522, 1930.
- 615/9. *P. HYDROPIPER* × *PERSICARIA*. Brookwood, *C. E. Britton* in *Rep. B.E.C.*, 523, 1930.
- 615/14. *P. MICROSPERMUM* Jord. Mitcham, *A. Bennett* in *Rep. B.E.C.*, 18, 1879.
- 618/4. *RUMEX ELONGATUS* Guss. Prof. Danser suggests this is wrongly identified, so too is *RUMEX MAXIMUS* which is ×*R. WEBERI*.
- 618/16. *R. ACETOSELLA* L. First record, Mitcham, *Hb. Du Bois*, c. 1700.
- 618/29. *R. OBOVATUS* Danser. Alien. Ham, *Mrs Wedgwood* in *Rep. B.E.C.*, 135, 1929.
- 635/1. *CANNABIS SATIVA* L. Alien. First record, Wandsworth, *Irvine* in *Phyt.*, 1859.
- 637/3. *URTICA DODARTII* L. Alien. Kew Bridge, *G. Nicholson* in *Rep. B.E.C.*, 18, 1878.
- 639/1. *HELIXINE SOLEIROLII* Req. Alien. Haslemere, *Miss Drummond* in *Rep. B.E.C.*, 136, 1929.
- 646/1. *QUERCUS ROBUR* L. First record, Witham Lane, *Hb. Du Bois*, c. 1700.
- 650/3. *SALIX ALBA* × *BABYLONICA*. Lower Morden, *C. E. Britton* in *Rep. B.E.C.*, 405, 1923. Many *Salices* remain unnoticed.
- 669/10. *ORCHIS ELODES* is not a correct name—it is the true *O. MACULATA* L., f. *VEPERTILIO* Druce, Byfleet, *Rep. B.E.C.*, 20, 1915. Early evidence, Holmbury, *Castalia, Countess of Granville*, 1878, in *Hb. Druce*.
- 678/6. *CROCUS ZONATUS* J. Gay. Alien. Shackleford, *F. Clarke* in *Rep. B.E.C.*, 761, 1928.
- 680/1. *SISYRINCHIUM ANGUSTIFOLIUM* Mill. Chobham, *Thomas* in *Rep. B.E.C.*, 898, 1925.
- 698/1. *ASPHODELUS FISTULOSUS* L. Warlingham, *Beadell* in *Rep. B.E.C.*, 216, 1923.
- 704/1. *HYACINTHUS COMOSUS* L. Thursley, *F. Clarke* in *Rep. B.E.C.*, 761, 1928.
- 706/3. *SCILLA NON-SCRIPTA* H. & L., var. *BRACTEATA* Dr. Claygate, *H. C. Watson*. Proves constant in culture, *L.B.E.C.*, 14, 1870.
- 718/16. *JUNCUS MACER* Gray. (*TENUIS*). Reigate, *Barton* in *Rep. B.E.C.*, 375, 1915; Wisley, *Lousley* in *Rep. B.E.C.*, 389, 1927.
- 737/17. *POTAMOGETON CRISPUS* L., var. *SERRATUS* (Huds.). Guildford, *Beeby* in *Rep. B.E.C.*, 57, 1883.
- 746/11. *SCIRPUS SETACEUS* L. Pedicelled spikelets, Pyrford, *Lady Davy* in *Rep. B.E.C.*, 153, 1924.
- 747/2. *ERIPHORUM ANGUSTIFOLIUM* Roth, var. *ELATIUS* Koch. Pirbright, *Beeby* in *Rep. B.E.C.*, 58, 1881.
- 753/4. *CAREX VESICARIA* L., forma *PENDULA*. Hedge Court, *Beeby* in *Rep. B.E.C.*, 98, 1883.

- 753/77. *C. VULPINOIDES* Michx. Alien. Thames-bank, near Kew, *Nicholson in Rep. B.E.C.*, 40, 1880.
- 754/8. *PANICUM CRUS-GALLI* L. (SUBMUTICUM). Alien. Pyrford, *Lady Davy in Rep. B.E.C.*, 507, 1926.
- 754/10. *P. SANGUINALE* L., var. *CILIARE* Trin. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 763/2. *SORGHUM HALEPENSE* Pers. Alien. Byfleet, *Lady Davy in Rep. B.E.C.*, 601, 1924.
- 765/1. *PHALARIS MINOR* Retz. and *P. PARADOXA* L. Early evidence, Wandsworth, *Irvine in Phyt.*, 1859.
- 770/1. *ALOPECURUS PRATENSIS* L., var. *CAESIUS* A. Schwarz. West Baynes, *C. E. Britton in Rep. B.E.C.*, 633, 1922.
- 777/1. *PHLEUM PRATENSE* L., f. *BRACTEATA*. Merton, *C. E. Britton in Rep. B.E.C.*, 457, 1924.
- 784/1. *GASTRIDIDIUM VENTRICOSUM* S. & T. The older name. Earliest evidence, *Hb. Du Bois*, c. 1700.
- 789/1. *AIRA CARYOPHYLLEA* L., var. *MAJOR* Gaud. (*MULTICULMIS*). Pyrford, *Druce in Rep. B.E.C.*, 221, 1923.
- 793/1. *TRisetum FLAVESCENS* Beauv., var. *VARIEGATUM* M. & K. Horsell, *Biddiscombe in Rep. B.E.C.*, 931, 1928.
- 794/6. *AVENA STRIGOSA* Schreb., var. *ALBIDA* Marq. Alien. Mortlake, *Rep. B.E.C.*, 753, 1922.
- 796/1. *GAUDINIA FRAGILIS* Beauv. Alien. Byfleet, *Lady Davy in Rep. B.E.C.*, 158, 1921.
- 800/1. *SIEGLINGIA DECUMBENS* Beauv., var. *LONGIGLUMA* Hackel. Byfleet, *Lady Davy and Druce*.
- 824/5. *POA PALUSTRIS* L. (as *serotina*). Alien. Kew and Mortlake, *G. Nicholson in Rep. B.E.C.*, 24, 1879.
- 824/6. *P. TRIVIALIS* L., var. *STRICTA* Doell. Epsom, *Rep. B.E.C.*, 1070, 1925.
- 826/ (2). *FESTUCA SULCATA* Hackel. Possibly native in heathy ground, Byfleet, *Druce in Rep. B.E.C.*, 323, 1927. First as British. Various grades have been given it. On the standard of the *Flora* it may be kept distinct.
- 826/7. *F. RUBRA* L., var. *BARBATA* (Hack.). Wimbeldon, *Fox in Rep. B.E.C.*, 142, 1926.
- 827/19. *BROMUS BRITANNICUS* Williams. (*B. HORDEACEUS*, var. *PSEUDORACEMOSUS* Dr.). Betchworth, 1867, *Warren in Rep. B.E.C.*, 42, 1929.
- 827/24. *B. SCOPARIUS* L. Alien. Wandsworth, *Irvine in Phyt.*, 1859.
- 827/27. *B. SQUARROSUS* L., var. *VILLOSUS* (as *patulus*). Alien. Mitcham, *Rep. B.E.C.*, 323, 1927.
- 829/2. *LOLIUM TEMULENTUM* L. Early record, *Hb. Du Bois*, c. 1700.
- 830/11. *AEGLIOPS (TRITICUM) OVATA* L. Alien. Wandsworth, *Irvine in Phyt.*, 1859.

- 844/7. *EQUISETUM OCCIDENTALE* Hy. This is the *E. hyemale* from the Ridgway where I discovered it. It may possibly have been introduced with French Roses. See *Rep. B.E.C.*, 244, 1929. It is the only known British station.
- 849/1. *BLECHNUM SPICANT* With., var. *BIFIDUM* Wollaston. Leith Hill, *C. E. Britton in Rep. B.E.C.*, 1039, 1923.
- The Genus *LASTREA* is retained instead of *DRYOPTERIS*.
- 872/2. *NITELLA OPACA* Ag. (as *syncarpa*). Ashtead, Groves in *L.B.E.C.*, 11, 1877.
- 876/17. *CHARA DELICATULA* Ag. Warborough, Comber in *Rep. B.E.C.*, 598, 1916.

The British plants omitted in the *Flora* are *Fumaria purpurea*, *Bursa rubella*, other *Bursae* 6, *Violae* 7, *Erodium commixtum*, *Rubi* 20, *Valerianella eriocarpa*, *Hieracium pellucidum*, *Carduus eu-crispus*, Dandelions 17, *Euphrasia atrovioleacea*, *Mentha hircina*, *Festuca sulcata*, *Bromus britannicus* probably, and *Chara delicatula*, besides 59 varieties.

The foregoing list gives 132 additional aliens with 4 varieties.

Earlier records are also given in 25 cases.

Several omissions of course are the result of the book being so long in the press.

ROSES IN ANGUS.

MARGARET CORSTORPHINE.

The flora of the county of Angus naturally falls into the flora of the seacoast, the lowland straths, the subalpine glens and the mountains. In all these areas, with the exception of the mountains, roses are plentiful but the relative abundance or rarity of the various species varies considerably in each. Our most abundant species are *R. Afzeliana*, *R. coriifolia*, *R. villosa* and *R. Sherardi*, and the British species which do not occur as natives are *R. arvensis* (?), *R. stylosa*, *R. obtusifolia*, *R. micrantha*, [*R. elliptica*] and *R. agrestis*.

GENERAL DISTRIBUTION.

R. SPINOSISSIMA L. is common along the coast. It is frequent on the grassy tops of the cliffs from Montrose to Arbroath and on the sandy dunes from Arbroath to Dundee. Tending to low growth all along the coast, it becomes quite dwarf on the dunes, forming here and there large patches of the dune carpet which are particularly conspicuous in June because of the beauty of its large white flowers. Inland, although widely distributed, one finds generally only isolated bushes, often growing to a height of 7 to 8 feet. When it grows so luxuriantly it has generally fewer spines and a tendency to larger leaves. It is infrequent in the highland glens, occurring in Glen Clova at 500 feet.

R. CANINA L. and *R. DUMETORUM* Thuill. are not abundant in Angus. They are most frequent on the coast, occur occasionally in the lowland straths, and are altogether absent from the subalpine and alpine areas.

R. AFZELIANA Fr. and *R. CORIIFOLIA* Fr., on the contrary, are least frequent along the coast, very abundant in the lowland straths and gradually give place to *R. villosa* and *R. Sherardi* in the highland glens.

The groups *Subcaninae* and *Subcollinae* are very much more plentiful than *R. canina* and *R. dumetorum* but not so abundant as *R. Afzeliana* and *R. coriifolia*. Their distribution is very much the same as the distribution of *Afzeliana* and *coriifolia* and is quite consistent with the suggestion made by J. R. Matthews ("Hybridism and Classification in the Genus *Rosa*," *New Phyt.*, 1920, p. 165) that possibly they may be hybrids of these species—*subcanina*, connecting, as it does, *canina* and *Afzeliana*; and *subcollina*, combining so many of the features of *dumetorum* and *coriifolia*.

R. VILLOSA L. is our commonest rose (usually as var. *mollis* and its forms). Like *R. Afzeliana* and *R. coriifolia*, it is not frequent on the immediate coast line. It ascends higher than these species, is abundant in the highland glens, and, on the mountains, one finds it occasionally on a grassy ledge or by the side of a hill burn. In Glen Esk it occurs at 1600 feet, and in Glen Clova at 2200 feet.

R. SHERARDI Davies follows very closely the distribution of *R. villosa* and is very nearly as abundant.

R. TOMENTOSA Sm. is very rare: in fact, it is very doubtful if typical *tomentosa* occurs in Angus. I sent several gatherings to Col. Wolley-Dod from bushes which seemed to me neither typical *Sherardi* nor typical *tomentosa*, but he also was doubtful under which they should come.

R. HURSTIANA Harrison in *Vasc.*, xvi., No. 4, November 1930, p. 145 (8), is a new species lying between *R. Sherardi* and *R. tomentosa*. Professor Harrison has gathered it at Tealing and he informs me he has never seen the type *tomentosa* in the county and, in his opinion, it does not grow there.

R. RUBIGINOSA is plentiful along the coast, frequent and widely spread in the lowlands, but only reaches the fringe of the subalpine area. It was formerly regarded as doubtfully native in Scotland. Professor Trail in his "Additions and Corrections to the Topographical Botany of Scotland" (*Ann. Scot. Nat. Hist.*, 1906, p. 38) says:—"In N.E. Scotland this frequently appears entitled to be regarded as native, if one may judge by habitats. It has long been a favourite, and has often been planted, even in early times; and its seeds are readily dispersed by birds. It is, therefore, often regarded as very doubtfully 'indigenous' in Scotland; but the evidence now obtainable can warrant only the verdict 'not proven'." Col. Wolley-Dod in *Rev. Brit. Roses*, p. 93, says:—"There can be no question as to its nativity in Scotland, which has been called in doubt." It is one of our very common roses and what adds to the evidence for its claim to nativity in Angus is the fact that, although frequent and very widely distributed all over the county, it is more common on the seacoast—all along the tops of the rocky stretch of cliffs from Montrose to Arbroath and on the sandy dunes from Arbroath to Dundee, where there has at no time been much human habitation. Gardiner says, in his *Flora of Forfarshire*, "not common." It is therefore, probable that it may have spread greatly in late years. The sweet briar still smells sweet but it has undoubtedly lost much of its old-time fragrance when, to be in its vicinity, meant to be conscious of it. The scent is now often hardly more perceptible than that of *R. Sherardi*, var. *resinosoides*. One wonders how that can be accounted for.

DISTRIBUTION.

R. ARVENSIS Huds.

Near Dun's Bridge, *Mr A. Croall, Gard. Fl. Forf.*; cliffs at Buckie Den, Lunan Bay, *Mrs Blair Imrie*.

Var. *ovata* Lejeune.

Lane near Idvies, Letham.

Although native in Scotland as far north as Stirling, *R. arvensis* is very doubtfully native in Angus. Mrs Blair Imrie's record from the cliffs would seem to indicate that it was indigenous. Unfortunately, however, the specimen was destroyed and although the station has been repeatedly searched, the bush has never been refound. Var. *ovata* (Lej.)

Desv. grows in some profusion in the lane at Letham but may be an escape from the gardens at Idvies which are near by.

Recorded for Scotland as native from Edinburgh, Linlithgow, and Stirling; and as doubtfully native from many other Scottish counties as far north as Kincardine and the banks of the Dee at Abergeldie.

R. STYLOSA Desv. (agg.).

Var. *systyla* (Bast.) Baker.

G. Don (under *R. collina*) in "Account of the Native Plants in the County of Forfar" in Headrick's *General View of the Agriculture of the County of Angus or Forfarshire*. No locality is mentioned. Watson (*Top. Bot.*) records it as insufficiently vouched, as are all the other Scottish records. It seems very improbable that it is a native of Scotland.

R. SPINOSISSIMA L. (agg.).

Plentiful along the coast and extending to a good elevation on the mountains, *Gard. Fl. Forf.*

Recorded for Scotland from 35 v.-cs.

Var. *typica* W.-Dod.

Banks by the coast at the mouth of the N. Esk, plentiful; cliffs near Lunan Bay; banks of the Monikie burn between Carnoustie and Muirdrum; near Barry; roadside between Wester Bonhard and Kelly Moor; roadside between Tannadice and Finavon.

Recorded for Scotland from Roxburgh, E. and Mid Perth and Easterness.

Forma *pimpinellifolia* W.-Dod.

Roadside near North Water Bridge, Montrose; cliffs near West Mains of Ethie, Auchmithie, and Seaton Den; dunes, frequent, between Elliot and Broughty Ferry; dens of Heughhead, Pitairlie, Ballumbie, Crombie, Elliot and Rottenraw; near Craigend; Letham, Glasterlaw, Finavon, Glen Clova, etc.

Many authors use the name of *R. pimpinellifolia* L. for the aggregate species but Col. Wolley-Dod makes *R. spinosissima* L. the aggregate as it is the older name and as there is some doubt as to the exact plant intended by Linnaeus. See "Roses of Britain," p. 16. Forma *pimpinellifolia* is much more frequent than the type but it is often difficult to decide under which form a plant should come as so many of the bushes have some of the peduncles glandular and others smooth, showing how one form passes into the other.

Recorded for Scotland from Wigtown and Ayr.

R. RUBELLA Sm.

Col. Wolley-Dod has seen a specimen from Angus—no locality. He considers the status of *R. rubella* is somewhat doubtful and thinks it probable that it is one of the very numerous hybrids of *spinosissima* and *villosa*.

Recorded for Scotland from Linlithgow, Perth and (S. Aberdeen).

×*R. SABINI* (Woods) W.-Dod. *R. nivalis* Donn Hort. Cant., ed. 8, p. 170. *R. Doniana* Woods.

On a rock on one of the mountains at the head of Clora [Clova] near the limits of perpetual snow (hence his name *nivalis*), G. Don, *Baker Mon. Brit. Roses*, p. 205. Under *R. Sabini* Woods, Mountains of Clova, G. Don. *Hook. Fl. Scot.*, p. 155. This, with the var. *Doniana* Woods, is frequent in the mountain valleys, *Gard. Fl. Forf.* Under *R. involuta* Sm. a colony consisting of eleven distinct clumps, a short distance from Muirdrum (!), W. Barclay in *Ann. Scot. Nat. Hist.*, 1899, p. 118. Several bushes by banks of Elliot above Arbirlot; roadside near Resten-net.

Don regarded *Doniana* as distinct from *Sabini*. It is described by Baker as more densely hairy than *Sabini*, with calyx tube and fruit densely prickly, and sepals hardly, if at all, pinnate. Col. Wolley-Dod, however, now includes it under *Sabini* as he thinks that neither the descriptions nor the authentic specimens indicate any substantial difference (*Roses of Britain*, p. 23).

Regarding Don's discovery of *R. Sabini* in Clova, Rev. E. S. Marshall (*Journ. Bot.*, 1895, p. 45) says that in July 1888, when descending from the tableland above Craig Rennet into Glen Fiagh, he noticed a short distance down the cliffs a rose which he supposed at the time to be *R. pimpinellifolia*. He, however, omitted to take specimens or make a proper examination but he said he had little doubt that this was Don's station, if not the very same bush. The elevation must have been at least 2500 feet, probably more. It is possible the bush may still be there. I have been repeatedly on these rocks and have not seen it, but it is a large area.

It is difficult to understand Gardiner's record, as *R. Sabini* is certainly not now "frequent in the mountain valleys" or elsewhere in Angus.

The hybrid roses recorded by Barclay under *R. involuta* Sm. are still there in plenty. I sent several gatherings of them to Col. Wolley-Dod, who places one group under ×*R. Sabini* Woods and another he considers comes nearest to ×*R. perthensis* Rouy. Their exact parentage is difficult to ascertain. *Mollis* and *Sherardi* both grow near. Barclay thought in one case the second parent might be a white-flowered *mollis* but he said he had been unable to form any definite opinion except in the case of one clump which he believed to be *spinosissima* × *tomentosa*. He used *tomentosa* as an aggregate, including *Sherardi*.

Recorded for Scotland from Selkirk, Haddington, Edinburgh, Linlithgow, W., Mid and E. Perth, N. Aberdeen, Banff, Easternness, Clyde Isles, E. Ross and E. Sutherland.

×*R. WILSONI* (Borr.) W.-Dod. *R. involuta*, var. *Wilsoni* Baker. *R. hibernica*, var. *cordifolia* Baker.

Cuthlie Den, several bushes; Den of Elliot between Arbroath and the Guynd, several bushes. Col. Wolley-Dod says that one of the latter

group very closely resembles the Menai Straits plant even to its purple foliage.

Recorded for Scotland from Haddington.

? \times R. PERTHENSIS Rouy. \times R. BARCLAYI W.-Dod non Traaen.

Near Muirdrum, *W. Barclay*: see under \times R. *Sabini*. This group comes nearest to \times R. *perthensis* but they are considerably off type. They certainly have not the hooked spines and excessive clothing of Barclay's Auchterarder plant but they are very near Rouy's description of *perthensis*.

Recorded from Scotland from Mid Perth.

R. CANINA L.

Var. *lutetiana* (Lem.) Baker.

Pitscandly Hill (!), *Arbroath Fl.*; coast between Invergowrie and Dundee; Ninewells and Magdalen Green, Dundee; near Monifieth.

Recorded for Scotland from Mid Perth.

Var. *sphaerica* (Gren.) Dum.

Magdalen Green and Ninewells, Dundee; coast east of Dundee; Barry; cliffs near Castlesea Bay; near Montrose.

Recorded for Scotland from (Kirkcudbright), Roxburgh and Mid Perth.

? Var. *senticos*a (Ach.) Baker.

Magdalen Green, Dundee.

Col. Wolley-Dod is uncertain of this determination and would not establish it as a record. He has never seen it north of the Tweed.

Var. *spuria* Pug. Var. *insignis* W.-Dod.

Mouth of the N. Esk, Montrose.

Recorded from Scotland from Roxburgh.

Var. *rhyngocarpa* (Rip.) Rouy.

Pitscandly Hill. Col. Wolley-Dod is doubtful about letting this determination pass as there is some slight excess of hispidity in the styles.

No other Scottish record.

Var. *globularis* (Franch.) Dum. *R. montivaga* Déség.

Coast near Dundee; banks of the Isla at Ruthven Bridge; Pitscandly Hill.

Recorded for Scotland from W. and E. Perth.

Var. *ramosissima* Rouy. Var. *curticola* W.-Dod non Pug.

Ninewells, Dundee.

No other Scottish record.

? Var. *dumalis* (Bechst.) Dum.

Pitscandly Hill, *Arbroath Fl.* (?); Magdalen Green and Ninewells, Dundee; Castlesea Bay; cliffs near Auchmithie.

The above records are queried by Col. Wolley-Dod as he thinks them not quite typical and as *dumalis* is rare in Scotland.

Recorded for Scotland from Peebles and Easternness.

Forma *viridicata* (Pug.) Rouy.

Coast east of Dundee; Magdalen Green; near Auchmithie.

Var. *biserrata* (Mér.) Baker.

Forma *sphaeroidea* (Rip.) W.-Dod.

Castlesea Bay; Ninewells, Dundee.

Keller names the latter var. *sylvularum* (Rip.) but Col. Wolley-Dod considers the leaflets much too large for that.

No other Scottish record.

Var. *verticillacantha* (Mér.) Baker.

Pitscandy Hill, *Arbroath Fl.*; wood near Letham. In the wood there are several bushes of this rose of which Col. Wolley-Dod saw a specimen. He allows this determination but says that it might equally well be a *subcanina* form and thinks it more probable in this latitude. As, however, *R. canina* grows in the wood and the bush has not the appearance of a *subcanina* form, I have left it under *verticillacantha*.

Recorded for Scotland from Dumbarton and E. Ross (?).

Var. *Schottiana* Ser.

Wood near Letham.

No other Scottish record.

R. DUMETORUM Thuill.

Invercarrity, *C. Lyall, Esq.*, of Kinnordy, *Hook. Fl. Scot.*, p. 158.

Var. *typica* W.-Dod.

Forma *urbica* (Lem.) W.-Dod.

Ninewells, Dundee.

Recorded for Scotland from Elgin and Peebles.

Forma *semiglabra* (Rip.) W.-Dod.

Magdalen Green and Ninewells, Dundee, several bushes; by the side of Forfar Loch; quarry near Forfar.

As the leaflets are pubescent only on the midribs beneath Keller makes this *R. canina*, var. *hispidula*.

Recorded for Scotland from Selkirk and Orkney.

Var. *ramealis* (Pug.) W.-Dod.

Banks of the Isla at Ruthven bridge. This has the glabrous styles of var. *obscura* (Pug.): see W.-Dod *Rev. Brit. Roses*, p. 45.

No other Scottish record.

Var. *platyphylla* (Rau) W.-Dod.

Plentiful round Loch Fithie. The very woolly styles make it f. *puberula* Braun.

No other Scottish record.

Var. *sphaerocarpa* (Pug.) W.-Dod.

Magdalen Green, Dundee.

No other Scottish record.

Forma *spinetorum* (Déség. et Osan.) W.-Dod.

Ninewells, Dundee.

No other Scottish record.

Var. *hemitricha* (Rip.) W.-Dod.

Fieldside by the Loch of Rescobie, very strongly biserrate form; Heughhead Den. There are a number of bushes in the den. Amongst them is a curious form with very elliptical leaflets and also a very strongly biserrate form which comes very near the *obtusifolia*-form *sclerophylla* (Sch.), but the lateral appendages of the sepals are too narrow for that and *obtusifolia* is not known from Scotland.

Recorded from Selkirk, Lanark (?) and Stirling.

R. AFZELIANA Fr. R. GLAUCA Vill.

Var. *Reuteri* (God.) W.-Dod.

Not frequent, Auldbar; Ruthven; Montrose; Muirdrum, etc.

Recorded for Scotland from Dumfries, Peebles, Roxburgh, Mid Perth, Elgin, Easternness, Westernness, W. Ross and Orkney.

Var. *glaucophylla* (Winch) W.-Dod. *R. canina*, var. *subcristata* Baker.*R. complicata* Gren.

Common and widely distributed throughout the county. Many of the bushes have glands on the midrib bringing them near f. *myriodonta* and one on Pitscandly Hill has a few subfoliar glands making it towards *stephanocarpa*. Near Auchmithie a form occurs with considerable glandular scabridity on the backs of the sepals which Keller calls var. *glauco-dulicalix* R. K. in sched. (var. *rara*).

Recorded for Scotland for Peebles, Selkirk, Fife, Berwick, Mid and E. Perth, Elgin, Easternness, Westernness, West Ross, and Orkney.

Forma *myriodonta* Chr. (under *R. Reuteri*).

Frequent. Banks of S. Esk at Kinnaird and mouth of Pow Burn; Muirdrum; Heughhead Den; Pitscandly Hill; Dunninald; Lintrathen; Craigisla, etc.

Recorded for Scotland from Roxburgh, Mid Perth, Easternness, E. Ross and Orkney.

Forma *adenophora* Gren. (under *R. Reuteri*).

Banks of Melgund at Kinnaird bridge; banks of Isla near Ruthven bridge.

Recorded for Scotland from Peebles, Roxburgh, Berwick, Mid Perth, Elgin, Argyle and Orkney.

Forma *stephanocarpa* (Déség. et Rip.) W.-Dod.

Auchmithie.

Recorded for Scotland from Roxburgh and Mid Perth.

GROUP SUBCANINAE.

Var. *subcanina* Chr. (under *R. Reuteri*).

Pitscandly Hill; Glen Prosen; Forest Muir; near Kingoldrum; Pit-airlie Den. Col. Wolley-Dod queries this last determination as the barren shoots are more biserrate than the fruiting ones, and considers it might be *denticulata* f. *subcomplicata*.

Recorded for Scotland from Peebles, Berwick, Mid Perth, Easternness and Orkney.

Var. *denticulata* (R. Kell.) W.-Dod.

Frequent, Pitscandly Hill; Turin Hill; Finavon Hill; roadside near Guthrie; laneside, Loch Fithie; Dunnichen; Monikie Burn at Muir-drum; banks of S. Esk near Brechin and Melgund; Lintrathen; Careston; wood near Idvies, Letham. There are several bushes in the wood, one of which Keller names var. *serrata*.

Recorded for Scotland from Wigtown, Peebles, Edinburgh, Mid Perth, Argyle, East Ross and Orkney.

Forma *subcomplicata* (Hayek) W.-Dod.

Pitscandly Hill; Balgownie Muir; Finavon Hill; R. Isla above Reekie Linn; R. Melgum at Kinnaird bridge. The last is var. *diodus* R. Kell., which Col. Wolley-Dod includes under *subcomplicata*.

Recorded for Scotland from Wigtown, Selkirk, Stirling, S. Aberdeen, Easternness (?) and Orkney.

Var. *pseudo-Haberiana* (R. Vill.) W.-Dod.

Not infrequent. Inverquharity; near Guthrie; Letham; roadside near Auldallan; between Balintore and Lintrathen and near the Loch of Lintrathen; hedgebank near Alyth; Ruthven; Turin Hill; Kilry. Keller puts the last two under var. *Kummeri* Kell., the Kilry gathering under f. *proxima* Kell.

Recorded for Scotland from Orkney.

Var. *glandulifera* (R. Kell.) W.-Dod.

Heughhead Den.

No other Scottish record.

Var. *Briqueti* (R. Kell.) W.-Dod. See "Rev. British Roses Additions," p. 105.

Turin Hill.

No other Scottish record.

R. CORIIFOLIA Fr.

Var. *typica* Chr. *R. canina* var. *coriifolia* Baker. *R. coriifolia* Déség.

Justinhaugh; near Rescobie; Clocksbriggs; roadside near Restennet (untypically small both in fruit and leaflets).

Christ's type, with quite simply serrate leaflets, is rare, though found in six v.-cs.; the nearest to it is f. *frutetorum*, under which most of the bushes must come.

Recorded for Scotland from Selkirk, Roxburgh, Stirling, Mid and E. Perth.

Forma *frutetorum* (Bess.) W.-Dod non Chr.

One of our commonest forms of *R. coriifolia* and widely distributed.

Recorded for Scotland from Selkirk, Mid Perth, S. Aberdeen and Westernness.

Var. *subglabra* R. K.

Forma *subovata* (Rouy) R. K.

Round Loch Fithie there are many bushes of a form with almost simply serrate leaflets glabrous above and markedly ovoid fruit which probably come under the above form but the name has not yet been adopted.

Var. *Watsoni* (Baker) W.-Dod.

Near Loch Fithie, frequent; near Inverquharity, frequent.

Recorded for Scotland from Mid Perth, Wigtown, Renfrew, Peebles, Roxburgh, Easternness and W. Ross.

Forma *subhispida* W.-Dod.

Auldbar; Parkford; Justinhaugh; Dunnichen; Letham; Idvies; Inverquharity; Balgownie Muir; Eunie Den, Glamis, etc.

This is a common form in the county. Many of the bushes are of a subglabrous type.

Recorded for Scotland from Renfrew, Mid Perth, Elgin (?), Easternness, and Argyle (?).

Var. *Bakeri* (Déség.) W.-Dod.

Inverquharity; Kirriemuir; Craigisla; Kilry; Lintrathen.

Recorded for Scotland from Roxburgh, Berwick, Mid Perth, Easternness, E. Ross and E. Sutherland.

Forma *setigera* W.-Dod.

Roadside, Kirriemuir; banks of R. Isla at Ruthven bridge; roadside, Alyth.

Recorded for Scotland from Mid Perth, S. and N. Aberdeen, Elgin, Easternness, Dumbarton, and E. Ross.

Forma *cryptopoda* (Baker) W.-Dod.

Milldens, near Auldbar; Lintrathen—not typical.

Some of the *Lintoni* records for Scotland may be this form: see *Rev. Brit. Roses*, p. 64.

Recorded for Scotland from Easternness.

GROUP SUBCOLLINÆ.

Var. *subcollina* Chr.

Inverquharity; Justinhaugh; North Water Bridge, Montrose; banks of the Isla above Reekie Linn; banks of the Melgum near Lintrathen and at Kinnaird bridge; roadside near Den of Airlie; wood near Letham.

Forms occur on the banks of Loch Fithie and at the mouth of the Pow Burn with more pubescent leaflets and ovoid fruit thus approaching var. *bellavallis* (Pug.) but that name has not yet been adopted. Keller determines them as *subcollina* var. *dimorphocarpa* (Borb. et Br.).

Recorded for Scotland from Mid and E. Perth, N. Aberdeen, Elgin, Westernness, and Argyll (?).

Var. *caesia* (Sm.) W.-Dod. *R. tomentosa* var. *incana* Woods.

G. Don, without locality, in an "Account of the Native Plants in the County of Angus" in *Headr. Agric. Forf.*; Justinhaugh; this is nearest to var. *caesia*, but not quite typical.

Baker (*Mon.*, pp. 231 and 233) differentiates var. *caesia* (Sm.) from *R. tomentosa* var. *incana* Woods, putting Don's plant under the latter and the Taynult plant, drawn for *Eng. Bot.*, under the former.

Recorded for Scotland from Mid Perth, Elgin (?), Argyll (?).

Var. *subcoriifolia* (Barclay) W.-Dod.

Round Loch Fithie, Restennet and Reswallie; banks of the S. Esk at Netherton; Pitscandly Hill; Clocksbriggs. The last two come under var. *incana* but the name is now merged in *subcoriifolia* as there is little difference except in the less pyriform shape of the fruit.

Recorded for Scotland from Wigtown (?), Roxburgh (?), W. and Mid Perth, S. Aberdeen, Easternness, and E. and W. Sutherland.

Another form grows in considerable quantity in a lane near Reswallie. See *Rev. Brit. Roses*, p. 67. It has large, dark coloured, broadly oval leaflets, very densely covered with sub-foliar glands and remarkably strongly compoundly serrate petioles, densely pubescent, very short peduncles and broadly ovoid fruit. Neither Col. Wolley-Dod nor Keller has seen a similar form.

Var. *Lintoni* Scheutz.

Eunie Den; banks of the Isla below the Reekie Linn; North Muir, Kirriemuir; Reswallie.

Recorded for Scotland from Roxburgh, Mid and E. Perth, Kincardine (?), S. Aberdeen, Easternness and W. Ross. Some of the v.-c. records may come under *cryptopoda*; see *Rev. Brit. Roses*, p. 64.

On the banks of Loch Fithie there are several bushes of a form of the *Subcollinae* with fully biserrate leaflets very glandular below for which no name has yet been given.

A var. of the *Subcollinae* with hispid peduncles, representing a group not hitherto found in Britain, occurs in a wood near Letham—Keller thinks it nearest to his var. *pastoralis*. See *Rev. Brit. Roses*, p. 69.

A strange form, which probably belongs to the *Subcollinae*, occurs at Auldallan. The peduncles are much longer than those of the *Subcollinae* group. It is too pubescent for var. *subcollina* Chr. and it is completely unarmed. It is an unknown form to Col. Wolley-Dod. Keller thinks that, in spite of the long peduncles, it belongs to the *Subcollinae* but he has never seen a similar form.

R. VILLOSA L.

Var. *pomifera* (Herrm.) Desv. *R. recondita* Pug. non Ley.

By the Melgum near Kiinnaird bridge; lane side at Clocksbriggs.

Recorded for Scotland from Roxburgh, Lanark (?), Mid Perth, Kin-
cardine, Argyll (?) and E. Ross.

Forma *lagenoides* (Favr.).

Wood near Letham. This form, with elongate ellipsoid fruit, is very plentiful in the wood. The bushes are tall—8 to 10 feet high—with thick, tree-like trunks and very long spreading branches.

Recorded for Scotland from Fife.

Var. *pomifera* is evidently native in Angus. It is not frequent but where it does occur is in places where it is unlikely to have been an escape from cultivation. Above Carloch, Glen Esk, at about 1600 feet, there is a bush which is probably var. *mollis* f. *glandulosa* but it has markedly *pomifera*-like leaves and might be a mountain form of *pomifera*.

Var. *mollis* Sm. *R. mollissima* Fr.

Under *R. villosa* L. occasionally along the coast and extending far up the Highland valleys, *Gard. Fl. Forf.*; above Braedownie, at the entrance to Glen Doll, both white and pink-flowered, *Rev. E. S. Marshall* in *Journ. Bot.*, 1889, p. 231.

Var. *mollis* is abundant everywhere except on the seacoast and ascends to about 2200 feet on the mountains.

Recorded for Scotland from 33 v.-cs.

Forma *typica* W.-Dod.

Common. Very small leafletted forms are not infrequent.

Recorded for Scotland from Dumfries, Kirkcudbright, Ayr, Selkirk, Roxburgh, Berwick, Edinburgh, Stirling, Elgin and Argyll.

Forma *glandulosa* W.-Dod.

Under var. *pseudo-rubiginosa*, Pitscandly Hill, *Arbroath Fl.* Common. A form with remarkably ovoid fruit occurs near Melgund Castle and at Magdalen Green, Dundee.

Recorded for Scotland from Peebles, Selkirk, Roxburgh, Berwick, Haddington, Fife, W., Mid and E. Perth, S. and N. Aberdeen, Elgin, E. Ross and Orkney.

Forma *caerulea* W.-Dod.

Common.

Recorded for Scotland from Kirkcudbright, Wigtown, Renfrew, Selkirk, Berwick, Edinburgh, Fife, W., Mid, and E. Perth, S. and N. Aberdeen, Inverness, Argyll, W. Sutherland and Orkney.

R. SHEPARDI Davies (agg.).

Common everywhere, reaching the tops of the highland glens and occasionally on the mountains.

Var. *typica* W.-Dod. *R. subglobosa* Sm.

Rescobie; Restennet; Clocksbriggs; Turin Hill; Craigmill Den; Elliot Den and above Arbirlot; between Carnoustie and Muirdrum; Glen Prosen. These all come nearest to Smith's *subglobosa* but not all are quite typical. Some of them are almost unarmed.

A form growing near Restennet with smaller fruit, longer leaves and shorter pedicels than the type is var. *dysadenophylla* Schwertsche, but to avoid a new name Col. Wolley-Dod puts this as a small form of var. *typica*.

Recorded for Scotland from Kirkcudbright, Roxburgh, Mid and E. Perth, Kincardine, Argyll and Orkney.

Var. *omissa* (Déség.).

Forfarshire, frequent, *Rev. Augustin Ley* in *Journ. Bot.*, 1907, p. 205; Eunie Den, Glamis; Balgownie Muir; Inverquharity; Den of Fullerton; Den of Airhe; Clocksbriggs; Edzell; Forest Muir, Arbirlot; Finavon Hill; Pitscandly Hill; banks of Esk between Blaikie Mill and Broomknowe; Den of Gardyne; Craigmill Den; Elliot Den; Glen Prosen; Glen Clova, etc.

Many of the bushes of var. *omissa* vary considerably from Déségli's description. The peduncles are often longer and the fruit is quite as often subglobose as pyriform. Almost unarmed bushes are not uncommon as at Inverquharity, Eunie Den, etc., and in some cases they are quite unarmed, as at Forest Muir.

Recorded for Scotland from Kirkcudbright, Roxburgh (Renfrew, Stirling), Fife, Mid and E. Perth, Easternness, E. Ross, W. Sutherland, and (the Hebrides).

Forma *resinosoides* (Crép.).

Forfar, *Rev. Augustin Ley* in *Journ. Bot.*, 1907, p. 205. A frequent form. Finavon Hill; Loch Fithie; Arbirlot; Craigmill Den; Monikie Burn; North Water Bridge, Montrose; Buckie Den; laneside, Loch Fithie; Melgund Castle (with very long fruit).

Recorded for Scotland from (Dumfries), Kirkcudbright, (Wigtown), Peebles, Selkirk (?), Roxburgh, (Fife), (W.), Mid and E. Perth, S. Aberdeen, E. and W. Inverness, Clyde Isles (?), E. Ross, (Argyll).

Var. *Woodsiana* W.-Dod. *R. tomentosa* var. *Woodsiana* Groves.

Den of Airlie.

Recorded for Scotland from Mid Perth and W. Ross.

Var. *suberecta* (Ley).

Under *R. mollissima* Willd., var. *suberecta*, Forfar, *Dr Druce* in a "List of Scottish Plants" (*Ann. Scot. Nat. Hist.*, 1911, p. 166); roadside near Arbirlot.

Recorded for Scotland from (Wigtown, Renfrew), Peebles, Selkirk, (Roxburgh, Berwick), (W.), Mid and (E.) Perth, S. Aberdeen, (Elgin), E. and (W.) Inverness, Argyll, W. and E. Ross, (N. Ebudes) and W. Sutherland,

Var. *collivaga* Cott.

Glen Prosen road, near Cortachy. The long obovoid fruit brings this under var. *collivaga*, a name which Col. Wolley-Dod now means to adopt. No other Scottish record.

R. HURSTIANA Harrison in *Vasc.*, xvi., No. 4, November 1930, p. 145 (8). Tealing, Dr Heslop Harrison.

Dr Heslop Harrison, having had *R. Hurstiana* under observation for several years, during which time he transplanted several specimens to his garden, has come to the definite conclusion that it is a new British species and places it between *R. Sherardi* Davies and *R. tomentosa* Sm. For comparisons of the three species see *Rep. B.E.C.*, 1930, p. 263, where Dr Harrison gives the contrasting features. See also *Rev. Brit. Roses*, p. 85.

Recorded for Scotland from Berwick, Haddington, Perth and Clyde Isles.

? R. TOMENTOSA Sm.

Without locality, G. Don in an "Account of Native Plants in the County of Forfar" in *Headr. Agric. Forf.*; frequent throughout the county, *Gard. Fl. Forf.*; under *R. mollissima* Willd., Glen Clova, Druce in *Bot. Soc. Rec. Club Rep.*, 1881-82, p. 90. These records all refer to the aggregate *tomentosa* which formerly included *Sherardi*.

? Var. *typica* W.-Dod.

Clocksbriggs; roadside near Shansie; near the Guynd; Pitscandly Hill.

Recorded for Scotland from Berwick, Mid and E. Perth, Forfar, Clyde Isles, N. Ebudes (?), and E. Ross.

? Forma *eglandulosa* W.-Dod.

Banks of Monikie burn, near Muirdrum.

Recorded for Scotland from Renfrew (?), Clyde Isles, and E. Ross (?).

? Var. *pseudo-cuspidata* (Crép.) Rouy.

R. Isla above Reekie Linn; S. Esk near Melgund.

Recorded for Scotland from Kirkcudbright, Renfrew (?), Peebles, Mid Perth, N. Aberdeen, and Easternness.

? Forma *cuspidatoides* (Crép.) W.-Dod.

Glen Clova in several places.

Recorded for Scotland from Edinburgh, Fife, Mid Perth, Easternness, and E. Ross.

? Var. *scabriuscula* Sm.

Without locality, G. Don in an "Account of Native Plants in the County of Angus" in *Headr. Agric. Forf.*

Recorded for Scotland from Peebles.

P × *R. tomentosa* Sm.

A rose at the head of Glen Clova is determined by Keller as a *tomentosa* hybrid. He is uncertain of the second parent.

I have listed the above records of *tomentosa* forms as Keller has definitely determined them as such and Col. Wolley-Dod also but with some doubt. I am, however, unconvinced that they belong to the *Tomentosae*; although untypical they seem to me much nearer *Sherardi* forms.

R. RUBIGINOSA L. (agg.).

Var. *typica* W.-Dod. *R. apricorum* Rip. *R. comosa* Rip.

Under *R. rubiginosa* L., not common, but occurs in various places rather plentifully, as on the beach at Ninewells, Invergowrie Bay. It is frequent in the hedgerows near Drumsturdy Moor and in hedges in various other places, as at Glamis, etc.; on the Sands of Barry near Monifieth. Wayside near Upper Mills of Kinaber and near Marten's Den, Mr A. Croall; between Meigle and Alyth and in the Carse of Gowrie, *Gard. Fl. Forf.* West of Arbroath, not common, *Arbroath Fl.* Common and widely spread everywhere in the lowlands but most frequent on the seacoast. It is evidently very much more plentiful now than it used to be, as both Gardiner and *Arbroath Fl.* (1892) say "not common." Var. *apricorum* Rip., with subglobose fruit and less erect and more deciduous sepals, is not now differentiated. It is not infrequent, occurring at Bridge of Dun, Montrose Basin, and mouth of N. Esk at North Water Bridge, etc.

Recorded for Scotland from 18 v.-cs.

Forma *Corstorphinae* Druce.

Near Dunninald, G. C. Druce; Eunie Den; Lintrathen, etc. Occurs here and there but not frequent.

Recorded for Scotland from Mid Perth, Elgin, and E. and W. Ross.

Var. *echinocarpa* (Rip.) Gren.

Cliffs near Boddin.

Recorded for Scotland from Mid Perth (?).

ALIENS.

R. rugosa Thumb.

Wood near Kirkbuddo and roadside in same district.

R. virginiana Mill. *R. lucida* Ehrh.

Clova, near Hotel, noted there by botanists for over 60 years; Braedownie; roadside between Glamis and Kirriemuir (!), Mrs Wedgwood; hedgebank at Memus. The Clova bushes are evidently of two forms (possibly of two species). One is an early flowering form with leaves which turn a brilliant red in early autumn. The other form, with shorter and less tapering leaves, flowers much later and the leaves remain green until they fall in the late autumn.

I have noted the other Scottish vice-counties in which these roses have been found merely to give an idea of the distribution in Scotland, but undoubtedly most of them are much more widely distributed. Col. Wolley-Dod kindly gave me his list of the Scottish records. He does not corroborate those which are bracketted.

I am very greatly indebted to Col. Wolley-Dod for examining and determining my doubtful specimens.

THE NATURALISED AND ALIEN ASTERS OF THE BRITISH PLANT LIST, ED. II.

Descriptions Compiled by C. E. BRITTON.

It is especially to three genera of the Compositae that the gardens in autumn owe their brilliant colouring. *Aster*, *Chrysanthemum* and *Helianthus* are then in their prime and, to the first-named genus, is due the blaze of purples, reds, blues, lavenders, and whites of the stouter-growing kinds, or the quiet grace of the small-flowered species. Valued, however, as the various kinds of *Aster* are, there frequently comes a time when the plants become a source of embarrassment owing to their strong vegetative increase by the underground parts, with the result that growing rootstocks find their way with garden refuse to waste places, ditches, etc., where, if there is no violent change in the character of the locality, there is every likelihood of the Asters securing a foothold and flourishing. Asters are so widely grown that there is probably no county in the British Isles where Asters have not become naturalised from gardens. Although the sources of origin of these plants are fairly obvious in most cases, yet, when the plants are seen growing on the banks of rivers and streams, as they frequently are, the methods of introduction are less apparent and the observer may be tempted to conclude that seed-dispersal by air and water currents is responsible for the presence of the plants. Once established, they hold their positions tenaciously. Writing in *Journ. Bot.*, 1870, the late W. P. Hiern recorded *Aster Novi-Belgii* as naturalised on the banks of the River Thames, near Richmond, and Barnes, in Surrey. At a later date, Mr James Britten (*l.c.*, 83, 1882), when recording *A. paniculatus* Lam., wrote—"This species appears to be the species most thoroughly established in England. In the Nat. Herb. at South Kensington are specimens from Surrey (from near Thrimble Bridge, Thames Ditton, September, 1865 . . . and from the Barnes and Richmond localities on the banks of the Thames, recorded by Mr Hiern in *Journ. Bot.*, viii., 8, 1870) under the name of *A. Novi-Belgii*." Mr Britten gave Prof. Asa Gray as the authority for the identity of the species mentioned by him and expressed the opinion that, "to an inexperienced eye, the specimens placed under *A. paniculatus* by Prof. Gray are somewhat dissimilar from each other." Probably there was good ground for this opinion as both *A. Novi-Belgii* and *A. paniculatus*, as well as other species, still occur by the Thames, and I may add that *A. paniculatus* was seen by me in September 1931, growing by the Wrythe stream at Winter's Bridge, Thames Ditton, which may, perhaps, be the "Thrimble Bridge" of H. C. Watson.

During the autumn of 1920 the banks of the Thames above Putney were well-worked in quest of Asters, which were found to be well estab-

lished at intervals in the course of the eight-mile stretch towards Kingston. The plants collected were later submitted to Prof. Thellung by Dr Druce (see *Rep. B.E.C.*, 384, 1921). The situation of the Asters by the Thames is rather curious, as they mostly grow rooted between the granite sets covering the river banks. As Asters were still plentiful there in 1931, there is presumptive evidence that they have flourished on the Thames banks for more than sixty years.

The *British Plant List*, ed. ii., gives the names of eighteen alien species of Aster that have hitherto been detected and, of this number, four species are shown as being completely naturalised. Botanical authors in Britain seem reluctant to admit into their works descriptions of wild plants that have entered into the native flora by way of cultivation. Not so, however, Continental authors, and in many well-known European floras are descriptions of naturalised species that are in no way inferior to the descriptions of the indigenous species. This practice, is, I think, commendable. The plants exist and there is no real reason why they should be ignored or given curt attention.

All the alien Asters of the *British Plant List* have been introduced into cultivation from the northern part of the American continent, where species of the genus abound. Coming from a temperate climate, they find themselves very much at home in Britain and, given the opportunity, find little difficulty in maintaining their ground against indigenous species.

As adequate descriptions of the naturalised and other alien Asters do not occur in the national floras, the following descriptions have been compiled in the hope that they may prove useful. A few words of warning are perhaps necessary. The species are by no means easy to discriminate—some grade into each other; other forms appear to be of hybrid origin; a few are not known as indigenous plants even in N. America and, again, culture has no doubt considerably modified certain forms. Added to these difficulties is the involved synonymy. "Aster," wrote Asa Gray, a botanist who had an unequalled knowledge of these plants, "is far the most difficult of our genera, both for the settlement of the names of the species and for their limitations, in respect of which little satisfaction has been attained as the result of prolonged and repeated studies."

The localities given are all taken from the Reports of the Botanical Society and Exchange Club, and an attempt has been made to furnish a key to the species, but this should be regarded primarily as an index to the descriptions of the species. The following are the species of the *British Plant List*—*salignus*, *paniculatus*, *longifolius*, *Novi-Belgii*, *macrophyllus*, *lanceolatus*, *Tradescanti*, *laevis*, *punicus*, *laevigatus*, *versicolor*, *carneus*, *novae-angliae*, *preanthoides*, *ericoides*, *junceus*, *vimineus* and *ascendens*. Descriptions have been included of a few species found wild on the Continent but not recorded so far from Britain.

KEY TO THE SPECIES DESCRIBED.

A.

Not fleshy. Basal and lower cauline leaves wholly or, in part, with slender petioles and lamina cordate.

1. Plant glandular *macrophyllus*.
2. Plant eglandular *cordifolius*.

B.

Not fleshy. Basal and lower cauline leaves sessile or with broadly-winged petioles, lamina not cordate; upper stem-leaves wholly or partly with more or less cordate or auricled amplexicaul base.

1. Plant hispid 2
Plant glabrous, glabrescent or pubescent 3
2. Glandular *novae-angliae*.
Eglandular *punicus*.
3. Leaves linear *junceus*.
Leaves ovate, lanceolate or linear-lanceolate 4
4. Leaves wholly or, in part, with lamina contracted at base into a broadly-winged petiole 5
Leaves with lamina not contracted into a broadly-winged petiole 6
5. Stems slender, flexuose *prenanthoides*.
Stems stout, rigid *laevis*.
6. Phyllaries arranged in two series *longifolius*.
Phyllaries arranged in more than two series 7
7. Phyllaries closely imbricate *versicolor*.
Phyllaries not closely imbricate; the outer spreading 8
8. Leaves all entire *ascendens*.
Leaves more or less serrate *Novi-Belgii*.

C.

Not fleshy. Leaves sessile or petioled, scarcely or, not at all, amplexicaul.

1. Lower leaves petioled *patulus*.
All leaves sessile 2
2. Leaves obtuse *dumosus*.
Leaves acute or acuminate 3
3. Branches horizontal or spreading 4
Branches erect or ascending 5
4. Phyllaries acute *vimineus*.
Phyllaries abruptly subulate-acute *ericoides*.
5. Phyllaries herbaceous at the apex and on the outer surface 6
Phyllaries not herbaceous at the apex *satignus*.
6. Pericline about 4 mm. in height; outer phyllaries one-quarter to one-third as long as inner phyllaries *Tradescanti*.
Pericline 5-6 mm. in height; outer phyllaries one-third to one-half as long as inner phyllaries *paniculatus*.

D.

Fleshy. Leaves narrow entire *tenuifolius*.

A. MACROPHYLLUS L. Sp. Pl., ed. ii., 2, 1232.

Basal leaves forming large tufts. Stems stout angled, reddish, reaching 1 m. Leaves rather thick, serrate, the lower broadly ovate or reniform-cordate, reaching as much as 25 cm. in length; upper leaves ovate to oblong, petiole often dilated; uppermost sessile, at times with broad bases. Inflorescence strigose and glandular, broadly corymbose, irregular. Pericline about 12 mm., viscid pubescent, phyllaries conspicuously green-tipped. Ligules 10 to 15, white or suffused with purple.

A woodland species extending from Canada to Georgia. Rather variable, appearing to pass into the smaller-headed *A. corymbosus*, and, in another direction, into *A. mirabilis* Torr. & Gray.

I know of one record only, viz., Renfrew, where it is said to be well-established. On the Continent it occurs naturalised in Bavaria, etc.

A. CORDIFOLIUS L. Sp. Pl., 875.

Green, subglabrous, or pubescent; stems paniculately branched; lower leaves membranous, acutely serrate, cordate-ovate, petioled, asperous, more or less pubescent, upper lanceolate, sessile, acuminate. Capitula very small, arranged in thyrsoid inflorescences; pericline 4-6 mm. in height. Ligules 10 to 12, pale purple or whitish.

A native of woods from New Brunswick to Georgia, extending west to Wisconsin and Missouri.

Not hitherto recorded as an alien in Britain, but known on the Continent as an escape.

A. NOVAE-ANGLIAE L. Sp. Pl., 875.

Stems robust, strict, attaining 2.5 m., very leafy, hirsute, or hispid with multicellular hairs, and with glandular pubescence. Leaves broadly linear or lanceolate, entire, sometimes narrowed below, semi-amplexicaul, base auriculate-cordate. Capitula clustered at the ends of branches, heads 2-5 cm. broad, ligules about 50, 1.2 cm. in length, violet-purple, rarely pink, or white. A very distinct species, one of the most beautiful of the genus, and found wild from Canada to the Southern States.

Recorded from Oxon, Bucks, Middlesex, Glamorgan, Carmarthen, Roxburgh, Argyll.

A. PATULUS Lam. Encyc., 1, 308.

Glabrous or slightly pubescent, stems low-growing or reaching 1-5 m., laxly branched. Leaves ovate or oblong-lanceolate, sharply serrate in the middle, acuminate, tapering at the base, the lower stem-leaves with winged petioles, the upper stem-leaves not auriculate. Capitula laxly paniced, heads about 2.5 cm. broad, phyllaries linear to linear-lanceolate, acuminate, loosely imbricate in 3-4 rows, the outer shorter. Ligules violet or purple varying to white.

A wild plant of Canada, New Brunswick, and the Eastern States, but better known as a garden plant.

Not recorded as an escape in Britain, and on the Continent known as an established species by the Rhine, etc.

A. PUNICEUS L. Sp. Pl., 875.

Stems firm, 1-2.1 m., loosely branched, red or purple, hispid, with spreading bristles arising from rigid bases. Leaves oblong-lanceolate, 3-15 cm., acuminate, coarsely and irregularly serrate to entire or denticulate, narrowed or not to the subcordate amplexicaul base, scabrous on the upper surface, often hispid on the midrib below. Capitula paniced

or thyrsoïd, phyllaries linear, thin, herbaceous, sometimes provided with additional more leafy bracts. Ligules 20-40, 10-12 mm. in length, showy, violet-purple or white.

A well-marked species, exhaling an odour similar to that of juniper berries when bruised.

Distributed as a wild plant from Nova Scotia and Canada to Dakota, N. Carolina, and Georgia. Several notable varieties.

Has been reported at Berwick, Dundee, and banks of the Tay at Perth.

A. LAEVIS L. Sp. Pl., 876.

Stems stout, rigid, reaching 1.5 m. Leaves ovate, oblong to lanceolate, 10-12 cm., becoming smaller; upper leaves sessile, base auriculate or subcordate, the lower leaves narrowed into a winged petiole. Capitula in a thyrsoïd panicle, branches short and rigid; pericline campanulate or turbinate, phyllaries rigid, appressed, in several series, coriaceous, whitish, apices green, deltoid or rhomboid. Ligules 20-30, broad, light-blue or violet.

Native to Canada, New Mexico, Rocky Mountains, etc.

Berks. Naturalised by Lough Neagh, Tyrone.

Var. *Geyeri* Gray is a much smaller plant with pericline broader, the phyllaries not coriaceous, lax, attenuate, the green apices less-marked. Recorded from N. Somerset.

A. JUNCEUS Ait. Hort. Kew., iii., 204.

A slender plant reaching a height of about 1 m. Stems glabrous or glabrescent. Leaves linear, 8-12 cm. in length and about 7 mm. in width, sessile by a broad clasping often subcordate base, entire, or lower leaves denticulate. Heads paniculate, rather distant, phyllaries linear, erect, thin, imbricated in 2 or 3 rows, the outer series shorter. Ligules purple, violet or white.

Inhabits wet meadows, etc., throughout the United States and reaching Hudson's Bay, etc.

Is closely related to *A. longifolius* Lam.

Recorded from Oxfordshire by Dr Druce.

A. ASCENDENS Lindl. in DC. Prod., v., 231.

Glabrescent or strigose, rigid. Stems reaching .6 m., ascending or erect, branched paniculately or subcorymbosely. Leaves firm, coriaceous, linear, spatulate or lanceolate, entire, margin ciliate and scabrous. Heads not numerous, about 2.5 cm. in diameter, phyllaries in 3-5 series, somewhat unequal, oblong-linear or spatulate, the green apices glabrous or puberulent. Ligules violet or purple, about 10 mm. long.

Well distributed in Canada and the States, reaching the upper regions of the Rocky Mountains.

Recorded as an outcast at Cardiff.

A. Novi-Belgii L. Sp. Pl., 877.

Of medium stature, rarely tall, glabrous, or with lines of pubescence on the branches. Leaves lanceolate, oblong-lanceolate, or linear-lanceolate, firm, often somewhat fleshy, entire or slightly serrate, glabrous, acuminate, narrowed, sessile, more or less clasping at the base, 5-15 cm. long, 1-2 cm. wide. Heads corymbose-paniculate, usually numerous, 2-3 cm. in diameter; ligules bright blue-violet.

Extremely variable both in the field and in cultivation. Some forms grown in gardens can scarcely be matched with wild prototypes.

Well spread in Eastern Canada and the eastern and south-eastern States.

A. Novi-Belgii L. is more frequently seen as an established species than any other member of the genus; and has been recorded from more than thirty counties in Britain.

Under the Linnean *A. Novi-Belgii*, Thellung placed *A. laevigatus* Lam. and *A. floribundus* Willd. as sub-species, distinguishing the forms in the following terms.

Sub-sp. *A. eu-Novii-Belgii* Thell.

Inflorescence corymbose-paniculate, the lowest branches elongated, ascending, many-headed; leaves lanceolate to oblong. Heads comparatively large, 2.5-4 cm. broad. Pericline exceeding 6 mm. high, phyllaries usually unequal, erect, about 1 mm. broad.

Sub-sp. *A. laevigatus* (Lam.) Thell.

Stem racemously branched, branches, including the lower, short, spreading, mostly with one or few heads. Heads comparatively large, phyllaries equal. Leaves above the middle sharply serrate, below somewhat panduriform and entire.

Sub-sp. *A. floribundus* (Willd.) Thell.

Stem-leaves narrowly lanceolate; capituli closely corymbose-paniculate, smaller than in preceding, phyllaries narrower, not much more than .5 mm., unequal. Connects *A. Novi-Belgii* with *A. lanceolatus* Willd. (*A. paniculatus* Lam.) and *A. Tradescanti* L.

A. laevigatus has been gathered in Middlesex, Bucks (on the banks of the Thames near Maidenhead) and in Glamorgan, and *A. floribundus* has been noted by the Thames in Surrey!, Essex, Herts, Oxon, and in Orkney.

A. versicolor Willd. Sp. Pl., iii., 2045.

Flowering stem corymbose, leafy. Leaves rather thin, bright green, oblong, ovate-oblong, or lanceolate, scarcely auriculate, the lower sharply serrate. Capitula about 3 cm. broad, pericline campanulate, phyllaries about 6 mm. long. Ligules about 10 mm. long, white, changing to pale purple, pink, or violet.

Grown in European gardens but hardly known as a wild plant in N. America, and considered by Thellung to be of hybrid origin (? *A. laevis* × *A. Novi-Belgii*).

Recorded from the side of the Thames above Richmond, Surrey!, S. Hants, Leicester, etc.

A. LONGIFOLIUS Lam. Encyc., i., 303.

Glabrous or pubescent. Stems 30-100 cm., paniculately branched; leaves elongate-lanceolate to linear-lanceolate, entire or serrulate, 7-18 cm. long, 5-12 mm. wide, narrowed to each end, at the base usually clasping and cordate. Heads numerous, 2.5 cm. broad, pericline 7-8 mm. high, phyllaries subequal, outer at times herbaceous. Ligules 7-8 mm. long, violet, purple, or white.

A boreal species reaching to the northern United States.

Recorded as completely established in Oxon; in Perth on the banks of the Tay; Merioneth.

A. VIMINEUS Lam. Encyc. 1, 306.

Subglabrous. Stems 1.5 m., slender, leaves linear or linear-lanceolate, entire, or slightly serrate, 8-12 cm. long, 5-7 mm. wide, often reflexed; branches horizontal, heads densely racemose-secund, shortly peduncled, 4-7 mm. broad; phyllaries linear, acute, appressed, in about three rows. Ligules white, sometimes turning purple. Distribution: Canada to the Southern States.

Recorded from Colchester, Essex.

A. DUMOSUS L. Sp. Pl., 873.

Glabrous; stems 40-100 cm. Leaves obtuse, entire, spreading or reflexed, linear, about 7 cm. long and 5 mm. wide, firm, decreasing in size and passing into minute bracts. Pericline campanulate or turbinate, 4-7 mm. in height, phyllaries linear, imbricated, obtuse or subacute, whitish, with oval or oblong green apices. Ligules violet to white, 4 mm. long, 15-30 in number.

Woods in Eastern United States, Florida, Texas, Canada.

Not yet recorded as an alien in Britain, but established in various places on the Continent, as in the Rhine Valley.

A. PANICULATUS Lam. Encyc. 1, 306.

Glabrous or pubescent. Stems tall, sometimes reaching as much as 2 m., branching paniculately. Leaves varying from elongate-oblong to linear-lanceolate, usually attenuate-acuminate, narrowed to a sessile or slightly clasping base, 7-15 cm. long, serrate or denticulate, upper entire, thin. Heads numerous, in leafy lax panicles; pericline about 7 mm. in height, phyllaries imbricated in 4-5 rows, linear, apex green, acute or acuminate, the outer at times entirely herbaceous. Ligules 6-8 mm. long, white or pale purple.

A variable species found growing naturally throughout Canada and the United States.

Introduced into English gardens before the middle of the 17th century, and probably the Aster to which the name Michaelmas Daisy was originally applied.

Recorded from Berks and Oxon. Several localities in Surrey! in one spreading on damp bushy heathland.

A. LANCEOLATUS Willd. Sp. Pl., iii., 2050.

This name was used by Thellung and other botanists to designate the species here named *A. paniculatus* Lam. (following American usage).

Plants named *A. lanceolatus* Willd. have been recorded from Oxon, W. Gloucester, and Surrey.

A. TRADESCANTI L. Sp. Pl., 876.

Stems slender, exceeding 1 m., branches numerous; stem-leaves linear-lanceolate or lanceolate, acuminate, narrowed to a sessile base, 7-15 cm. long, 4-8 mm. wide, glabrous or glabrescent, thin. Heads small, 1-1.5 cm. in diameter, numerous, racemose, corymbose or paniculately-arranged, not secund, phyllaries linear, appressed, imbricate in 4-5 series, dorsally green and also at the apex. Ligules numerous, 4-6 mm. long, white, sometimes suffused with purple.

Ranges from Canada to the Southern States. Some of its forms connect with *A. dumosus*, *A. vimineus*, *A. diffusus*, and *A. paniculatus*. Cultivated in English gardens from 1633. Known as a naturalised species in France, Germany, Switzerland, etc.

In Britain recorded from the side of the Thames in Surrey! and from Glamorgan.

A. SALIGNUS Willd. Sp. Pl., iii., 2040.

Rootstock much-branched and creeping. Stems erect, paniculate-corymbose, branches pubescent in four rows. Leaves lanceolate, acuminate at each end, entire or with few serratures, the lowest narrowed into a petiole, the upper sessile, semi-amplexicaul. Capitula numerous, phyllaries linear, acute or acuminate, imbricate, not herbaceous at the apex, the inner membranous-margined. Ligules white, becoming pale purple,

According to Asa Gray, this plant is a form of *A. paniculatus* Lam. and has been naturalised from early times in Hungary and Germany, or it may even be native in those countries. Established in France, Italy, etc.

In Britain naturalised in Wicken Fen, Cambs, where it was observed by Mr W. P. Hiern in 1867. Recorded also from Surrey, Middlesex, Oxon, Cornwall, Roxburgh, Angus, etc.

A. PRENANTHOIDES Mühl. in Willd. Sp. Pl., iii., 2046.

Low-growing, 40-70 cm. in height, subglabrous or pubescent. Stems flexuous, much branched. Leaves thin, elongated, oblong or ovate-lanceolate, prominently serrated at the middle, attenuate acuminate, narrowed below and usually dilated into an auriculate base, minutely scabrous above. Capitula borne on short rigid spreading branches, heads 2.5 cm. or more in diameter, phyllaries imbricate in 3 or 4 rows, linear, acute, green, the outer shorter. Ligules about 1.2 cm. long, pale violet or white.

A native of moist ground in Canada and the eastern States.
Recorded from Hants and from the banks of the Tay at Perth.

A. ERICOIDES L. Sp. Pl., 875.

Stems glabrous, villous or hirsute, rigid, 30-90 cm. in height, branches spreading or ascending. Radical leaves oblanceolate and spathulate, slightly serrate, stem-leaves lanceolate or linear, narrowed to each end, 2.5-7.5 cm. long, 3-6 mm. wide, upper rameal leaves subulate. Capitula usually secund, pericline 6 mm. in height, phyllaries abruptly subulate, green-tipped, base coriaceous, imbricate in about 3 rows. Ligules 15-25, white or tinged with rose.

Found as a wild plant in Canada and the States to Florida.

Has many varieties, the best-known being that cultivated in gardens under the name of *A. Reevesii*, which is a stout form with larger heads and ligules.

Recorded as an escape in Oxon, Berwick and Roxburgh.

A. TENUFOLIUS L. Sp. Pl., 873.

Rootstock slender, stems often flexuose, sparsely leafy, 30-60 cm., paniculately branched above. Stem-leaves fleshy, entire, linear, 5-15 cm. long, 5-7 mm. wide, branch-leaves minute, bract-like, appressed. Heads rather few, pericline turbinate, phyllaries lanceolate-subulate, attenuate, appressed, imbricate in about 5 series. Ligules pale purple or nearly white.

A native of salt marshes of the south-eastern States.

Known as an escape on the Continent, but not hitherto observed under similar conditions in Britain.

A. CARNEUS Nees Syn. Ast., 26.

No description of this has been given as authorities conclude that Nees' species is made up of forms of *A. paniculatus* Lam. and *A. salicifolius* Ait.

SOME PLANTED OR CULTIVATED WILLOWS.

J. FRASER.

Some willows are such a feature in the landscape, but particularly on the banks of rivers and streams, that some collectors are much impressed by them, and a few distribute them. Five of those described below are not British and no descriptions of them are given in British floras. Two imported species have been described by the late Rev. E. F. Linton in his "Monograph of the British Willows," namely, *Salix babylonica* L. and *S. daphnoides* Villars. Three of the hybrids described in this article have *S. babylonica* for one of their parents, and are usually regarded as *S. babylonica* itself, though an examination of the catkins would dispel that idea. The last named is very decidedly spring tender, and I know of no large trees in Britain. The largest tree I have seen was one growing by the side of the big lake in Kew Gardens, and that was destroyed by voles eating away the bark some years ago, and its progeny are not yet as large. Trees in St James' Park, London, are quite small. Other cultivators complain of its tenderness. Its hybrids are hardier and more vigorous trees.

Salix alba L., var. *stenophylla* Fraser, var. nov.—A large, often round-headed tree, with sharply ascending branches, till it gets very old, when the larger branches become more spreading or even drooping a little. Twigs of the current season are more or less densely silky at first, becoming thinly so or subglabrous in the lower parts by September. Leaves linear-lanceolate, attenuate to a fine point, finely serrate or serrulate from the base to near the tip, narrowed gradually to the cuneate base, more or less densely silky above, but glabrous or subglabrous by September, densely silky beneath, becoming thinly hairy or subglabrous and glaucous in the south-east of England, but retaining much of their silkiness in Scotland to the end of September, at least; in length the leaves vary from 5 to 11.5 cm., though 5 to 8 cm. is a more common average in the south of England, and Northern Ireland; width 7-14 mm., the latter on pollarded trees.

J. E. Leefe and Dr F. B. White were under the impression that male trees of *S. alba* had narrow leaves, and that the female had broad leaves, but the latter are common to both sexes. N. J. Andersson's *S. alba*, var. *angustata*, had its leaves for the most part obsoletely serrulate, and silvery on both sides. None of the specimens I have seen conforms to this. On the R. Mole below Esher, 1899, J. Fraser (large tree now dead, but others occur along the valley from Esher to East Molesey, some of them pollards and evidently planted); Lambriggan, Perranzabuloe, Cornwall, 1926, F. Rilstone; Montpellier, Belfast, Northern Ireland, 1924, James W. White; Inveresk, Edinburgh, 1923, George Taylor; Boyndlie and Aberdour Mill, North Aberdeen, 1927, J. Fraser. All

the above are in my herbarium. Two are male, one female, and two only leaf-specimens.

S. alba L., var. *britzensis* Späth.—Trees of rapid growth, but not yet of great age. Shoots of the current year rather densely pubescent at the very first, but soon glabrescent, and the lower half glabrous by the middle of September, orange red or brilliant red during autumn and winter. Leaves broadly lanceolate, to narrowly lanceolate, attenuate to a slender point, in some trees short and in others long, finely serrate almost to the tip, cuneate at the base, thinly hairy at first with adpressed hairs on the upper face, soon glabrescent, more or less densely silky on the lower face, but becoming rather thinly hairy by the end of September on the base of the shoots. The length of the leaves varies from 5 to 8.5 cm.; the width in the male is 1.3-2 cm., in the female 8-12 mm. The scales of the catkins in the male are broad and blunt like those of *S. alba*; in the female they are narrowly oblong, obtuse, densely pubescent on the lower half, ciliate, glabrous in the upper half, reaching to the base of the style or to the stigmas during anthesis, similar to those of *S. alba*, var. *vitellina*.

These trees originated in the nursery of Späth, at Berlin, and were listed in Catalogue 57, p. 67 (1883), under the name of *S. vitellina* L., var. *britzensis*. The female shows evidence of this in the long bracts of the catkins, but the bracts of the male are short like those of *S. alba*. Some botanists are of opinion that *S. vitellina* is a form of the hybrid *S. alba* × *fragilis* and, if so, the two forms of bracts in the above trees are explainable. The trees were grown by me from cuttings obtained from Holland House, Kensington, and Westonbirt, Tetbury, Gloucester, and flowered in 1914 and 1918 respectively.

S. alba × *babylonica* = × *S. sepulchralis* Simonkai La, *Novit. ex Fl. Hung.* in Termès Fuzet, xii., p. 157 (1890). A. et E. G. Camus, *Mon. de Saules de France*, i., p. 234 (1904). A tree 50-75 ft. high, with all the branches decidedly pendulous and descending to a great length on river banks. Branches slender, densely silky at first, soon glabrescent, and the lower parts glabrous by the middle of July. Leaves lanceolate, much attenuated at the apex with a slender point, more or less falcate, cuneate at the base, finely and acutely serrate, with incurved serratures, densely silky at first on both sides, but becoming ± thinly so during the season, till nearly glabrous, except on the petioles, but in sheltered places retaining some silkiness till they fall; length 6-14.5 cm., width 1.2-2.5 cm. Catkins up to 3.5 cm. long, slender, seated on peduncles an inch long or less, and furnished with four or five, leafy, entire or finely serrulate bracts; bracteoles or scales ovate, obtuse, ciliate, shorter than the ovary after anthesis. Ovary ovoid, glabrous, sessile or the lower ones very shortly stalked, style short, stigmas entire or bifid.

All the trees I have seen in bloom are female. A. and E. Camus say the trees may be male, female, partly mixed with both sexes and occasionally hermaphrodite. See *S. alba*, var. *vitellina* × *babylonica*. Flowering usually takes place towards the end of March, when the yellow bracts and young leaves are highly ornamental from a distance. The hybrid

originated before 1864. Localities are Mitcham Common, 1914, C. E. Britton; Thames banks, Kew, Surrey, Richmond on the Middlesex side, 1926, and Thames banks, Mortlake, 1927, J. Fraser; Woburn, Beds, 1929, A. B. Jackson, and elsewhere. The dates relate to the time of collecting only.

S. alba, var. *vitellina* × *babylonica* = × *S. chrysocoma* Dode, Bulletin Soc. Bot. de France, 1908, p. 655. *S. babylonica*, var. *aurea* Hort. *S. babylonica ramulis aureis* Hort. *S. vitellina*, var. *pendula* Rehd. *S. alba tristis* Gaud. An extremely weeping willow, with very long, slender, drooping branches, and leafy twigs, with a golden yellow bark. It does not seem to rise with a straight, shapely trunk, but should be grafted or budded on a tall stock of *S. alba* or some of its varieties. Twigs thinly hairy at the very first, soon glabrous. Leaves lanceolate, very much attenuate at the slender apex, cuneate at the base, very finely serrate almost to the tip, with acute incurved serratures, very thinly silky on both sides at the very first, soon glabrous except for the uppermost leaf or two, occasionally, or a few short hairs on some of the petioles; length 5-12 cm.; width 1-2 cm. Catkins and leaves contemporaneous. Catkins slender, ascending or spreading, curved, 2.5-5 cm. long, male, female, or the sexes indiscriminately mixed on different trees, occasionally hermaphrodite, with an ovary and stamen side by side in the same flower, seated on a short peduncle, furnished with one to five, entire, leafy bracts; bracteoles or scales lanceolate to oblong, pubescent on the lower half, or shaggy with long hairs that extend beyond the glabrous upper half, pale yellow. Ovary glabrous, style short, stigmas entire or bifid.

The most beautiful and picturesque weeping willow in cultivation. The very mixed sexes on the same and different trees, and the variable hairiness and shape of the scales of the catkins indicate hybridity. The influence of *S. alba*, var. *vitellina*, is seen in the colour of the twigs and branches, and in the size of the larger leaves. The weeping habit of the tree, the slender twigs and branches, the small catkins, small scales and ovaries are due to *S. babylonica*. Many trees have been raised, for not all are exactly alike, and I have heard of one that is spring tender, suggesting the influence of *S. babylonica*. These hybrids could not have come from *S. alba* as suggested by *S. alba*, var. *tristis* Gaud., and adopted by Rehder. They could not have come from *S. alba*, var. *vitellina* (L.), for this has catkins 2-5 in. long. Trees are to be seen at the Royal Horticultural Society's gardens, Wisley, gathered in 1926, Barnes Common, 1926, Thames banks, Twickenham, Middlesex, 1928, J. Fraser; and Westonbirt, Tetbury, Gloucester, 1928, A. B. Jackson.

S. babylonica × *fragilis* = *S. blanda* Anderss., Monographia Salicum, p. 50 (1865). A tree with wide spreading main branches, and drooping branchlets and twigs. Shoots dull green, brownish or substestaceous, glabrous from the first, polished when one year old. Leaves lanceolate, attenuate at the apex to a fine, oblique or straight point, serrate almost to the tip with subacute serratures, slightly incurved at the tip, cuneate at the base, dark green above, paler and somewhat glaucous beneath,

having a few short hairs on both faces at the very first, but soon perfectly glabrous, 7-14 cm. long, 1.5-2.5 cm. broad; stipules one-half cordate, acute, serrate, not always present. Catkins straight or slightly curved, ascending or spreading, but ascending the reverse way on pendent branches, essentially female, but sometimes with male flowers mixed with them, and occasionally hermaphrodite, supported by peduncles 7-17 mm. long, and furnished with one to five, leafy entire bracts, 2.5-3.5 cm. long; bracteoles or scales narrowly ovate to narrowly oblong, obtuse or acute, downy at the base, ciliate, pale yellow. Ovary narrowly ovate, tapered into the style, finely pubescent at the base as in *S. babylonica*; shortly stalked; style short, stigmas emarginate or bifid.

The trees I have seen are as described above, but not very large compared with those of *S. alba* × *babylonica*. The evidence of *S. fragilis* is seen in the large leaves, their glabrous condition, the glabrous shoots, the relatively long bracteoles of the catkins, and the stalked ovaries. The presence of *S. babylonica* is seen in the weeping habit, slender twigs, short catkins and the more regular serratures of the leaves, greatly reduced in size compared with those of *S. fragilis*. Waylands Farm, Hershams, Surrey, 1925; Petersham, Surrey, 1926, J. Fraser.

S. purpurea L. Sp. Pl., 1017 (1753). Sm. Fl. Brit. iii., 1039; S. J. Enander, Studier öfver Salicis i Linne's Herbarium, p. 31 (1907). A shrub, 3-4 ft. high, decumbent. Twigs sooner or later creeping on the ground for several feet, very slender, glabrous from the first, very tough, red, very bitter to the taste. Leaves oblanceolate-linear, acute, or shortly acuminate, narrowed to a rounded base or cuneate, finely serrulate from near the apex to nearly the base, glaucous beneath, ± pubescent on both faces at first, soon glabrous, 5-7.5 cm. long (average 5-6 cm.), 5-10 mm. broad (average 7 mm.). Stipules very small, seldom produced. Catkins before the leaves in March or April, very slender on a very short peduncle, carrying one to three, small, linear bracts, straight or curved, partly opposite, partly alternate; female 1-2 cm. long during anthesis, lengthening to 3 cm. in fruit; bracteoles or scales obovate, villous at first, becoming densely pubescent with shorter hairs in fruit, black in the upper half; ovary very small, ovoid, obtuse, sessile, grey-tomentose; stigmas very small, round, entire or emarginate, subsessile; male with two stamens completely connate and terminated by a four-lobed anther, reddish before shedding the pollen.

The above is the type in the herbaria of Linnaeus and Smith, and S. J. Enander, late of Uppsala, confirmed it in the herbarium of the first named. I have known the female as a bush and as a budded or grafted, weeping tree since 1874; the bush and trailing form was grown in the garden for tying up the Raspberries with its tough twigs. It is often grown in gardens and nurseries as a weeping standard, under the name of *S. americana*, var. *pendula*. That is why I have introduced it here, as it is seldom seen in Britain, except on the stem of another species. Smith considered it native, and gave King Street meadows, Norwich, as a habitat according to Mr Crowe (1804). I have specimens from Cambridge Botanic Garden, 1926; quarry, Crox Bottom, Bristol,

1925, Ida M. Roper; and male and female specimens from the River Etsch, above Botzen, Italy (formerly part of Austria), 1927, A. H. Maude. I have seen standard trees at Richmond, and Anchor Lock, River Wey Navigation, both in Surrey, and elsewhere.

S. purpurea L., var. *Eugenei* Fraser, var. nov. *S. purpurea* L., var. *C. Helix* Koch, Comment., p. 25. A. and E. G. Camus, i., p. 104 and Atlas, Pl. 7, fig. F. *S. Eugenei* Hort. *S. pyramidalis* Josephine Hort. *S. Rehderiana* Hort., not Schneider. An erect bush, 10 ft. high or more, with the branches slightly spreading at a very acute angle. Twigs slender, though considerably stouter than those of *S. purpurea*, glabrous from the first, polished, pale green in shade, yellow green in exposure. Leaves linear-oblongate, cuspidate, acute to shortly acuminate, broadest near the apex, narrowed to the base, cuneate, finely serrulate from near the apex to one or two-thirds downwards, a little revolute at the margin, thinly pubescent at first, soon glabrous, glaucous, 6-10 cm. long, 7-13 mm. wide in good, moist soil, but 3-6 cm. long in dry soil. Stipules not seen. Catkins male, sharply ascending, straight or slightly curved, 2-2.5 cm. long, 6 mm. wide when in bloom. Anthers very pale red, fading before dehiscence. The rest as in the type.

A Continental variety of recent introduction. The leaves are always narrower and more extensively serrulate than those of *S. Helix* Sm., whether they are long or short. It makes a very handsome bush. There are only two British varieties of *S. purpurea*; on the Continent the varieties and forms are numerous. Cult. Kew and first flowered in 1929 from Westonbirt, Tetbury, Gloucester; Hort. Hillier and Sons, 1929.

NOTES ON BRITISH ORCHIDACEAE.

P. M. HALL.

Helleborine Helleboriné (L.) Dr. × *purpurata* (Sm.) Dr. Selborne Common, N. Hants, v.-c. 12, August 8, 1931, Colonel M. J. Godfery and P. M. Hall.

In the open woodland above Selborne Hanger, known as The Common, the predominating form of Helleborine is *H. purpurata*. Both *H. Helleborine (latifolia)* and *leptochila* occur in The Hanger and the former is also found on the outskirts of The Common. A single plant was found which appeared to be an extremely tall *purpurata* with two stems rising from the rhizome in the manner of that species but abnormally bracteate and large-leaved. Although no flowers were open, Colonel Godfery believed this plant to be a hybrid and subsequently confirmed his opinion in a letter dated August 14, 1931, as follows:—"I am now quite satisfied that the *Epipactis* with broad leaves and a very dense spike with extraordinarily developed bracts is a hybrid. The buds on dissection clearly confirmed the evidence of the broad *latifolia*-like leaves. The floor of the hypochile was not *transversely* ridged with violet undulations as in even the topmost buds of *E. violacea* [i.e., *purpurata*—see later, P. M. H.], but was longitudinally veined with close-lying transparent veins and entirely green, with no trace of violet. The epichile showed no trace of the parallel *longitudinal* furrows on the bosses or hunches of *violacea*, slightly suggestive of the fingers of the human hand, but showed indications of an irregular boss on each side, similar to those of *latifolia*. The transverse mottling of the hypochile of *E. violacea* is a marked feature of that species, clearly visible in all the buds I opened, even the least developed. I, therefore, think that the plant is *E. latifolia* × *violacea* = × *Epipactis Schulzei* Camus. Other points about the hybrid were the very stout stem, slightly shallower hypochile and narrower epichile. The 2nd leaf from base was broadly ovate, 5 cm. long × 4 cm. broad, the next 8 cm. × 5 cm., the next 8.5 cm. × 3.5 cm., and the next 8.5 cm. × 2 cm., agreeing generally with *E. latifolia*. Lowest bract 6.5 cm. × 1.2 cm."

As stated above, the general affinity of this plant was with *purpurata* in habit and appearance, and in his analysis Colonel Godfery draws attention to those characters in which the plant differs from *purpurata (violacea)* and resembles *Helleborine (latifolia)*.

This hybrid is quoted by Camus, *Iconographie des Orchidées d'Europe et du bassin Méditerranéen*, ii., p. 486, as × *E. Schulzei* Fournier, *Brev.*, p. 514 (1927) = *E. latifolia* All. × *varians* Fleischm. & Reehinger. According to Camus' synonymy *E. varians* Fleischm. & Reehinger in *O.B.Z.*, lv., p. 267 (1905) = *E. violacea* Boreau, *Fl. Cent.*, éd. 3, ii., p. 651 (1857) = *E. purpurata* Sm., *Eng. Fl.*, iv., p. 41 (1828)

= *Helleborine purpurata* Druce in *Journ. Bot.* (1909), p. 28. This hybrid is recorded by Camus from Switzerland and Germany, but has apparently not been hitherto recorded in the British Isles. If the nomenclature of the *British Plant List* is followed, this hybrid should be cited as × *Helleborine Schulzei* (Fournier) nov. comb.

- Helleborine palustris* (Mill.) Schrank. Rudley Mill, S. Hants.
H. leptochila (Godfrey) Dr. Selborne, N. Hants. Normal plants as well as the peloriate form recorded in 1930.
Orchis incarnata L. Askham Bog, near York; Austwick, West Yorks, v.-c. 64, W. A. Sledge.
 Var. *pulchrior* Dr. Thursley Common, near Hammer Pond, Surrey, confirming the identification of J. E. Lousley's dried specimens of 1930; very numerous. Holmsley, Matley, and near Beaulieu Road Station, all New Forest, S. Hants. Austwick Moss, West Yorks, v.-c. 64, W. A. Sledge.
O. praetermissa Dr. *Britty Common, S. Somerset, v.-c. 5, N.C.R. Though technically a new record this plant has in fact been long known in the vice-county to Mr W. D. Miller and other Somerset botanists. Shapwick, N. Somerset. *Mathon, Worcestershire, v.-c. 37, plentiful, N.C.R., F. M. Day.
 Var. *pulchella* Dr. Austwick, West Yorks, v.-c. 64, W. A. Sledge.
 **O. purpurella* Steph. Kilnsey, West Yorks, v.-c. 64, N.C.R., W. A. Sledge. Submitted to Dr Stephenson, who concurred.
O. maculata L., var. *leucantha* Dr. Whernside, W. Yorks, v.-c. 64, W. A. Sledge.
O. maculata L. × *praetermissa* Dr. Shapwick, N. Somerset.
 **O. maculata* L. Askham, near York, and near Austwick, West Yorks, v.-c. 64, N.C.R., W. A. Sledge.
O. maculata L. × *praetermissa* Dr., var. *pulchella* Dr. Near Austwick, West Yorks, v.-c. 64, W. A. Sledge.
 **O. Fuchsii* Dr. Askham, near York, and near Austwick, West Yorks, v.-c. 64, N.C.R., W. A. Sledge.
O. Fuchsii Dr. × *incarnata* L. Askham, near York, W. A. Sledge.
O. Fuchsii Dr. × *praetermissa* Dr. Mathon, Worcs, F. M. Day.
O. Fuchsii Dr. × *praetermissa* Dr., var. *pulchella* Dr. Austwick, West Yorks, v.-c. 64, W. A. Sledge.
O. hircina Crantz. A single specimen in the parish of Exton, S. Hants, F. Escombe.
Habenaria Gymnadenia Dr., var. *densiflora* (Wahl.). Rudley, S. Hants, with type.
 II. *Gymnadenia* Dr. × *O. Fuchsii* Dr. Rudley, S. Hants, 1 plant.
 H. *Gymnadenia* Dr. × *O. praetermissa* Dr. Near Southwick, S. Hants, 3 plants.

All the above were seen by me *in situ* or as fresh specimens. With regard to the N.C.R.s for *O. maculata* L. and *O. Fuchsii* Dr., *O. maculata* L. (agg.) has, of course, been previously recorded for v.-c. 64, but the *Comital Flora* does not record either segregate for that vice-county.

A NEW ALCHEMILLA FOR THE BRITISH ISLES.

F. JAQUET.

ALCHEMILLA CONTROVERSA Bus. apud Jaquet, *les Alchimilles fribourgeoises* (Mém. Soc. Frib. Sciences Naturelles, i., 1902, p. 128), et Buser, *les Alchimilles du Crêt de Chalam* (Bulletin Soc. Natur. de l'Ain, p. 5).

Description by the Author:—

Species of medium size, vigorous, rather short and squat, coriaceous and flexible, covered with soft down, but not very abundantly, sparse at the top. Rhizome of medium size, breaking easily. Leaves rounded-oblique, coriaceous, remaining flexible, strongly undulate, exterior lobes joining or more often half overlapping above the petiole. Lobes broad, only slightly incised, those of the inferior leaves arcuate, equalling $\frac{1}{4}$ to $\frac{1}{3}$ of the radius; those of the large summer leaves semicircular, $\frac{1}{4}$ to $\frac{2}{5}$ ths of the radius; those of the last leaves widely triangular, toothed all round. Teeth 6-8 on each side, rather large, equal, obliquely ovate or mammiform, strongly ciliate, mucronate, penicillate. Leaves of a dirty bluish-green, pale in colour, the last almost white below. With the exception of the first leaves, which are glabrous, the others have loose hair scattered over almost all the surface. Petioles very robust, those of the large leaves as thick as the stems, covered all over with rather silky hairs. Stems rather vigorous, arcuate, ascending, one to two times as long as the petioles, yellowish, readily turning brown in the sun and sub-pubescent up to the first branch. Inflorescence corymbiform, divaricate at the summit; scorpioid cymes much unrolled, pedicels divergent, flowers therefore pseudo-umbellate, fasciculate. Flowers medium-sized, shortened, of a dirty yellow green, quite glabrous. Urceoles shortly turbinate or sub-spherical. Sepals equalling the urceoles, short and broad, cordate-ovate, obliquely upright or even arcuate-convergent after flowering and hiding the rather exerted styles. Pedicels rather slender, the lateral twice, the superior three times, the length of the urceole. Appears to be rare everywhere.

Habitat. Pastures, grassy slopes of the Haut-Jura and of the calcareous Alps of western Switzerland.—Jura Vaudois: Suchet, Mont-Tendre, Dent de Vaulion (*Gaillard*).—Jura Dubisien: summit of Mont-d'Or.—Alpes; Bas-Valais: vallée de Morgins, going towards the Pas de Chésery.—Vaud: Lavarraz, la Boellaire, towards the col des Essets (*R. Bus.*).—Fribourg: le Haut de Terroche (*Cerniat*); les Grouins (valley of Motélon), amidst abundance of *lineata* (Jaquet).

The whole appearance of the plant, its texture, the shape of the leaves and their denticulation are those of *A. alpestris* Schmidt. I had taken for a more hairy form of that species the first specimens that M. Jaquet sent me. But this acute observer, who has had the advantage of

seeing the plant *in situ*, growing side by side with true *alpestris*, pointed out to me certain very definite differences. As a reminder of our controversy I have given the plant the name of *A. controversa*.

The description given above is taken from robust plants from the Jura. Those from the Fribourg and Vaudoises Alps differ slightly. They are quite half the size and are more slender; the stems are more or less decumbent and often glabrous . . . I regard the alpine plant as the slender, badly nourished form (habitat less favourable), the plant from the Jura as f. *vegeta, robusta*, of the same type.

(Signed) R. BUSER.

Without wishing to question the value of the above, not having seen the plant from the Jura, we should like to state, regarding the Fribourg plant that, at the time of its flowering, the pastures of Terroche are almost always grazed and only occasional small plants escape the teeth of the animals which, as is well known, are very partial to plants of this genus. It was such small plants that were sent to M. Buser.

For several years we have had the pleasure of examining the Alchemillas gathered in the British Isles by our honoured friends, Mr Salmon of Reigate, Dr Druce of the University of Oxford and Mrs Wedgwood, of London. It has enabled us to make a comparative study of the Alchemillas and many interesting forms have been brought to our notice. When examining last autumn the parcel of plants which had been sent from Britain, our attention was particularly struck by a plant we had not hitherto observed. A comparison with our Swiss specimens at once showed, to our great surprise, that it was identical with our *A. controversa*.

Thanks to the very precise information given by Mrs Wedgwood and Dr Druce, to whom belong the credit of its discovery, we are able to give the two stations in which *A. controversa* has been found in the British Isles.

1. In Scotland, near the shores of Loch Lubnaig, Perthshire, growing on quartzose schist, at an altitude of 410 feet, in rough pasture.
2. In Ireland, at Cave Hill, Belfast, Co. Antrim, on soil above basaltic rock, plentiful amongst grass at an altitude of 500 feet.

The question arises as to whether the plant occurs in Switzerland and England without any intermediary localities or if, as is infinitely more probable, it will one day be discovered on, for example, the central Massif of France.

Fribourg, Switzerland, 1st December 1931.

[We are greatly indebted to Col. H. H. Johnston for permission to publish this summary of his fifteenth paper on this subject, and to join with him in thanking Dr Hugo Dahlstedt for his valuable determinations and descriptions.]

ADDITIONS TO THE FLORA OF ORKNEY.

As Recorded in Watson's *Topographical Botany*, Second Edition (1883).

Colonel H. H. JOHNSTON,
C.B., C.B.E., D.Sc., M.D., C.M., F.R.S.E., F.L.S.

So far as I am aware, the seventeen plants mentioned in this paper are new records for H. C. Watson's county No. 111 (Orkney), and they are not mentioned in the following publications: *A Tour through some of the Islands of Orkney and Shetland*, in the year 1804, by Patrick Neill (1806); "Notice of some of the rarer Plants observed in Orkney during the Summer of 1849," by John T. Syme, Esq., published in the *Transactions of the Botanical Society of Edinburgh*, vol. iv., pp. 47-50 (1850); "Florula Orcadensis—A list of plants reported to occur in the Orkney Isles," by H. C. Watson, Esq., F.L.S., published in *The Journal of Botany*, No. xiii., pp. 11-20 (January 1864); Annual Reports of the Botanical Exchange Club of the British Isles; "A new List of the Flowering Plants and Ferns of Orkney," edited by W. A. Irvine Fortescue, and published in *The Scottish Naturalist* (1882-1884); *Supplement to Topographical Botany*, ed. ii., by Arthur Bennett, A.L.S. (1905); and *Flora Orcadensis*, by Magnus Spence, F.E.I.S. (1914).

I am much indebted to the following botanists for kindly determining the names of the specimens of most of the plants mentioned in this paper:—Dr Hugo Dahlstedt; Lieutenant-Colonel A. H. Wolley-Dod; and the late Dr George Claridge Druce.

CLASS I.—DICOTYLEDONS.

Erophila Boerhaavii (Van Hall) Dumortier, *Flor. Belg.*, p. 120 (1827), var. *decipiens* (Jordan) O. E. Schulz (*vide* George Claridge Druce, who saw six specimens of my Reference No. 3797 on 14th September 1931).—Reference No. 3797, grassy roadside, 135 feet above sea-level, Burn of Wasdale, at the Loch of Wasdale, Firth, Mainland, Orkney, Scotland, 26th May 1928, Henry Halcro Johnston.

Rosa Afzeliana Fries, var. *e. subcanina* (Christ) Wolley-Dod in his "A Revision of the British Roses," in *Supplement to The Journal of Botany*, vol. lxix., p. 105 (December 1931) [= *Rosa glauca* Villars, var. *e. subcanina* (Christ)] (*vide* A. H. Wolley-Dod, who saw all my specimens of Reference Nos. 4377, 4497, 4462, and 4504, on 18th December 1931; and all my specimens of Reference Nos. 4463 and 4505, on 28th Decem-

ber 1931).—(1) Grassy banks at burnside, 20 feet above sea-level, left bank (west side) of the Burn of Grimbister, Firth, Mainland, Orkney, Scotland, Reference No. 4377, 17th July 1931, and Reference No. 4497, 26th September 1931; (2) grassy banks at burnside, 70 feet above sea-level, right bank (south side) of the Kirk Burn, Bu, Hoy, Orkney, Scotland; Reference Nos. 4462 and 4463, 14th August 1931, and Reference Nos. 4504 and 4505, 26th October 1931, H. H. Johnston, native, rare.

Rosa Afzeliana Fries, var. f. *denticulata* (R. Keller) Wolley-Dod, forma *subcomplicata* (Heyek?) Wolley-Dod in his "A Revision of the British Roses," in *Supplement to the Journal of Botany*, vol. lxi., p. 105 (December 1931) [= *Rosa glauca* Villars, var. f. *denticulata* R. Keller, forma *subcomplicata* (Heyek?) Wolley-Dod] (*vide* A. H. Wolley-Dod, who saw all my specimens of Reference Nos. 4382 and 4489 on 18th December 1931).—Grassy banks at burnside, 10 feet above sea-level, right bank (east side) of the Burn of Rossmire, near its mouth, on the upper (south) side of the Kirkwall-Stromness Public Road, Ingshowe, Firth, Mainland, Orkney, Scotland, Reference No. 4382, 24th July 1931, and Reference No. 4489, 26th September 1931, H. H. Johnston.

Sedum album Linn. [= *Sedum album* Linn., var. a. *teretifolium* Haworth] (*vide* George Claridge Druce, who saw living plants of my Reference No. 4379 on 5th August 1931).—Crevices of stone walls of two buildings in ruins near a dwelling-house, 35 feet above sea-level, Nether Bigging, Firth, Mainland, Orkney, Scotland, Reference No. 4379 (plants in flower-bud), 17th July 1931, and Reference No. 4397 (plants in flower-bud and sparingly in flower), 31st July 1931, H. H. Johnston.

Hieracium sagittaticeps Dahlstedt, n. sp. Ab *Hieracium Sinclairii* Dahlstedt, haec species differt pedicellis et ramis inflorescentiae dense stellatis et sparsim glandulosis et pilosis, squamis involucri minus dense pilosis et glandulosis, marginibus squamarum latius et magis conspicue floccosis, apicibus squamarum magis comosis nec non stylis obscuris et foliis minus pilosis.

According to the heads this species agrees very well with *Hieracium sagittatum* Lindeberg except that they are less hairy and glandular. As to the leaves and in its general appearance it comes very near to *Hieracium Sinclairii* Dahlstedt. It belongs to *Vulgata*, a. *Silvaticiformia* Dahlstedt.

Hieracium sagittaticeps Dahlstedt belongs to Zahn's capital or group-species *Hieracium sagittatum* (Lindeberg) Dahlstedt, and in *The London Catalogue of British Plants*, Eleventh Edition (1925), it should be inserted between Nos. 1089 and 1090.

Locality.—Reference No. 4425, heathery banks at burnside, 150 feet above sea-level, Burn of Segal, Hoy, Orkney, Scotland, 8th August 1931, H. H. Johnston.

Hieracium Sinclairii Dahlstedt, n. sp. *Caulis* 2-2.25 dcm. altus, 0-1-phyllus basi ipsa longe pilosus caeterum sparse densius pilosus a basi

± leviter superne densius stellatus. *Folia basalia* in rosulam multifolium congesta, exteriora fere rotundata intermedia ovalia omnia ± obtusa, interiora ± et saepe late ovata sparse mucronato-dentata vel ad basin latius et acute dentata, breve acuta, supra sparse—densiuscule subtus praesertim in nervo dorsali dense pilosa ± dense ciliata, in petiolis dense et longe pilosa laete viridia; *folium caulinum* 0-1, lineari-lanceolatum integrum acutum, breve petiolatum. *Inflorescentia* oligo-polycephala ramis ± longis vel mediocribus arcuatis et pedicellis brevibus acladium circa 10 mm. longum ± superantibus sparse superne densius et obscure pilosis, densiuscule—sat dense glandulosis ± stellatis. *Involucrum* parvum ± atroviride, basi ovata. *Squamae* exteriores breves intermedia longiores obtusae—obtusiusculae margine ± stellatae, interiores lineares obtusiusculae margine leviter vel parum stellatae omnes, apice leviter comosae, caeterum ± dense et obscure pilosae, sat dense—dense glandulosae. *Calathium* sat obscure luteum circa 40 mm. diametro, radians. *Stylus* luteus-melleus, stigmatibus extus fusciscentibus.

Hieracium Sinclairii Dahlstedt belongs to a group of species of which *Hieracium sagittatum* Lindeberg is the most prominent. From the latter *Hieracium Sinclairii* Dahlstedt is distinguished through its heads with narrow phyllaries, covered with darker simple hairs and denser glandular hairs but less floccose in the margins. According to the heads it mostly resembles *Hieracium pycnodon* Dahlstedt but differs by their darker and denser hairiness. The leaves are mostly entire, the inner ones only sparsely and shortly dentated at the base, not shortly lobed as in *Hieracium pycnodon* Dahlstedt. *Hieracium Sinclairii* Dahlstedt belongs to Zahn's capital or group-species *Hieracium sagittatum* (Lindeberg) Dahlstedt, and in *The London Catalogue of British Plants*, Eleventh Edition (1925), it should be inserted between Nos. 1097 and 1098.

Locality.—(1) James Sinclair's Reference No. 716, moist mossy soil on sandstone crags on hillside, 430 feet above sea-level, Dwarfie Hamars, Hoy, Orkney, Scotland, 24th July 1931, James Sinclair. (2) Modification (*vide* Hugo Dahlstedt, who saw James Sinclair's seven specimens of his Reference No. 715 at Skärsåtra, Lidingö, Sweden, on 8th December 1931). James Sinclair's Reference No. 715, moist mossy clefts of sandstone rocks on crags on hillside, Dwarfie Hamars, Hoy, Orkney, Scotland, 24th July 1931, James Sinclair.

Note.—James Sinclair's specimens of his Reference No. 716 were collected by him at 430 feet above sea-level, near the foot of the crags on the Dwarfie Hamars, south of the Dwarfie Stane; and those of his Reference No. 715 were collected higher up the crags, near the north-east end of the Dwarfie Hamars.

Hieracium paraliaeforme Dahlstedt, n. sp. *Caulis* 3-4 dcm. altus, bifolius inferne crebrius superne parcius pilosus et ± stellatus. *Folia* saturate viridia, *basalia* in rosulam (1)—2-5-foliam congesta ± petiolata, exteriora ± ovalia obtusa, interiora ± ovato-lanceolata—late lanceolata,

breve acuta-obtusiuscula, subintegra vel ad basin parce breve et densiuscule dentata, supra parce subtus crebrius pilosa, ± ciliata, in pagina inferiore saepe ± virescentia; *caulina* 2, infimum ovato-lanceolatum acutum (subintegrum) vel infra medium dentibus parvis latis praeditum supra parce subtus praesertim in nervo dorsali crebrius pilosum, breve petiolatum, summum plerumque parvum anguste lanceolatum—linearilanceolatum subintegrum vel basi ± denticulatum acutum, sessile. *Inflorescentia* ± contracta oligo-cephala ramis brevibus—sat longis acledium 5-10 (-20) mm. longum ± superantibus, cum pedicellis glandulis ± sparsis et pilis obscuris ± crebre praeditis, sat dense stellatis. *Involucrum* basi-ovato-decurrente. *Squamae* exteriores breves, paucae, intermediae latiores ± lineares, interiorae lineares omnes ± albido-comosae, obtusiusculae, in margine leviter floccosae caeterum, pilis obscuris sat crebis et glandulis parvicioribus obtectae. *Calathium* circa 30 mm. diametro, obscure luteum. *Stylus cum stigmatibus* ± fuscus, siccus sat obscurus.

Hieracium paraliaeforme Dahlstedt bears a great resemblance to *Hieracium paraliium* Dahlstedt, from Sweden, but it differs from it especially in having more glabrous leaves, that are more or less entire or more broadly dentated below the middle, longer heads with denser hairiness and more prominent stellate hairs in the margins of the phyllaries. It belongs to *Vulgata*, b. *Vulgatiformia* Dahlstedt. *Hieracium paraliaeforme* Dahlstedt belongs to Zahn's capital or group-species *Hieracium levicaule* Jordan, and in *The London Catalogue of British Plants*, Eleventh Edition (1925), it should be inserted between Nos. 1122 and 1123.

Locality.—(1) James Sinclair's Reference No. 717, moist mossy soil on sandstone crags on hillside, 430 feet above sea-level, Dwarfie Hamars, Hoy, Orkney, Scotland, 24th July 1931, James Sinclair. (2) Modification (*vide* Hugo Dahlstedt, who saw my two specimens of my Reference No. 4425A, in full fruit, at Skärsättra, Lidingö, Sweden, on 2nd December 1931). Reference No. 4425A, heathery banks at burnside, 150 feet above sea-level, Burn of Segal, Hoy, Orkney, Scotland, 8th August 1931, H. H. Johnston.

Note.—James Sinclair's specimens of his Reference No. 717 were collected by him at 430 feet above sea-level, near the foot of the crags on the Dwarfie Hamars, south of the Dwarfie Stane, and a short distance north-east of his Reference No. 716 *Hieracium Sinclairii* Dahlstedt.

Hieracium Johnstonii Dahlstedt, n. sp. *Caulis* 6-7 decm. altus, polyphyllus, fere glaber. *Folia* sat laete viridia, subtus pallidiora, rosularia nulla, *basalia* sub anthesi emarcida; *caulina* plurima, 16-20, supra glabra subtus parce pilifera, margine parce ciliata omnia infimis exceptis sessilia, anguste—sat late ovato-lanceolata ± longe acuta, integra—sparsae ad medium denticulata-dentata. *Inflorescentia* corymbosa, polycephala e ramis ex axillis foliorum summorum ortis acuta, ramis pedicellisque ± dense stellatis sparsim—hinc inde crebrius pilosis. *Involucrum* mediocre ± atroviride basi ovata. *Squamae* extimae anguste interiores

lineares densiusculae—obtusae apice leviter vel parum comosae glandulis paucis parvis—minutis et pilis sparsis vel hinc inde crebrioribus obtectae. *Calathium* parvum circa 30 mm. diametro sat obscure luteum. *Stylus cum stigmatibus* luteus vel melleus.

This species, in respect of the more or less ovate acute leaves and all its general appearance, very closely resembles *Hieracium crocatum* Fries. Regarding the form of the heads, the more linear obtuse phyllaries and their hairiness, it comes very near *Hieracium polycomum* Dahlstedt. In reality it is intermediate between these two above-mentioned species. It belongs to *Foliosa* Dahlstedt. *Hieracium Johnstonii* Dahlstedt belongs to Zahn's capital or group-species *Hieracium inuloides* Tausch, and in *The London Catalogue of British Plants*, Eleventh Edition (1925), it should be inserted between Nos. 1236 and 1237.

Locality.—My Reference No. 4461 and James Sinclair's Reference No. 724, grassy rocky sandstone sea-cliffs, 15 feet above sea-level, on the north side of Pegal Head, North Walls, Hoy, Orkney, Scotland, 13th August 1931, H. H. Johnston and James Sinclair.

The aggregate species *Taraxacum officinale* Wiggers is recorded for Orkney in Watson's *Topographical Botany*, Second Edition, p. 236 (1883), but the following three segregate species are not mentioned in that book.

GROUP VI.—VULGARIA.

Taraxacum sublacinosum Dahlstedt, var. (*vide* Hugo Dahlstedt, who saw James Sinclair's two dried specimens at Lidingö, Sweden, on 20th November 1931).—James Sinclair's Reference No. 706, grassy banks at seashore, 10 ft. above sea-level, Bu, Hoy, Orkney, Scotland, 13th June 1931, James Sinclair.

Taraxacum sublaeticolor Dahlstedt, modification (*vide* Hugo Dahlstedt, who saw my two dried specimens at Lidingö, Sweden, on 20th November 1931).—Reference No. 4323, grassy roadside, 50 feet above sea-level, Mill Burn, Hoy, Orkney, Scotland, 18th May 1931, H. H. Johnston.

Taraxacum primum Dahlstedt, modification (*vide* Hugo Dahlstedt, who saw my one dried specimen at Lidingö, Sweden, on 20th November 1931).—Reference No. 4323A, grassy roadside, 50 feet above sea-level, Mill Burn, Hoy, Orkney, Scotland, 18th May 1931, H. H. Johnston.

Senecio Smithii De Candolle.—(1) James Sinclair's Reference No. 747, grassy banks near the mouth of a burn, Mill Burn, Burnhouse, North Walls, Hoy, Orkney, Scotland, 5th September 1931, James Sinclair; (2) my Reference No. 4482, edge of a grassy poultry yard, 100 feet above sea-level, Pleasance, Stromness Secondary School, Stromness Town, Stromness, Mainland, Orkney, Scotland, 7th September 1931, H. H. Johnston. This alien South American species was first discovered in Orkney by Dr George Claridge Druce, at Mill Burn, Burnhouse, North Walls, Hoy, in August 1931.

Matricaria suaveolens Buchenau [= *Matricaria discoidea* De Candolle].—(1) Reference No. 4481, grassy poultry yard, 100 feet above sea-level, Pleasance, Stromness Secondary School, Stromness Town, Stromness, Mainland, Orkney, Scotland, 7th September 1931, H. H. Johnston; and (2) Reference No. 4500, grassy rubbish heap from Stromness Town, 50 feet above sea-level, Clouster, Stromness, Mainland, Orkney, Scotland, 16th October 1931, H. H. Johnston. This alien North American species was first discovered in Orkney by James Sinclair, junior, at Pleasance, Stromness Town, on 3rd September 1931, when he collected his specimen of his Reference No. 744; and he also discovered it at Clouster, Stromness, before I collected my specimens of my Reference No. 4500 there on 16th October 1931.

Veronica agrestis L., var. b. *Garckiana* P. Fourn. (*vide* Charles Edward Britton, who saw specimens of my Reference No. 4065, through Dr George Claridge Druce).—Potato and cabbage plot in a vegetable garden, 30 feet above sea-level, Bellevue House, North End Road, Stromness Town, Stromness, Mainland, Orkney, Scotland. (1) Reference No. 2853, 11th October 1924; and (2) Reference No. 4065, 14th September 1928, H. H. Johnston. See *Rep. B.E.C.*, 1930, vol. ix., part iii., p. 363 (August 1931).

Prunella vulgaris L., var. b. *nemoralis* Beguinot (*vide* George Claridge Druce, who saw my two specimens of Reference No. 4420 on 18th August 1931).—Reference No. 4420, grassy banks at burnside, 15 feet above sea-level, North Burn of Quoys, Hoy, Orkney, Scotland, 6th August 1931, H. H. Johnston.

[*Salix viminalis* L., var. c. *linearifolia* Wimmer (*vide* John Fraser, who saw my specimen of Reference No. 4380 on 17th November 1931).—Reference No. 4380, marshy grassy burnside, 60 feet above sea-level, Burn of Grimbister, Mid Bigging, Firth, Mainland, Orkney, Scotland, 17th July 1931, H. H. Johnston. Not native. Planted by man. Two plants, in leaf but not in flower or fruit, only seen by me.]

CLASS II.—MONOCOTYLEDONS.

Malaxis paludosa Swartz.—Reference No. 4456, heathery sedgy marsh near a burn, 130 feet above sea-level, near the left (north) bank of Lyrawa Burn, about $\frac{1}{2}$ mile from the mouth of the burn at Lyrawa Bay, North Walls, Hoy, Orkney, Scotland, 12th August 1931, H. H. Johnston.

A LIST OF PLANTS FROM THE ISLE OF WIGHT.

E. DRABBLE and J. W. LONG.

The present contribution is a mere list of plants observed by us from 1916 to the present date (1931), accompanied here and there by brief notes on some of the more interesting of them. The list makes no pretence to completeness—many large genera are not mentioned—but it seemed to the late Editor better to publish this incomplete list than to wait, perhaps for several years, until justice could be done to the Phanerogamic Flora as a whole.

In general the records of localities run from West to East. No further classification of localities has been attempted here, as in our opinion a classification to be of any value would necessitate a division of the Island on principles very different from those hitherto proposed; even the broad division into Cretaceous and Tertiary areas loses much of its attraction when the petrological character of the rocks with their overlying soils is carefully considered, while mere topographical division is too artificial to be of use to anyone but the mere collector.

It will be noticed that we have added considerably to the records from West Wight, which on the whole make a surprisingly meagre show in Stratton's lists. Most of the collectors whose records he assembled appear to have given by far the greater share of their attention to East Wight. It is unnecessary to mention all previously published lists; among the more important are the following:—Bromfield's "Flora Vectensis," edited by W. J. Hooker and Bell Salter, published in 1856, four years after Dr Bromfield's death. A "Supplement" by A. G. More appeared in the *Journal of Botany* in 1871. In 1883 F. Townsend's "Flora of Hampshire, including the Isle of Wight," was published, followed at the beginning of the present century (1904) by a second edition by Townsend—an excellent work. In 1909, F. Stratton contributed to the "Guide to the Natural History of the Isle of Wight" a long list, apparently largely a compilation of records made by other collectors many of which had been published previously, although he very rarely mentions the authority for any particular record. A Supplementary list by Stratton was printed in the *Journal of Botany* in 1913. Since that time occasional short notices have appeared in the *Journal of Botany* and the Reports of the B.E.C., and some records are given in the Cambridge British Flora; while in 1929, J. F. Rayner brought out a "Supplement" to Townsend's Flora.

In the following list all the records, except in the very few instances where another collector's name is given, are our own.

We are greatly indebted to Mr J. E. Little, M.A., for sending to us a list of specimens from the Isle of Wight in a Herbarium at Hitchin Priory made by Mrs Fredk. Peter Delmé Radcliffe, nearly one hundred

years ago. These records are enclosed in square brackets and quoted throughout as "Herb. Radcliffe, teste J. E. Little."

In general, the sequence and nomenclature of the London Catalogue, Ed. XI., has been followed.

- CLEMATIS VITALBA L.—The common plant is var. INTEGRATA DC. with entire leaflets; var. CRENATA (Jord.) with crenate-serrate leaflets occurs much less commonly; var. TIMBALI Drabble with leaflets long and narrowly lanceolate:—Thorley. (See Journ. Bot., 84, 1932). It should be noted that the leaves in the young plant, and of the lower parts of mature plants, are usually toothed in all the varieties.
- [We have failed to find THALICTRUM FLAVUM L. in either of its two recorded localities.]
- ANEMONE APENNINA L.—Norton; no doubt an escape from cultivation.
- RANUNCULUS LENORMANDI F. Schultz—Not common; Newchurch, slopes of Bleak Down.
- R. HEDERACEUS L.—Northwood, Compton Bay; var. HOMOIOPHYLLUS (Ten.), a form characterised by its robust stems and large floating leaves:—Sandown.
- R. SCCELERATUS L.—Not common; Freshwater, Norton, Newport, Ryde, etc.; var. PUBESCENS R. & F. Brading.
- R. FLAMMULA L.—The common form (var. SUBERECTUS Syme) abundant; vars. SERRATUS DC., OVATUS Pers. and LATIFOLIUS Wallr. also occur.
- R. LINGUA L.—Most of the plants in the marsh at Freshwater Gate are more or less hairy; all have a downy coat when young but this becomes less and less evident as the plants mature, and the fully grown plants may be nearly glabrous. The downy coating, however, differs from plant to plant and even from branch to branch of the same plant. It is therefore unsatisfactory to try to distinguish a. GLABRATUS and b. HIRSUTUS of Walloth amongst these plants.
- R. ACER L.—The commonest variety is MULTIFIDUS DC. (BORAEANUS Jord.); this flowers in spring and early summer. Forma TOMO PHYLLUS (Jord.) generally flowers a little later. Var. STEVENI (Andrz.) is also abundant, flowering chiefly in July and August. Less common is var. FRIESIANUS (Jord.), also a late-flowering plant. (See Drabble in *Rep. B.E.C.*, 1930 (1931), p. 472-8).
- R. REPENS L., var. ERECTUS DC.—The large upright form without runners:—Freshwater, etc. A small prostrate form occurs on the slip-clay at Cranmore.
- R. BULBOSUS L., var. BRACHIATUS (Schleich.). With many spreading stems, up to 48, from the single corm:—Moon's Hill and Newport. On the Downs occur two dwarf forms; (1) f. NANUS Druce, a small upright few-flowered plant, and (2) a small plant with several spreading prostrate stems. In cultivation these retain their distinctness, but approach the corresponding inland forms in size. They should be regarded merely as growth forms of our ordinary BULBOSUS (i.e., R. BULBIFER Jord.) and R. BRACHIATUS Schleich., re-

- spectively. The densely-hairy var. *VALDEPUBENS* (Jord.) also occurs at Freshwater and Totland, and retains its character in cultivation. Near the coast on the south of the Island a form indistinguishable from var. *DUNENSIS* Druce has been found here and there.
- R. SARDOUS* Crantz—Not common; Totland, Freshwater, Grange Chine. Newport, Sandown; f. *PROSTRATUS* Druce (see *Rep. B.E.C.*, 1924 (1925), p. 431, and 1926 (1927), p. 19), Moon's Hill, Norton.
- R. PARVIFLORUS* L.—Abundant on broken ground on the Downs at Freshwater, Afton, Compton, Calbourne, Apes Down.
- R. ARVENSIS* L.—Rare; Newport, Whippingham, Bembridge.
- R. FICARIA* L.—With cream-coloured (not yellow) flowers at Moon's Hill.
- HELLEBORUS VIRIDIS* L., var. *SMITHIANUS* A. Br.—Still persisting in the locality at Haven Street mentioned by Stratton; [Totland, April 1838, in Herb. Radcliffe, teste J. E. Little].
- AQUILEGIA VULGARIS* L.—Very local; in scrub on the Downs near Alum Bay, all with purple flowers, abundant; [Forest near Cowes (c. 1838) in Herb. Radcliffe, teste J. E. Little].
- DELPHINIUM AJACIS* Reichb. (? *GAYANUM* Wilmott)—Waste-land by the Medina below Newport.
- ACONITUM ANGLICUM* Stapf (*A. NAPELLUS* L., b. *LACINIOSUM* Seringe of *L.C.*, Ed. xi.)—At Pan Mill till 1918, not seen since that year. A specimen in Herb. Drabble labelled *A. NAPELLUS* L., Newport, I. of W., July 4th, 1877, H. E. Wilkinson, is *A. ANGLICUM*.
- BERBERIS VULGARIS* L.—Very rare; Freshwater, Carisbrooke.
- PAPAVER RHOEAS* L., var. *PRYORII* Druce—Brading, Newport; var. *VIOLACEUM* Bréb.—Moon's Hill; var. *CAUDATIFOLIUM* (Timb.)—Newport, Freshwater.
- P. DUBIUM* L.—Not common; Fishbourne, Carisbrooke, Brading.
- P. LECOQUI* Lamotte—Very rare; Newport.
- P. ARGEMONE* L.—Not common; Headon Hill, Yarmouth, Newchurch; [Tinker's Lane, Cowes, June 1839, in Herb. Radcliffe, teste J. E. Little].
- P. HYBRIDUM* L.—Rare; Yarmouth, Newport.
- GLAUCIUM FLAVUM* Crantz—Abundant on the cliffs of the south coast; in an old chalk-pit at foot of Ashley Down, several miles from the sea.
- CORYDALIS BULBOSA* DC.—Cowes.
- C. LUTEA* DC.—Abundant on old walls at Gatcombe.
- FUMARIA CAPRIOLATA* L., var. *BABINGTONII* Pugsley—Rare, Chilton, Brightstone, Steephill.
- MATTHIOLA INCANA* Br.—Still on the cliffs between Freshwater and Compton. There are two forms:—(1) with petals narrow, oblong, dark purple; (2) with petals broader, obovate, paler. In Stratton's list it is given as "Formerly at Steephill"; it was there in 1925, but the cliff has now fallen (1931).
- CHEIRANTHUS CHEIRI* L. and var. *FRUTICULOSUS* (L.)—On cliffs and old walls at Freshwater, Yarmouth and elsewhere.

- NASTURTIUM OFFICINALE Br., var. MICROPHYLLUM Crantz—Compton Bay, Newchurch.
- N. SYLVESTRE Br.—Sandown.
- BARBAREA VULGARIS Br., var. TRANSIENS Druce—Moon's Hill, Newport and elsewhere. This variety has often been mistaken for *B. intermedia*.
- B. VERA Asch. (PRAECOX Br.)—Abundant; Freshwater, Norton, Newport, Wooton, etc.; [Cowes, 1838, Herb. Radcliffe, teste J. E. Little].
- CARDAMINE FLEXUOSA With.—Rare; Newport, Newchurch, Binstead.
- EROPHILA BOERHAAVII Dum.—Freshwater, Norton, etc.; var. BRACHYCARPA (Jord.)—Freshwater Downs; var. MURICOLA (Jord.)—Freshwater Downs.
- COCHLEARIA DANICA L.—Abundant and luxuriant at Freshwater Gate and as a minute form in the turf at the edge of the cliffs from Afton to the Needles.
- C. ANGLICA L.—High up in the chalk-cliffs at Afton and Freshwater, a most unusual situation for *C. ANGLICA*. [*C. officinalis* L. recorded in Rayner's "Supplement," as still on Cliffs, Freshwater, 1924, we have entirely failed to find there in that or any subsequent year].
- SISYMBRIUM THALIANUM Gay—Highdown, Freshwater, Farringford, Newport.
- S. PANNONICUM Jacq. (ALTISSIMUM L.)—Newport, Cowes.
- S. COLUMNAE Jacq. (ORIENTALE L.)—Moon's Hill, Yarmouth, Newport, Cowes, St Helens.
- S. SOPHIA L.—Thorley, Alverstone.
- ERYSIMUM CHEIRANTHOIDES L.—Newport.
- E. PERFOLIATUM Crantz (E. ORIENTALE Mill., CONRINGIA ORIENTALIS (L.) Dum.)—Newport, Shide.
- CAMELINA SATIVA Crantz—Cowes, Newport, Ryde, Godshill. [The records of *C. foetida* Fr., attributed to J. W. Long in Rayner's "Supplement," are due to the compiler's error. *C. foetida* has not been seen in the Island by either of us].
- BRASSICA ARVENSIS O. Kuntze (SINAPISTRUM Boiss.), var. ORIENTALIS (L.), pods retrorsely hispid, abundant; var. SCHKUHRIANA (Reichb.), pods glabrous, strongly torulose; Highdown, Farringford, Newport, Cowes.
- DIPLTAXIS TENUIFOLIA DC.—Rare; Newport, Sandown, Ventnor, St Lawrence.
- D. MURALIS DC.—Alverstone; var. BABINGTONII Syme—Newport, Shanklin, Ventnor, Stepphill.
- CORONOPUS DIDYMUS Sm.—Newport, Ryde.
- LEPIDIUM CAMPESTRE Br.—Cowes, Whippingham, St George's Down, etc.
- L. SMITHII Hook.—[Cowes, 1837, Herb. Radcliffe, teste J. E. Little].
- L. RUDERALE L.—Ryde.
- L. DRABA L.—Chilton Chine, Newport, Cowes, Ryde; var. VIRIDESCENS Druce—Newport.

- THLASPI ARVENSE* L.—Not common; Freshwater, Newport, Cowes, Sandown, Shanklin.
- CRAMBE MARITIMA* L.—Very rare; Hamstead (1920).
- RAPHANUS RAPHANISTRUM* L. and var. *FLAVUS* Druce—Ventnor.
- R. MARITIMUS* Sm.—Ventnor, and by the Medina below Newport.
- RESEDA ALBA* L.—Cowes, Ryde.
- R. LUTEOLOLA* L.—Common; var. *CRISPATA* (Link)—Cliffs at Freshwater; this plant has retained its narrow leaves and crisped margins in cultivation for several years.
- HELLIANTHEMUM CHAMAECISTUS* Mill. (*VULGARE* Gaertn.)—Abundant on the Downs; also in a damp meadow near the sea at Newtown. A form with pale cream-coloured flowers from Afton Downs has retained its colour unchanged for several years in cultivation, but a plant with very pale yellow flowers from Westover Down reverted after one year to the ordinary form.
- VIOEA ODORATA* L., var. *IMBERBIS* (Leight.)—Freshwater, Thorley; a beardless form with puce-coloured flowers near Alum Bay.
- V. HIRTA* L.—Common; var. *PROPERA* (Jord.)—Freshwater; var. *FOUDRASI* (Jord.)—Freshwater Downs, Afton Downs.
- V. CALCAREA* Gregory—Freshwater Downs, Apes Down.
- V. PALUSTRIS* L.—Newchurch.
- V. SILVESTRIS* Lamk.—Moon's Hill, Bouldnor, Cranmore, Wooton, Apes Down, Alverstone.
- V. RIVINIANA* Reichb.—Common; var. *DIVERSA* Greg.—Farringford; var. *VICINA* (Martr.-Don.)—Wooton; var. *FLAVICORNIS* (Forster)—Freshwater and Afton Downs, Newchurch.
- V. CANINA* L.—Headon Hill, Freshwater, Cranmore, Sandown; var. *PUSILLA* Bab.—Headon Hill, Cranmore; var. *ERICETORUM* Reichb. (*FLAVICORNIS* Sm. non Forster)—Freshwater.
- V. LACTEA* Sm.—Cranmore, abundant.
- V. LEJEUNEI* Jord.—Beckett's Copse near Freshwater, one plant only. This is the only representative of the *TRICOLORS* section that we have seen in the Island.
- [*V. VECTENSIS* F. N. Williams, gathered by C. E. Palmer outside Steyne Wood, Bembridge, in June 1900, we have entirely failed to find. (See Drabble, *Journ. Bot.*, 47, 1927)].
- V. AGRESTIS* Jord.—The only common member of the *ARVENSES* section in the Island; Freshwater, Cowes, St George's Down, Godshill, Alverstone, Sandown.
- V. SEGETALIS* Jord.—Totland, Wooton.
- V. DESEGLISEI* Jord.—Brading.
- V. DERELICTA* Jord.—Mottistone.
- V. ARVATICA* Jord.—Newport.
- V. ANGLICA* Drabble—Near Beckett's Copse, Freshwater.
- V. RURALIS* Jord.—Newport, St Lawrence.
- POLYGALA VULGARE*.—Not common; Freshwater, Cranmore, St Lawrence, Ventnor.

- P. OXYPTERUM* auct. angl. (? *DUBIUM* Bellyneck)—Common on the Downs from Freshwater eastwards, also at Headon Hill, Bonchurch, etc. Stratton seems to have confused this plant with *vulgare*.
- P. SERPYLLIFOLIUM* Hcse—Freshwater Downs, Headon Hill, Bleak Down, etc.; var. *MAJUS* R. & F.—Freshwater Downs, Colwell Heath; var. *VINCOIDES* Chodat—St George's Down.
- P. CALCAREUM* F. Sch.—Freshwater Downs.
- FRANKENIA LAEVIS* L.—King's Quay, Newtown.
- SAPONARIA OFFICINALIS* L.—Pan Mill, and by the Medina.
- S. VACCARIA* L.—Whitepit Lane, Newport.
- SILENE CUCUBALUS* Wibel (*INFLATA* Sm.), var. *PUBESCENS* DC.—Totland, Newport.
- S. ANGLICA* L.—Totland, Freshwater, Apes Down, Sandown, etc.
- S. NOCTIFLORA* L.—Freshwater, Ryde.
- LYCHNIS ALBA* Mill.—Common; var. *COLORATA* Rostr. (*INCARNATA* Lamotte)—Alum Bay, High Down, Afton. This plant, which differs from ordinary *alba* in having pink flowers, has generally been confused with the hybrid *ALBA* × *DIOICA*, which also occurs in the Island. We are indebted to Mr J. E. Little for calling our attention to this variety.
- CERASTIUM TETRANDRUM* Curt.—Very common; var. *PEDUNCULATUM* Bab.—characterised merely by its very long pedicels, all grades between the ordinary form and the "variety" being found, Freshwater, Compton, Norton Spit; var. *LUXURIANS* Druce—a very large broad-leaved form, Afton, Compton; var. *EGLANDULOSUM* C. E. Salmon—a good variety, eglandular and with the habit of a small *C. VULGATUM* L. Freshwater Downs.
- C. PUMILUM* Curt.—Rare; Headon Hill, Afton Down, Norton Spit.
- C. SEMIDECANDRUM* L.—Not very common; Compton, Sandown, etc.; var. *GLANDULOSUM* Koch—Headon Hill, Norton Spit.
- C. VISCOSUM* L. (*GLOMERATUM* Thuill.)—Common; var. *ROTUNDATUM* Druce—with very large broad leaves, Brook; var. *MACROPETALUM* Druce—with petals much longer than sepals, Freshwater Downs, Afton Downs, Grange Chine, Brightstone, Newchurch, Alverstone, Marvell Copse, Sandown; var. *APETALUM* (Dum.)—Afton Down, Cranmore, Haven Street, Newchurch, Alverstone.
- C. VULGATUM* L. (*TRIVIALE* Link), var. *HIRSUTUM* Fries, the ordinary small-flowered form, common; var. *PRATENSE* Diard, petals much longer than sepals, a well-marked variety which has retained its distinctness in cultivation, Compton, Norton, Brook; var. *MACROCARPUM* (Schur), leaves up to 3 cm. in length, capsule 10-15 mm., Moon's Hill; var. *PENTANDRUM* Syme, a small annual plant with five stamens, Freshwater.
- STELLARIA AQUATICA* Scop.—Newport, St Lawrence, and by the Medina from Blackwater to Shide.
- S. APETALA* Ucria, the form with straggling pale-green shoots (var. *MAJOR* R. & F.)—Norton Spit.
- S. MEDIA* Vill., var. *MAJOR* Koch—Farringford.

- S. NEGLECTA* Weihe—Stamens 10, sepals hairy, Alverstone, Bembridge, 1860, A. G. More in Herb. Drabble; var. *ELIZABETHAE* (Schultz), stamens more than five, typically ten, sepals tuberculate, glabrous:—Merston.
- ARENARIA SERPYLLIFOLIA* L., var. *SCABRA* Fenzl—Freshwater Downs, Compton, Afton, Norton, etc.; var. *VISCIDULA* Roth—Freshwater, Norton, Shide; var. *PATULA* Martr.-Don.—Farringford; var. *STRICTA* Townsend—E. Medina; var. *MACROCARPA* Lloyd (A. LLOYDII Jord.)—Alum Bay, Freshwater Cliffs, Afton; var. *SPHAEROCARPA* Tenore (*non* Hooker, *nec* Rouy & Foucaud, *nec* Townsend)—Norton, Sandown, (see Drabble Journ. Bot., December 1930). Stratton's statement that *SPHAEROCARPA* Tenore is frequent on walls is based on a complete misunderstanding of *SPHAEROCARPA*.
- A. *LEPTOCLADOS* Gussone, var. *SCABRA* R. & F.—Freshwater, Headon Hill, Whippingham; var. *VISCIDULA* R. & F.—Norton; var. *PETIOLATA* Drabble—Freshwater; var. *MICRANTHA* Drabble—Headon Hill, High Down, Freshwater, Bembridge, Quarr. (See Drabble Journ. Bot., loc. cit.).
- SAGINA MARITIMA* Don—Afton Downs; [W. Cowes, July 1841, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].
- S. *APETALA* Ard., var. *BARBATA* Fenzl—Moon's Hill, Newport, Wooton, St George's Down, Bembridge; var. *PROSTRATA* Gibs.—Moon's Hill, Newport.
- S. *FILICAULIS* Jord.—Norton, Yarmouth, Quarr.
- S. CILIATA* FF.—Not common; the glandular form at Headon Hill and Moon's Hill; the eglandular form at Headon Hill, Moon's Hill, Brook, Grange Chine, Carisbrooke, King's Quay; var. *PATULA* (Jord.)—Moon's Hill.
- S. *PROCUMBENS* L.—Abundant everywhere; var. *MARITIMA* Fries—Compton Bay; var. *SPINOSA* Gibs.—Grange Chine, Wooton, St Lawrence.
- S. REUTERI* Boiss.—Freshwater.
- S. *SUBULATA* Presl—Headon Hill.
- S. NODOSA* Fenzl—[Bog at Freshwater, August 1838, Herb. Radcliffe, teste J. E. Little]; var. *GLANDULOSA* (Bess.)—Norton.
- SPERGULA SATIVA* Boenn.—Very rare; the Wilderness.
- CLAYTONIA PERFOLIATA* Donn—Weed at Newport, 1929.
- MONTIA VERNA* Neck. (*CHONDROSPERMA* Fenzl)—Cranmore.
- HYPERICUM ANDROSAEMUM* L.—Moon's Hill, Wooton, Firestone Copse, Quarr, St Lawrence.
- H. *PERFORATUM* L., var. *ANGUSTIFOLIUM* DC.—St George's Down.
- H. *HUMIFUSUM* L.—Common in W. Wight; Freshwater, Bouldnor, Parkhurst, etc.; var. *DECUMBENS* Reichb. (*MAGNUM* Bast.)—Highdown.
- H. *PULCHRUM* L.—Not common; Parkhurst, Bleak Down.
- H. *MONTANUM* L.—Still at Steephill.
- H. *HIRSUTUM* L.—Certainly not common in E. Wight, rare in W. Wight.
- H. *ELODES* L.—Very local; Rookley Wilderness, Sandown, Lake.
- MALVA MOSCHATA* L.—Apes Down, St George's Down, Blackwater; var. *HETEROPHYLLA* Lej. & Court.—Cowes.

- M. ROTUNDFOLIA* L.—Newport, Cowes, Quarr.
- M. PUSILLA* Sm., var. *LASIOCARPA* C. E. Salmon, sepals triangular, herbaceous, but little accrescent:—Newport, Alverstone. (The fig. 110 in Butcher and Strudwick named *M. pusilla* Sm. shows the accrescent, spreading, roundish and mucronate sepals of *M. parviflora*. Moreover the carpels of *pusilla* are there stated (p. 97) to be glabrous, whereas the common form of *M. pusilla* in this country, var. *lasiocarpa* Salmon, has hairy carpels. Fig. 110 should be labelled *M. parviflora*).
- M. PARVIFLORA* L. Sepals strongly accrescent, roundish, mucronate:—Newport.
- LAVATERA HIRSUTA* L.—By the Medina near Newport, 1928.
- LINUM CATHARTICUM* L., var. *DUNENSE* Druce—Compton Bay. This well-marked ecad develops into the ordinary form in cultivation.
- LINUM USITATISSIMUM* L.—Newport.
- GERANIUM VERSICOLOR* L. (*STRIATUM* L.)—Sandown until recently.
- G. PYRENAICUM* Burm.—Occasionally near Wroxall and Arreton.
- G. PUSILLUM* L.—Not common; Newport; [Newchurch, June 1844, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].
- G. ROTUNDFOLIUM* L.—Rare; Farringford and between Shide and Blackwater.
- G. COLUMBINUM* L.—Blackwater; still on Apes Down and St George's Down.
- G. LUCIDUM* L.—Rare; Godshill, Niton, St Lawrence; [St Lawrence, July 5th, 1838, in Herb. Radcliffe, teste J. E. Little].
- G. ROBERTIANUM* L., var. *RUBRICAULE* Hornem., a form with the whole of the stem and leaves brilliantly red, Wooton. This is a different form from the common anthocyanic plant of exposed places.
- ERODIUM MARITIMUM* L'Hérit.—Rare; Headon Hill, Totland.
- OXALIS ACETOSELLA* L.—Not common; Newchurch, Alverstone.
- O. CORNICULATA* L., var. *PURPUREA* Parl.—Established at Fishbourne.
- EUONYMUS EUROPAEUS* L.—Hamstead, Shide.
- RHAMNUS FRANGULA* L.—Haven Street, Sandown; [Standwood, Ryde, June 1838, in Herb. Radcliffe, teste J. E. Little].
- GENISTA ANGLICA* L.—Rare; Brookley Wilderness; [Forest near Cowes, (c. 1838), in Herb. Radcliffe, teste J. E. Little].
- ONONIS REPENS* L., var. *HORRIDA* Lange—Afton, Compton, etc.
- TRIGONELLA ORNITHOPODIOIDES* DC.—Still at St Helens Green; Newport, F. J. H., May 1872, in Herb. Drabble.
- MEDICAGO FALCATA* L.—By the Medina near Newport.
- M. SILVESTRIS* Fries—By the Medina near Newport.
- M. LUPULINA* L., var. *WILLDENOWIANA* Koch—Not common; Moon's Hill, Farringford, Newport, Whippingham.
- M. DENTICULATA* Willd.—Not common; Moon's Hill, Brook, Newport; var. *APICULATA* (Willd.)—Newport.
- M. ARABICA* Huds. (*MACULATA* Sibth.)—Very common and generally distributed.

- MELILOTUS ALTISSIMA* Thuill.—Totland, Norton Spit, by Medina, etc.;
lusus UNGUICULATA (Ser.)—Norton Spit.
- M. ALBA* Desr.—Norton Spit, Hamstead, Newport.
- M. ARVENSIS* Wallr. (*OFFICINALIS* Lam.)—Highdown, Newport, Cowes;
 an "unguiculate" *lusus* similar to that of *M. altissima* occurs at
 Newport. (It should be noted that Stratton wrongly makes
officinalis Lam. synonymous with *altissima* Thuill.).
- M. INDICA* All.—Newport, Wooton, etc.
- TRIFOLIUM SUBTERRANEUM* L. Afton, Compton, Grange Chine; [North-
 wood Park, May 27th, 1839, in Herb. Radcliffe, teste J. E. Little].
- T. SUFFOCATUM* L.—Still at St Helen's.
- T. PRATENSE* L., var. *SATIVUM* Schreb. and var. *AMERICANUM* Harz—
 Farringford, etc.; var. *PARVIFLORUM* Bab.—Beckett's Copse.
- T. MARITIMUM* Huds. (*SQUAMOSUM* L.)—Yarmouth.
- T. INCARNATUM* L. and var. *STRAMINEUM* Presl—In cultivated ground
 only; Afton, etc.
- T. SCRABRUM* L.—Afton; [E. Cowes, c. 1838, in Herb. Radcliffe, teste
 J. E. Little].
- T. GLOMERATUM* L.—Newchurch, Sandown.
- T. REPENS* L., var. *RUBESCENS* Ser.—Moon's Hill.
- T. RESUPINATUM* L.—Newport.
- T. DUBIUM* Sibth., var. *PYGMAEUM* Soy.-Will.—Freshwater Downs and
 Headon Hill; a mere *ecad* we believe.
- T. FILIFORME* L.—Headon Hill, Newport, Wooton, Ryde.
- LOTUS CORNICULATUS* L., var. *HIRSUTUS* Rouy (*INCANUS* Gray)—Moon's
 Hill; var. *MICROPHYLLUS* Meyer—a mere *ecad*; Compton, Newport.
- L. TENUIS* W. & K.—Colwell Bay, Newtown, Newport, Cowes; a very
 fleshy-leaved form in tidal ground at Whippingham.
- L. ULIGINOSUS* Schkuhr, var. *GLABER* Bréb. (*GLABRIUSCULUS* Bab.)—Fresh-
 water Marsh.
- ASTRAGALUS GLYCYPHYLLOS* L.—Cliff-edge at St Lawrence; still on the
 undercliff near Ventnor.
- CORONILLA VARIA* L.—Cowes, Newport.
- HIPPOCREPIS COMOSA* L.—A form with pale lemon-yellow petals and with
 brown veins in the standard, on Afton Downs, June 1928.
- VICIA HIRSORA* Gray—Freshwater, Newport.
- V. TETRASPERMA* Moench—Frequent in E. Wight, rare in W. Wight,
 Beckett's Copse; var. *TENUISSIMA* Druce—more frequent than the
 typical form; Cowes, Whippingham.
- V. GRACILIS* Lois.—Common in W. Wight; Totland, Newport, etc.
- V. CRACCA* L., var. *INCANA* Thuill. *non* Vill.—Bouldnor; var. *LINEARIS*
 Peterm. (*LEPTOPHYLLA* Fr.)—Freshwater Marsh and from Brook to
 Chiltern, abundant.
- V. VILLOSA* Roth, var. *ANGUSTIFOLIA* Rouy and var. *LATIFOLIA* Rouy—Tot-
 land.
- V. VARIA* Host (*DASYCARPA* Tenore)—Totland, Newport.
- V. ANGUSTIFOLIA* L., var. *BOBARTHII* Koch—Moon's Hill, Totland; var.
UNCINATA Desv.—Cranmore.

- V. LATHYROIDES L.—Sandown.
LATHYRUS APHACA L.—Newport.
L. NISSOLIA L.—Totland, Wooton, Sandown.
L. HIRSUTUS L.—Totland, 1929 onwards; Newport.
L. PRATENSIS L., var. VILLOSUS Schleicher—Moon's Hill.
L. LATIFOLIUS L.—Established at Totland.
L. SILVESTRIS L.—St Lawrence, 1927; still at E. Cowes; [Bonchurch, T.H.A.S., July 1887, in Herb. Drabble; Shanklin, c. 1838, in Herb. Radcliffe, teste J. E. Little].
L. TUBEROSUS L.—Totland, 1931; [Golden Common, c. 1838, in Herb. Radcliffe, teste J. E. Little].
PRUNUS INSITITIA L.—High Down, St Lawrence.
 [“P. CERASUS L., var. CAPRONIANA Dr. Bromfield, copses near Wooton Bridge, May 1839, in Herb. Radcliffe”].
SPIRAEA ULMARIA L., var. DENUDATA Boenn. (See Yapp, Ann. Bot., July 1912). Moon's Hill.
S. FILIPENDULA L.—Very rare; Downs between Calbourne and Carisbrooke.
POTENTILLA NORVEGICA L.—Cowes.
P. ANSERINA L., var. CONCOLOR Wallr. (SERICEA Hayne)—mature leaves silvery on both surfaces, Quarr, Binstead.
P. PALUSTRIS Scop.—[Freshwater Marsh, June 30th, 1840, in Herb. Radcliffe, teste J. E. Little]. Still there.
AGRIMONIA EUPATORIA L., var. SEPTIUM Bréb.—common in thick hedgebanks and woods; we believe it to be merely a state, but undoubtedly it has often been confused with *A. odorata*.
A. OPORATA Mill.—Not common; Haven Street, St Lawrence.
POTERIUM POLYGAMUM W. & K. (MURICATUM Spach)—Bowcombe.
CRATAEGUS MONOGYNA Jacq., var. MICROPHYLLA Druce—Bouldnor; var. GLABRATA Sond. (LEIICALYX Druce)—Freshwater.
PYRUS COMMUNIS L., var. ACHRAS (Gaertn.)—Farringford until 1929, now cut down.
P. MALUS L., var. MITIS Wallr.—Freshwater, Alverstene.
CHRYSOSPLENIUM OPPOSITIFOLIUM L.—Newchurch.
RIBES UVA-CRISPA L., with ovary pubescent, eglandular, fruit glabrous, and var. GROSSULARIA (L.) with fruit glandular-hairy, in thickets on Freshwater Downs.
COTYLEDON UMBILICUS L.—Godshill.
SEDUM PURPUREUM Link (TELEPHIUM auct.)—Alverstene.
S. ANGLICUM Huds.—Headon Hill, abundant.
S. REFLEXUM L.—Afton Downs, Sandown; [Godshill, July 5th, 1838, in Herb. Radcliffe, teste J. E. Little].
S. DASYPHYLLUM L.—Still at Alverstene.
DROSER A ROTUNDFOLIA L.—Very local; Bleak Down, Sandown; [Near Cowes, c. 1838, in Herb. Radcliffe; in the same packet, but loose and without label is *D. LONGIFOLIA* L., teste J. E. Little].
EPILOBIUM ANGSTIFOLIUM L., var. BRACHYCARPUM (Leight.)—St George's Down.

- E. HIRSUTUM* L., var. *VILLOSISSIMUM* Koch—Moon's Hill, Freshwater Marsh, Calbourne.
- E. PARVIFLORUM* Schreb., var. *MOLLISSIMUM* Levl. (provisionally adopting this name for the densely villous plant)—Headon Hill, Wooton.
- E. ROSEUM* Schreb.—Rare; Ryde.
- E. TETRAGONUM* L.—Common; Freshwater, etc.
- E. LAMYI* Schultz—Frequent; Moon's Hill, Totland, Newport, Ryde, Whitwell.
- E. OBSCURUM* Schreb.—Very rare; St George's Down, Whitwell. Stratton says "frequent," this surely indicates that he entirely misunderstood this plant.
- E. PALUSTRE* L.—Freshwater, St Helen's, Sandown; var. *PUBESCENS* Coss. & Germ.—Freshwater Marsh.
- CIRCAEA LUTETIANA* L., var. *CORDIFOLIA* Lasch.—Common; the usual form in the Island.
- CENOTHERA ODORATA* Jacq.—Sown at St Helen's Spit in 1858 by A. G. More; still there in 1931.
- BRYONIA DIOICA* Jacq.—Rare; Downs between Buckham and Shorwell, Westover Downs.
- SANICULA EUROPAEA* L.—In scrub on Freshwater Downs, abundant.
- CANTUM MACULATUM* L.—Hamstead, Cowes, Alverstone, St George's Down.
- SMYRNIUM OLUSATRUM* L.—Norton, St Lawrence.
- BUPLEURUM ROTUNDIFOLIUM* L.—Cowes, 1926.
- APIUM INUNDATUM* L.—Sandown.
- PIMPINELLA SAXIFRAGA* L., f. *ARENARIA* N. Bryhn; this dwarf plant is abundant on Freshwater Downs, and is now being tested in cultivation. It was observed here by Dr Thorild Wulff in 1894, and the name was published in *Botaniska Notiser*.
- ANTHRISCUS SILVESTRIS* Hoffm., var. *LATISECTA* Druce—Freshwater, Brooke.
- A. VULGARIS* Bernh.—St Helen's, Sandown.
- CARUM CARVI* L.—Cowes, Newport.
- FOENICULUM VULGARE* Miller—Norton Spit. Stratton writes (*Nat. Hist.*) "probably not native in Wight," but no grounds are stated for his opinion. If this plant is truly native anywhere in England—and we see no reason for doubting that it is—then this may well be regarded as a native locality.
- CERITHIUM MARITIMUM* L.—On chalk-cliffs abundant, and on sandy shores, e.g. at Norton Spit.
- CENANTHE PIMPINELLOIDES* L.—Freshwater, Wooton, etc.
- C. LACHENALII* C. Gmel.—Freshwater Marsh, Cowes, The Wilderness.
- C. CROCATA* L., var. *TENUIFOLIOLATA* Druce—Whippingham.
- AETHUSA CYNAPIUM* L., var. *AGRESTIS* Wallr.—Moon's Hill; we believe this to be a mere growth-form.
- ANGELICA SILVESTRIS* L.—Abundant in damp woods and shady lanes throughout W. Wight.
- CORIANDRUM SATIVUM* L.—Newport.

- DAUCUS CAROTA* L.—Abundant both N. & S. of the Chalk, as well as on the Downs; var. *COMOSUS* Grogg.—Moon's Hill; var. *NANUS* Druce (an ecad we think)—Freshwater and Afton Downs.
- D. GUMMIFER* All.—Cliffs at Freshwater and Steepphill; var. *INTERMEDIUS* Corb.—Cliffs at Freshwater. Stratton's remark that "it is doubtful if the sea-side thick-leaved *Daucus* which grows on the Freshwater Cliffs and elsewhere by the sea is *D. gummifer* Allioni" seems to suggest that he had var. *intermedius* in mind. The true *D. gummifer* certainly grows between Freshwater and the Needles, though sparingly. We think that var. *intermedius* should be regarded as a variety of *D. Carota* rather than of *D. gummifer*.
- CAUCALIS NODOSA* Scop. (*TORILIS NODOSA* Gaertn.), var. *PEDUNCULATA* R. & F.—Freshwater Downs, St Lawrence.
- C. LATIFOLIA* L.—Newport.
- SAMBUCUS EBULUS* L.—Brading.
- GALIUM CRUCIATA* Scop.—Not common as Stratton describes it, at least in W. Wight; fairly frequent in E. Wight.
- G. VERUM* L., var. *MARITIMUM* DC.—Freshwater Downs, Norton Spit, etc.; an ecad we believe.
- G. TRICOERNE* Stokes—Rare, by the Medina; [Egypt near Cowes, July 1839, in Herb. Radcliffe, teste J. E. Little].
- SHERARDIA ARVENSIS* L., var. *MARITIMA* Griseb.—Freshwater.
- VALERIANA DIOICA* L.—Still at Freshwater, Sandown.
- VALERIANELLA RIMOSA* Bast. (*AURICULA* DC.)—Freshwater; [Broadfield, I. W., July 17th, 1840, Dr Bromfield, in Herb. Radcliffe, teste J. E. Little].
- V. CARINATA* Loisel.—Newport, Ryde, St Lawrence.
- V. ERIOCARPA* Desv.—Carisbrooke Castle until recently.
- V. DENTATA* L., var. *MIXTA* (L.).—Chale.
- DIPSACUS SATIVUS* L. (*FULLONUM* auct.)—Norton, Newport, Shide, Cowes.
- SCABIOSA COLUMBARIA* L., f. *NANA* T. Wulff—A small erect state on the Downs at Freshwater.
- SOLIDAGO VIRGAUREA* L.—Northwood, Wooton, Ryde, Alverstone.
- ASTER NOVI-BELGII* L.—Wooton.
- A. TRIPOLIUM* L., var. *GLABER* Bolzon—Freshwater, Norton, Shide, Cowes; and with white, not purple, ray-florets at Norton; var. *DISCOIDEUS* Reichb.—Freshwater, Norton, Newtown, Wooton.
- ERIGERON CANADENSE* L.—Newport, Pan gravel-pit, Cowes.
- E. ACRE* L.—Afton Down, Apes Down, Cowes.
- FILAGO MINIMA* Fries—Still at Headon Hill and Bleak Down.
- INULA HELENIUM* L.—Ningwood, etc.; [Banks of the Medina, August 1838, in Herb. Radcliffe, teste J. E. Little].
- I. CONYZA* DC. (*SQUARROSA* (L.) S. & T.)—Stratton gives "on the chalk"; it is abundant on the Lower Greensand at St Lawrence and St Catherine's Point, also on the Oligocene at Totland.
- I. CRITHMOIDES* L.—Yarmouth 1913 to 1931; still there; Newport, Newtown on tidal mud. This plant is by no means "confined to maritime rocks in the west of Britain from Wigtown to south-west Wales

Kent's
Essay

W. J. J. J.

- and Cornwall," as stated by J. Fraser in B.E.C. Rep. for 1928, p. 913. Its presence in great abundance on shingle at Hurst Castle is well known. (See Carey and Oliver, "Tidal Lands," p. 93).
- BIDENS TRIPARTITA* L., var. *INTEGRA* Koch—Alverstone.
- ACHILLEA MILLEFOLIUM* L., var. *CONSPICUA* Druce—more abundant than the small-headed form at Moon's Hill and elsewhere in W. Wight; var. *LANATA* Koch—Alum Bay.
- ANTHEMIS COTULA* L., var. *LATISECTA* Thell.—Norton, Godshill.
- A. NOBILIS* L.—St Anthony's Common, etc.
- CHRYSANTHEMUM SEGETUM* L.—Shalfleet, Newport.
- MATRICARIA INODORA* L., var. *MARITIMA* L.—Norton, Cowes, Wooton, St Helens; var. *SALINA* DC.—Wooton, Sandown, St Helens; [Black Gang Chine, July 1839, in Herb. Radcliffe, teste J. E. Little (as *INODORA*)].
- M. CHAMOMILLA* L.—Newport 1924, Totland 1928, Alverstone and Sandown 1930; certainly very rare in the Island. The record from Newport by J. W. Long in Rayner's "Supplement" seems hitherto to be the only one.
- M. SUAVEOLENS* Buch., which, according to Stratton, was rare up to 1909, is now abundant and widely spread.
- TANACETUM VULGARE* L.—Shorwell, St George's Down, Cowes.
- ARTEMISIA ABSINTHIUM* L.—Cowes, Ventnor, St Lawrence.
- A. MARITIMA* L.—Quarr; var. *GALLICA* (Willd.)—Quarr.
- PETASITES FRAGRANS* Presl—Abundant at Freshwater, Shide, etc.
- SENECIO SILVATICUS* L.—Abundant at Headon Hill, Bleak Down, etc.
- S. VISCOSUS* L.—Newport, Cowes.
- S. BRUCIFOLIUS* L., var. *VIRIDULUS* Martr.-Don.—Moon's Hill; a mere state we believe.
- S. AQUATICUS* Hill—The typical form is not very common; var. *PENNATIFIDUS* Gr. & Godr.—common; Freshwater, Merston, etc..
- S. ERRATICUS* Bert.—Freshwater, Thorley.
- S. CAMPESTRIS* DC.—Still on Westover Down.
- S. CINERARIA* DC.—Steephill; *CINERARIA* × *JACOBAEA*—Newport, Yarmouth.
- CARLINA VULGARIS* L.—The dwarf state of this plant on Freshwater Downs was described by Dr Thorild Wulff, who gathered it in 1894, in *Botaniska Notiser* as f. *HUMILLIMA* "a most distinguished variety."
- ARCTIUM MAJUS* Bernh.—St George's Down, Godshill.
- A. MINUS* Bernh.—Moon's Hill, St George's Down, Godshill, Alverstone.
- A. VULGARE* Evans (*INTERMEDIUM* Lange)—Beckett's Copse, St George's Down, Alverstone, Godshill.
- CARDUUS TENUIFLORUS* Curt.—Abundant on the Downs from Alum Bay to Brook.
- CIRSIUM ERIOPHORUM* L., var. *BRITANNICUM* (Petrak)—Rare; Alum Bay, Buckham.
- C. ACAULE* (L.) Weber, var. *CAULESCENS* Pers.—Alum Bay.

- C. PRATENSE (Huds.) DC.—Freshwater, Norton, Yarmouth, Haven Street, Wilderness.
- C. ARVENSE (L.) Scop., var. SETOSUM C. A. Mey.—Newport.
- C. PALUSTRE L., var. FEROX Druce—Freshwater Downs.
- ONOPORDON ACANTHIUM L.—Very rare; Moon's Hill.
- SERRATULA TINCTORIA L., var. ALPINA Grenier & Godron—Freshwater Downs, Afton Downs; exactly like the Lizard plant—an ecad we believe; var. INTEGRIFOLIA Koch—Norton.
- CENTAUREA CYANUS L.—Newport, Alverstone, Sandown.
- LAPSANA COMMUNIS L., var. GLANDULOSA Freyn—Moon's Hill, Whippingham.
- PICRIS HIERACIOIDES L., var. GRACILIS (Jord.)—Carisbrooke. Grown from seed at Moon's Hill, *gracilis* gave exceptionally fine and profusely branched plants of typical *hieracioides*; var. *gracilis*, then, is apparently merely a growth form.
- CREPIS TARAXACIFOLIA Thuill. This plant, said by Stratton to be rare, is now abundant everywhere; var. SUBINDIVISA Druce—Shanklin.
- CREPIS VIRENS L., var. DIFFUSA DC.—Alum Bay, Freshwater, etc.; var. ANGLICA Druce & Thellung—Totland, Moon's Hill; var. AGRESTIS Willd.—High Down.
- C. BIENNIS L.—Alum Bay, High Down, Farringford, Freshwater, and on railway-banks between Wooton and Ryde.
- HYPOCHAERIS GLABRA L.—Locally abundant; Alum Bay, Headon Hill, Totland.
- H. RADICATA L., var. LEOCEPHALA Regel—Freshwater; var. HISPIDA Peterm., with stem and involucre scales very bristly, St Helens.
- LEONTODON HIRTUS L.—Not confined to sandy and gravelly fields as given by Stratton; common on the chalk Downs at Alum Bay and Freshwater; var. LASIOLAENUS Druce—Norton Spit, St Lawrence.
- LACTUCA SERRIOLA L.—Cowes; var. INTEGRATA G. & G.—Newport, Cowes.
- L. MURALIS Gaertn.—Rather rare; Quarr, Binstead, St Lawrence.
- SONCHUS OLERACEUS L., var. TRIANGULARIS Wallr.—Freshwater; var. RUNCINATUS Coss. & Germ.—Freshwater; var. INTEGRIFOLIUS Wallr.—Freshwater.
- S. ASPER Hill, var. PUNGENS Bisch.—Moon's Hill; var. INTEGRIFOLIUS Lej.—Wooton; from Alverstone to Shanklin, abundant, and the only form seen.
- S. ARVENSIS L., var. GLABRESCENS Hall—Newport, Cowes.
- TRAGOPOGON PORRIFOLIUS L.—Newport, Wroxall.
- JASIONE MONTANA L.—Rare; High Down; Bleak Down.
- CAMPANULA TRACHELIUM L.—Rare; Calbourne, Apes Down; [Marwell (*sic*) Copse, Newport, 1838, in Herb. Radcliffe, teste J. E. Little].
- C. ROTUNDIFOLIA L.—The dwarf state found on Freshwater Downs was named f. PYGMAEA in Botaniska Notiser by Dr Thorild Wulff, who visited Freshwater in 1894.
- C. GLOMERATA L.—White flowered, Freshwater, Afton Downs.
- LEGOUSIA (SPECULARIA) HYBRIDA Delarbre—Afton, Chale, Bembridge.

- ERICA CINEREA* L., var. *SPLENDENS* Vigurs—a form with very large rose-coloured flowers in long dense racemes, Bouldnor, Cranmore.
- LIMONIUM HUMILE* Mill.—Freshwater, Whippingham, Wooton.
- ARMERIA PLANIFOLIA* Syme—Freshwater Cliffs, Afton.
- PRIMULA VULGARIS* Huds., var. *CAULESCENS* Koch—Freshwater.
- P. VULGARIS* × *VERIS*—Abundant at Moon's Hill, Freshwater, etc.
- ANAGALLIS ARVENSIS* L., var. *VERTICILLATA* Diard, with three or more leaves in the whorl—Moon's Hill, abundant; var. *CARNEA* Schrank, with flesh-coloured flowers, Cowes, St George's Down; var. *LILACINA* Alef., with lilac flowers, Grange Chine.
- A. TENELLA* Murr.—Bleak Down, Sandown.
- CENTUNCULUS MINIMUS* L.—Still on Bleak Down.
- SAMOLUS VALERANDI* L.—Freshwater, abundant, Cowes; [Rocken End, I.W., July 1838, in Herb. Radcliffe, teste J. E. Little].
- VINCA MAJOR* L.—Freshwater, etc.
- ERYTHRAEA CENTAURIUM* Pers., var. *CAPITATA* Koch—Downs at Freshwater and Afton.
- E. CAPITATA* Willd.—Fairly common on the Downs in W. Wight; Highdown, Westover Down, etc.
- E. PULCHELLA* Fr. and its forma *SUBELONGATA* Wittr.—Very common; f. *SCHWARTZIANA* Wittr.—On the Downs at Alum Bay and Freshwater, Bonchurch.
- E. TENUIFLORA* Hoffmgg. & Link—Probably now extinct except on private ground.
- GENTIANA LINGULATA* C. A. Agardh, var. *PRAECOX* Towns.—High Down, Freshwater, Bonchurch. The flowers are as often five-partite as four-partite.
- G. AMARELLA* L.—Abundant on High Down, Afton Down, Westover Down, Apes Down; occasionally white-flowered.
- CYNOGLOSSUM OFFICINALE* L.—Abundant on the Downs at Freshwater and Compton.
- SYMPHYTUM OFFICINALE* L.—Not common in W. Wight, but abundant by the eastern Yar.
- S. CAERULEUM* Pitm. (? *OFFICINALE* × *PEREGRINUM*)—Moon's Hill, Totland.
- BORAGO OFFICINALIS* L.—Moon's Hill, Newport, Newchurch, Ventnor.
- ANCHUSA SEMPERVIRENS* L.—Ventnor, St Lawrence.
- A. OFFICINALIS* L.—Cowes.
- LYCOPSIS ARVENSIS* L.—Alum Bay, Headon Hill, Compton, St George's Down, Blackwater, Sandown. This plant is widely distributed and cannot be called rare and local as Stratton describes it.
- PULMONARIA LONGIFOLIA* Boreau (*ANGUSTIFOLIA* auct. angl.)—Wooton, Haven Street, Quarr, etc., etc.; [Parkhurst Forest, April 13th, 1839, in Herb. Radcliffe, teste J. E. Little].
- MYOSOTIS PALUSTRIS* Hill—Not common; Newport, Alverstone.
- M. CAESPITOSA* F. Schultz—Pool at Alum Bay.
- M. REPENS* G. & D. Don—Sandown.

- M. *VERSICOLOR* Sm.—Common on the Downs and on Headon Hill; var. *DUBIA* Arrondeau—High Down, Alverstone.
- M. *COLLINA* Hoffm.—Common; var. *MITTENII* Baker—Afton Down.
- LITHOSPERMUM OFFICINALE L.—Shide, Ryde; var. *PSEUDO-LATIFOLIUM* C. E. Salmon—Apes Down, Bonchurch, St Lawrence.
- L. *ARVENSE* L.—St Lawrence.
- E. *PLANTAGINEUM* L.—Cowes.
- CALYSTEGIA SEPIUM Br., var. *COLORATUS* Lange—Brook.
- CONVOLVULUS ARVENSIS L., var. *LINEARIFOLIUS* Choisy—Freshwater.
- CUSCUTA EUROPAEA L.—("Not recorded for some years"—Stratton), Headon Hill, 1931, St Lawrence, 1926.
- C. *EPITHYMIUM* Murray—Headon Hill, Cranmore, etc.
- C. *TRIFOLII* Bab.—Rare; Totland.
- SOLANUM DULCAMARA L., var. *VILLOSISSIMUM* Desv.—Totland, Freshwater, Compton, Ryde, St Helens.
- S. *NIGRUM* L.—Common everywhere on cultivated land.
- LYCIUM CHINENSE Mill.—Established at Compton, Chale, etc.
- DATURA STRAMONIUM L.—Newport, Cowes.
- HYOSCYAMUS NIGER L.—Afton abundant in 1931, Compton, Newtown, Whippingham, Shide.
- VERBASCUM THAPSUS L.—Fairly common on the chalk.
- V. *VIRGATUM* Stokes—Cowes, Ryde.
- LINARIA CYMBALARIA Mill.—Moon's Hill near Freshwater. (No record for W. Wight in Nat. Hist.).
- L. *ELATINE* Mill.—Common in W. Wight both on and off the chalk; Newport, Alverstone.
- L. *SPURIA* Mill.—Freshwater.
- L. *PURPUREA* Mill.—Norton Spit, Shide. It persisted for some years in both localities, but has now gone.
- ~~L. *REPENS* Mill.—Northwood, Cranmore.~~
- L. *VULGARIS* Mill.—A form with narrowly linear leaves, between Brook and Chilton Chine; a plant with corollas bearing two short lateral spurs in addition to the median long spur, at Freshwater 1924.
- L. *VULGARIS* × *REPENS*—Cowes; [Near Cowes, August 1838, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].
- L. *MINOR* Desf.—Ningwood, Cowes, Alverstone.
- ANTIRRHINUM ORONTIUM L.—Newport, Cowes.
- SCROPHULARIA AQUATICA L., var. *PUBESCENS* Bréb.—Freshwater; var. *APPENDICULATA* Méral.—Freshwater.
- VERONICA HEDERAEFOLIA L.—Abundant everywhere in W. Wight.
- V. *POLITA* Fr.—Common.
- V. *AGRESTIS* L.—In Nat. Hist. Stratton stated that this plant was common; later, in Journ. Bot., 1913, he writes, "Does not occur in I. of Wight. Townsend's records are in error," but he does not refer to his own plant from Totland, which is wrongly named. We were assured by another collector that *agrestis* grew at Yarmouth and at Freshwater Bay; the plants were *polita*. V. *agrestis* is exceed-

- ingly rare in I. of Wight; we have found it once only and very sparingly near Godshill in 1930.
- V. *PERSICA* Poir., var. *ASCHERSONIANA* Lehm.—Common everywhere; var. *CORRENSIANA* Lehm.—Totland, Moon's Hill; var. *KOCHIANA* Godr.—Freshwater, Whippingham, Alverstone. (See Drabble & Little, Journ. Bot., July and August 1931).
- V. *ARVENSIS* L., var. *NANA* Poir.—Headon Hill, Freshwater, Compton, Whippingham. We believe this to be a mere growth form.
- V. *SERPYLLIFOLIA* L., var. *OBSCURA* Drabble & Salmon—Moon's Hill, Newport.
- V. *CHAMAEDRYIS* L.—White-flowered (var. *ALBA* Druce), Moon's Hill; var. *RUDOLPHIANA* Hayne—Totland.
- V. *MONTANA* L.—Not common; Freshwater, and occasionally in E. Wight.
- V. *SCUTELLATA* L.—With blue flowers at Cranmore; with pale-pink flowers at Freshwater.
- V. *AQUATICA* Benqueral, var. *ANAGALLIFORMIS* (Boreau)—Freshwater.
- EUPHRASIA BREVIPILA* Burnat & Gremlı—Freshwater Marsh, St Lawrence.
- E. *NEMOROSA* Pers.—Common; Norton, St George's Down, Haven Street, St Helens, etc.; var. *CILIATA* Drabble—Freshwater, St George's Down, St Helens.
- E. *OCCIDENTALIS* Wettst.—Alum Bay, Freshwater Downs, Compton.
- E. *PSEUDO-KERNERI* Pugsley (E. *KERNERI* auct. angl.)—Carisbrooke, St George's Down, Apes Down.
- BARTSIA ODONTITES* Huds., var. *SEROTINA* (Dum.)—St Lawrence; var. *DIVERGENS* (Jord.)—Not uncommon.
- MELAMPYRUM PRATENSE* L., var. *LAURIFOLIUM* Beauv.—Northwood.
- OROBANCHE CAERULEA* Vill. (O. *PURPUREA* Jacq.)—Sandown, 1931.
- O. *PICRIDIS* F. Schultz—The latest date given in Nat. Hist. is 1883 for Rosehall Green. There is a specimen from this, the only known locality in the Island, labelled July 1890, J. H. A. Stewart, in Herb. Drabble.
- O. *HEDERAE* Duby—By no means rare as stated in Nat. Hist.; Moon's Hill, St Lawrence, Ventnor, Bonchurch, etc.
- O. *ELIATOR* Sutton—On *CENTAUREA SCABIOSA* at Alum Bay, 1913.
- O. *RAPUM-GENISTAE* Thuill.—Haven Street.
- LATHERAEA SQUAMARIA* L.—Sullen's Copse near Newport.
- UTRICULARIA NEGLECTA* Lehm. (MAJOR Schmidel)—Freshwater Marsh.
- PINGUICULA LUSITANICA* L.—Near Cowes, c. 1913 (Miss A. E. Cook); Bleak Down.
- MENTHA ALOPECUROIDES* Hull—Newport.
- M. *LONGIFOLIA* Huds. (*SILVESTRIS* L.)—Cowes; [Freshwater, c. 1838, in Herb. Radcliffe, teste J. E. Little].
- CALAMINTHA OFFICINALIS* auct. angl. (C. *ASCENDENS* Jord.)—Freshwater, Moon's Hill in W. Wight.
- C. *SILVATICA* Bromf. (Non *CLINOPODIUM GRANDIFLORUM* O.K. as given by Stratton)—Still abundant at Apes Down.
- MELISSA OFFICINALIS* L.—Shide, Brading.

- SCUTELLARIA GALERICULATA L., var. LITTORALIS Druce—King's Quay, Quarr.
- S. MINOR Huds.—Abundant as a woodland plant at Wooton and Haven Street.
- NEPETA CATARIA L.—Idlecombe.
- PRUNELLA VULGARIS L., var. NEMORALIS Béguinot—Moon's Hill, very finely developed; a growth form only, we believe.
- MARRUBIUM VULGARIS L. Given for the chalk-downs only in Nat. Hist. and stated to be not very common. It grows abundantly on the Downs at Alum Bay and Freshwater, and occurs also on the Wealden in the South of the Island.
- STACHYS BETONICA Benth. (OFFICINALIS Trev.)—Not only in woods and hedges as given in Nat. Hist., but abundantly on the Downs at Freshwater and elsewhere as f. NANA Druce, exactly like that at the Lizard, passing into the ordinary form in the longer herbage near the scrub-clumps.
- STACHYS PALUSTRIS L.—The ordinary plant at Moon's Hill; var. CANESCENS (Schultz) as a weed in very dry cornfields at Afton, etc.
- S. SYLVATICA × PALUSTRIS (S. AMBIGUA Sm.) Moon's Hill, Chilton, Northwood.
- S. ANNUA L.—Cowes.
- GALEOPSIS INTERMEDIA Vill. (LADANUM L., p.p.)—Moon's Hill.
- G. TETRAHIT L., var. ARVENSISSIMA Schleich.—St Lawrence; var. SILVESTRIS Schleich.—Beckett's Copse; var. NIGRESCENS Bréb.—Alverstone.
- G. BIFIDA Boenn.—Moon's Hill.
- LAMIUM AMPLEXICAULE L.—Totland, Ningwood, Newport; the cleistogamous form at Moon's Hill; this is a frequent spring and autumn state of the plant and was wrongly given varietal rank by Reichenbach (Icon. Crit. 8) as var. *clandestinum*, and by Saint-Lager (Et. fl.) as var. *cryptanthum*. (See Rouy Fl. Fr. xi).
- L. HYBRIDUM Vill.—Freshwater, Colwell, Godshill.
- L. PURPUREUM L., var. EXANNULATUM Loret & Berg.—Farringford; var. DECIPIENS Sonder—Newport, Wooton, Godstone.
- PLANTAGO CORONOPUS L., var. PYGMAEUS Lange—Alum Bay, Freshwater, etc.
- P. MARITIMA L.—The typical plant at Norton Spit and elsewhere; var. LATIFOLIA Syme—Whippingham.
- P. LANCEOLATA L., var. ELLIPTICA Druce—Moon's Hill.
- P. MEDIA L.—Abundant on the chalk; var. MONNIERI Giraud (? var. LANCEOLATIFORMIS Druce, ? var. LONGIFOLIA Meyer)—Norton.
- P. MAJOR L., var. INTERMEDIA Syme—Norton.
- ATRIPLEX LITTORALIS L.—Common; var. MARINA (L.), (SERRATA Syme)—Whippingham, Quarr, St Helens.
- A. PATULA L., var. LINEARIS Moss & Wilmott—Moon's Hill, Golden Hill, Yarmouth; var. ANGUSTISSIMA G. & G.—Freshwater, Golden Hill, S. Lawrence. We have raised plants exactly resembling *angustissima* from seeds of *linearis*, and believe it to be a mere state of *linearis*.
Var. ERECTA Lange—Common everywhere in cultivated land; "var.

- "BRACTEATA Westerlund"—Moon's Hill, Newport, St Helens; the large bracteoles which characterise this state, as we believe it to be, may be associated with several varieties of *A. patula*.
- A. HASTATA L.—Common; Moon's Hill, etc.; var. MICROTHECA Rafn.—Moon's Hill.
- A. DELTOIDEA Bab.—Moon's Hill, etc.; var. PROSTRATA Bab.—by the shore at King's Quay, Ryde and elsewhere.
- A. GLABRIUSCULA Edmondst. (VIRESCENS Lange)—St Helens, Ryde; var. BABINGTONII (Woods)—Yarmouth, Quarr; var. PSEUDO-CALOTHECA Ar. Bennett—We have from Wooton (September 1930) a plant which to us is indistinguishable from that gathered at Keiss near Wick, Caithness, and thus named by Mr A. J. Wilmott for Mrs Wedgwood.
- A. MARITIMA E. Hallier (A. LACINIATA auct. angl.)—Totland 1913; [Yarmouth, c. 1838, in Herb. Radcliffe, teste J. E. Little].
- SALICORNIA RADICANS Sm.—Norton, Newport, St Helens.
- S. LIGNOSA Woods—Newtown.
- S. DOLICHOSTACHYA Moss—Norton Spit, Newport, St Helens.
- S. EUROPAEA L. (S. HERBACEA auct.)—Norton Spit, Yarmouth, Newport, St Helens; var. STRICTA Dum.—Norton Spit, Newport, St Helens.
- S. RAMOSISSIMA Woods—Norton Spit, Fishbourne, St Helens.
- S. GRACILLIMA (Towns.) Moss—Norton Spit, Newport, St Helens.
- S. APPRESSA Dumort.—Norton Spit, Fishbourne.
- S. DISARTICULATA Moss—Norton Spit, Yarmouth, St Helens.
- SUAEDA MARITIMA Dumort.—Abundant in salt-marshes and estuaries; var. PROCUMBENS Syme—Quarr; var. FLEXILIS Rouy—Quarr.
- SALSOLA KALI L.—Norton Spit, King's Quay, St Lawrence.
- POLYGONUM CONVULVULUS L.—The typical form is not common; Cowes; var. SUBALATUM Lej. & Court.—Abundant generally.
- P. DUMETORUM L.—Newport (1924), Sandown (1931), Alverstone.
- P. HETEROPHYLLUM Lindman, var. ANGUSTISSIMUM Meisn.—Freshwater; var. EURIVAGUM (Jord.)—Moon's Hill, Farringford; var. LITTORALE Koch—Freshwater Gate, Totland, Yarmouth, Newport.
- P. AEQUALE Lindman—Alum Bay, Moon's Hill, Freshwater Gate, Totland, Yarmouth, Newport.
- P. RAII Bab.—Recorded from several stations in Nat. Hist and stated in Rayner's "Supplement" to have been collected at Yarmouth in 1918 and seen there since that date. We have failed to find it at Totland, Freshwater, Norton, Colwell or Yarmouth, all given as localities for *Raii* in Nat. Hist., but *P. heterophyllum* Lindm., var. *littorale* Koch grows in several of these localities (e.g. Yarmouth and Freshwater Gate), and we think that some, at least, of the records for *Raii* may be erroneous.
- P. PERSICARIA L.—Common; var. RUDERALE Meisn.—Totland; var. ELATUM G. & G.—Moon's Hill, Gogger Hill; var. DEPAUPERATUM Meisn.—St George's Down. We believe all these to be growth forms.
- P. PETECTICALE Stokes (P. MACULATUM Bab., P. NODOSUM Pers.)—Alverstone.

- FAGOPYRUM ESCULENTUM* Moench—Newport.
- RUMEX GLOMERATUS* Schreb. (*R. CONGLOMERATUS* Murr.), var. *DIVARICATUS* Bluff. & Fing.—Newport.
- R. CONDYLODES* M. Bieb. (*R. SANGUINEUS*, var. *VIRIDIS* Sibth., *R. NEMOROSUS* Schrad., *R. VIRIDIS* Sibth. of Druce's List)—Common everywhere; f. *SANGUINALIS* Moss is not uncommon. (*R. sanguineus* L. is wrongly recorded from the Island in Nat. Hist.).
- R. PULCHER* L.—Totland, Compton, Grange Chine, Newtown, Newport.
- R. OBTUSIFOLIUS* L.—Common everywhere; var. *SILVESTRIS* (Wallr.), (*MICROCARPUS* Dierb.)—Newport.
- R. CRISPUS* L.—Common everywhere; var. *TRIGRANULATUS* Syme—Bouldnor, Yarmouth, Alverstone; var. *PLANTIFOLIUS* Schur (*ELONGATUS* Ley)—Moon's Hill, Newport; in cultivation this variety retains its characteristic long flat-leaves, lax inflorescence and tall growth.
- R. HYDROLAPATHUM* Huds.—Abundant by the W. and E. Yars.
- R. MAXIMUS* auct. angl. (*R. LATIFOLIUS* Borrer)—Freshwater, Alverstone. This plant is often regarded as a hybrid between *R. Hydrolapathum* and *R. obtusifolius*, but we have at present no evidence of its hybrid nature.
- R. ACETOSELLA* L., var. *ANGIOCARPUS* (Murb.)—Headon Hill, Compton.
- DAPHNE LAUREOLA* L.—Freshwater, Ryde.
- HIPPOPHAE RHAMNOIDES* L.—Stated in Nat. Hist. (1909) to be very rare, one locality only being given—St Helens. It is certainly not rare now (1931). It fruits freely (e.g., at Totland) and may be bird-sown in many of its stations.
- VISCUM ALBUM* L.—Not uncommon; on *Tilia* at Newport.
- EUPHORBIA PLATYPHYLLOS* L.—Still at Whippingham.
- E. VIRGATA* W. & K.—Newport.
- E. PORTLANDICA* L.—Still at St Helens.
- E. EXIGUA* L., var. *RETUSA* DC.—Sandown.
- MERCURIALIS ANNUA* L.—Moon's Hill, Thorley, Shorwell, Cowes; [Northwood Park, September 1838, in Herb. Radcliffe, teste J. E. Little].
- URTICA DIOICA* L., var. *ANGUSTIFOLIA* Wimm. & Grab.—Locally very common, Freshwater, Northwood, etc.; var. *SUBINERMIS* Uechtr.—Farthingford, Freshwater.
- U. URENS* L.—Stated in Nat. Hist. to be not very common. We find it very commonly at Newport, etc.
- MYRICA GALE* L.—Sandown.
- CARPINUS BETULUS* L., var. *PROVINCIALIS* G. & G.—Moon's Hill.
- CORYLUS AVELLANA* L., var. *GLANDULOSA* Druce—St George's Down.
- CERATOPHYLLUM DEMERSUM* L.—Alverstone, Brading.
- HYDROCHARIS MERSUS-RANAE* L.—Still in the pond at Norton (1931). Stratton (Nat. Hist.) states without giving any evidence that it is not a native. We have no evidence that it was ever planted there. It is recorded for the mainland of Hampshire. That it was planted by Bell Salter at Barrett's between Ryde and Brading is, of course, well known.

STRATIOTES ALOIDES L.—Still in the pond at Sandown; now (1931) in abundance.

NEOTTIA NIDUS-AVIS Rich.—Calbourne.

SPIRANTHES AUTUMNALIS Rich. (*S. SPIRALIS* Koch)—We cannot accept Stratton's statement (Nat. Hist.) that this is "not common." It occurs in great abundance both on and off the Downs at Alum Bay, High Down, Afton, Totland, Sandown, etc.

CEPHALANTHERA GRANDIFLORA Gray—Westover (1931).

EPIPACTIS LATIFOLIA Sw., sensu stricto—Beckett's Copse, Calbourne Bottoms.

E. PALUSTRIS Sw.—Abundant at Totland, Cranmore, Chale.

ORCHIS PYRAMIDALIS L.—Abundant from Alum Bay to High Down, and at Compton.

O. USTULATA L.—Freshwater.

O. MORIO L.—Locally abundant; Freshwater Downs, Farringford, Headon Hill; var. *CHURCHILLII* Druce—Farringford, Brightstone.

O. MASCOULA L.—Abundant on the Downs at Freshwater; var. *OBTUSIFLORA* Koch—Freshwater and Afton Downs.

O. INCARNATA L.—Rare; Totland, Freshwater, Bouldnor.

O. PRAETERMISSA Druce—Headon Hill, Freshwater, Wooton, Newchurch, on the bare Downs at Freshwater.

O. LATIFOLIA auct. angl.—Headon Hill, Totland, Freshwater, Colwell.

O. ERICETORUM Linton—Not common; Wooton, Alverstone, Sandown, Blackwater, St Anthony's Common.

O. FUCHSII Druce—Abundant; Moon's Hill, Freshwater Downs, Beckett's Copse, Cranmore, Wooton.

OPHRYS APIFERA Huds.—Abundant on the Downs; Alum Bay, High Down, Afton, Compton, etc.; var. *FLAVESCENS* Rost.—Afton (Miss A. White); [var. *TROLLII* is recorded from Brading (Miss M. Neal) in Rayner's "Supplement." The plant with non-reflexed terminal-lobe of labellum found by us at St Lawrence and elsewhere is not var. *Trollii*, which differs in other characters from typical *O. apifera*].

O. MUSCIFERA Huds.—By no means frequent; Woodside.

GYMNADENTIA CONOPSEA Br.—Alum Bay.

HABENARIA VIRIDIS (L.) Br. (*COELOGLOSSUM VIRIDE* Hartm.)—We have seen a plant from the Eastern side of the Island, but have not ourselves found it.

H. BIFOLIA (L.) Br. (*PLATANATHERA BIFOLIA* Reichb. f.)—Cranmore.

H. CHLORANTHA Bab. (*PLATANATHERA CHLORANTHA* Reichb.)—St Helens.

IRIS FOETIDISSIMA L.—Abundant in W. Wight; var. *CITRINA* Bromf.—Norton.

I. PSEUDACORUS L., var. *ACORIFORMIS* (Bor.)—Freshwater.

NARCISSUS PSEUDO-NARCISSUS L.—Farringford, Chale, Kingston, etc.

N. BIFLORUS Curt.—[Gurnet (i.e. Gurnard) wood, April 1838, in Herb. Radcliffe, teste J. E. Little]. Still there 1916.

N. POETICUS L.—In fields at Swainstone.

GALANTHUS NIVALIS L.—Still at Freshwater; [Osborne Lane, c. 1838, in Herb. Radcliffe, teste J. E. Little].

- RUSCUS ACULEATUS* L.—Common near Freshwater; sparingly in E. Wight.
- ASPARAGUS OFFICINALIS* L.—Still at Norton Spit.
- ALLIUM VINEALE* L.—Abundant at Freshwater, where it rarely flowers;
var. *COMPACTUM* (Thuill.)—E. Medina.
- A. TRIQUETRUM* L.—In hedge-bank at Middleton; status doubtful.
- A. URSINUM* L.—Swainstone, Luccombe; stated in Nat. Hist. to be not uncommon; it is decidedly rare in W. Wight; [Northwood Church, May 16th, 1838, in Herb. Radcliffe, teste J. E. Little].
- SCILLA AUTUMNALIS* L.—Still at St Helens; with blue, pink and white flowers.
- NARTHECIUM OSSIFRAGUM* Huds.—Sandown.
- JUNCUS BUFONTUS* L., var. *RANARIUS* Song. & Perrier—Freshwater, Alverstone.
- J. SQUARROSUS* L. [Bleak Down, June 1842, in Herb. Radcliffe, teste J. E. Little]; still there.
- J. GERARDI* Lois.—Freshwater, Cranmore, St Helens, etc.
- J. EFFUSUS* L.—Abundant; var. *COMPACTUS* Lej. & Court.—Headon Hill, Alverstone, etc., common; probably often mistaken and recorded for *J. conglomeratus*.
- J. CONGLOMERATUS* L.—Cranmore, Haven Street, etc. Probably all previous records need revising, as this plant has been much confused in Herbaria with *J. effusus*, var. *compactus*. The figure of *effusus* in Butcher and Strudwick and the note tend to perpetuate the confusion. Var. *LAXUS* A. & G.—Haven Street.
- J. BULBOSUS* L., var. *FLUITANS* Lam.—Alverstone, Haven Street.
- J. OBTUSIFLORUS* Ehrh. (*J. SUBNODULOSUS* Schrank)—Totland.
- J. ARTICULATUS* L. (*J. LAMPROCARPUS* Ehrh.), var. *FLUITANS* Koch—Moon's Hill.
- J. ACUTIFLORUS* Ehrh. × *SUBNODULOSUS*—Freshwater.
- LUZULA PILOSA* Willd.—Not common; Freshwater.
- L. FORSTERI* DC.—Common in the N. of the Island.
- L. SILVATICA* Gaud.—Beckett's Copse, Newchurch.
- L. MULTIFLORA* DC.—Wooton, Haven Street, etc.; [with its variety—*CONGESTA* (Lej.) (as *CAMPESTRIS*), Cockleton Bog, July 1839, in Herb. Radcliffe, teste J. E. Little].
- L. CAMPESTRIS* DC.—Common; var. *CONGESTA* Syme—Afton.
- SPARGANIUM RAMOSUM* Curt. (*S. POLYEDRUM* A. & G.)—Freshwater.
- S. NEGLECTUM* Beeby—Newport, Whippingham.
- S. SIMPLEX* Huds.—Sandown, Brading.
- RUPPIA MARITIMA* L. and *R. ROSTELLATA* Koch—Both at Newtown.
- ALISMA RANUNCULOIDES* L.—Norton; [Ditch at Freshwater, August 1838, in Herb. Radcliffe, teste J. E. Little].
- BUTOMUS UMBELLATUS* L.—Still at Freshwater.
- CYPERUS LONGUS* L.—Near Carisbrooke, 1922 and onwards; [Apes Down, Swainstone, September 30th, 1839, ex. herb. J. B. Wood, Manchester, in Herb. Radcliffe, teste J. E. Little].
- SCIRPUS SAVII* Seb. & Maur. (*S. FILIFORMIS* Savi)—Compton, Newchurch, St Helens.

- S. TABERNAEMONTANI Gmel.—Thorley, Cranmore, etc.
- S. MARITIMUS L., var. COMPACTUS Hoffm.—Freshwater, Norton, Thorley, Brading; var. MACROSTACHYS Visiani—Freshwater.
- S. SILVATICUS L.—King's Quay, Alverstone.
- ERIOPHORUM ANGUSTIFOLIUM Roth—Freshwater; var. ELATIUS Koch—Chale.
- E. LATIFOLIUM Hoppe—[Cockleton Bog, 1839, in Herb. Radcliffe, teste J. E. Little].
- PANICUM LINEARE Krocker—Newport.
- P. SANGUINALE L.—Newport.
- P. CRUS-GALLI L.—Newport, Ryde; var. LONGISETUM Döll—Newport.
- SETARIA VIRIDIS Beauv.—Moon's Hill frequent, Newport, Cowes; var. MAJUS (Gaud.) Koch—Newport; var. WEINMANNI R. & S.—Newport.
- S. GLAUCA Beauv.—No record in Nat. Hist. since 1869; Newport 1928.
- S. VERTICILLATA Beauv.—Medina Valley below Newport.
- SPARTINA STRICTA Beauv.—Becoming very scarce; Norton Spit 1913, not seen recently; Newtown, Medina Valley.
- PHALARIS CANARIENSIS L.—Frequent in waste ground.
- P. MINOR Retz.—Newport.
- P. PARADOXA L.—Newport, once only; var. PRAEMORSA Coss. & Dur.—Common on waste-ground at Newport, c. 1916-17.
- ANTHOXANTHUM ODORATUM L.—Common; var. VILLOSUM Lois.—Moon's Hill; var. LONGIARISTATUM Celak.—Moon's Hill.
- A. ARISTATUM Boiss. (A. PUELLII Lecoq & Lamotte).—Medina Valley below Newport.
- ALOPECURUS BULBOSUS Gouan—Freshwater, Yarmouth; [Marsh by Yarmouth, c. 1838, in Herb. Radcliffe, teste J. E. Little].
- PHLEUM PRATENSE L., var. NODOSUM (L.)—Freshwater.
- P. ARENARIUM L.—Still on Norton Spit.
- AGROSTIS SETACEA Curt.—Heathy places, Haven Street, Sandown, etc.
- A. ALBA L., var. MARITIMA Meyer—Totland, Freshwater.
- A. VULGARIS With. (A. TENUIS Sibth.), var. PUMILA (L.)—High Down, Norton, etc.
- A. NIGRA With. Moon's Hill.
- POLYPOGON MONSPELIENSIS Desf.—Medina estuary on several occasions. No record in Nat. Hist. since 1868.
- CALAMAGROSTIS EPIGÆIOS Roth—Not uncommon in the N.E. of the Island.
- GASTRIDIMUM LENDIGERUM Gaud.—Frequent; Moon's Hill, Yarmouth, Wooton, Ryde; [Between Freshwater and Yarmouth, Dr Bromfield, September 1844, in Herb. Radcliffe, teste J. E. Little].
- APERA SPICA-VENTI Beauv.—Newport, Cowes.
- ATRA CARYOPHYLLEA L., var. MULTICAULIS (Dum.)—Cranmore.
- ARRHENATHERUM TUBEROSUM Gilib. (A. ELATIUS Mert. & Koch, var. BULBOSUM Presl)—High Down, etc., etc., abundant.
- CYNODON DACTYLON Pers.—Newport, now lost.
- PHRAGMITES COMMUNIS Trib., var. REPENS Meyer—Totland, Chale; var. SUBUNIFLORA Druce—Norton; var. DENSIOR Druce—abundant at Thorley.

- CYNOSURUS ECHINATUS L.—Freshwater, Newport, Northwood.
 DACTYLIS GLOMERATA L., var. CONGESTA G. & G.—Freshwater and Afton
 Downs, Grange Chine, Chale, Haven Street.
 BRIZA MINOR L.—Whippingham 1918, not seen since.
~~POA BULBOSA L.—Still at St Helens.~~
 P. PRATENSIS L., var. SUBCAERULEA (Sm.)—Freshwater Downs, Newport.
 P. NEMORALIS L.—Freshwater, Newport, Ventnor.
 P. COMPRESSA L.—Still at Apes Down and Shide.
 GLYCERIA DISTANS Wahlb.—Freshwater, Newport, St Helens.
 G. BORRERI Bab.—In several places by the sea; Freshwater, etc.;
 [Meadows at Freshwater Gate, June 21st, 1841, Dr Bromfield in
 Herb. Radcliffe, teste J. E. Little].
 FESTUCA ROTBELLIODES Kunth—High Down, Steephill.
~~F. UNICLUUM Soland.—Still at St Helens.~~
~~F. AMBIGUA Le Gall—Still at St Helens.~~
~~F. MYUROS L.—Whippingham, Sandown.~~
 F. BROMOIDES L.—By no means common as stated in Nat. Hist.; St
 Helens.
 F. CAPILLATA L.—Haven Street.
 BROMUS ERECTUS Huds.—Moon's Hill, Ashey Down; [Luccombe, July
 1840, Dr Bromfield in Herb. Radcliffe, teste J. E. Little].
 B. MADRITENSIS L.—Newport.
 B. MAXIMUS Desf.—Newport, Ventnor.
 B. SECALINUS L., var. VELUTINUS (Schr.)—Newport.
 B. COMMUTATUS Schrad.—Haven Street.
 B. HORDEACEUS Fries, var. NANUS Druce—Cliffs as Freshwater, Afton,
 Compton; inflorescence often reduced to one spikelet only.
 B. ARVENSIS L.—Bleak Down.
 LILIUM PERENNE L., var. TENUE Syme—High Down, Moon's Hill, New-
 port.
 L. REMOTUM Schrank (L. LINICOLA Sonder)—Newport.
 L. TEMULENTUM L.—Norton, Newport, Cowes; var. ARVENSE (With.)—
 Newport.
 AGROPYRON REPENS Beauv., var. DUMETORUM (Hoffm.) S. F. Gray—Fresh-
 water; var. GLAUCUM Döll—Freshwater.
 A. PUNGENS R. & S.—Yarmouth; var. LITTORALE (Reichb.)—Newport;
 var. PYCNANTHUM G. & G.—Norton Spit, Bembridge; var. ARISTATUM
 Hack.—Newport.

SOME ALIEN PLANTS OF THE ISLE OF WIGHT.

J. W. LONG.

The following plants of more or less casual occurrence are not included in *The London Catalogue of British Plants*, 11th edition, but, with a few exceptions, the names appear in the *British Plant List*, 1928. The nomenclature and arrangement of that work have been taken as a guide.

- SISYMBRIUM LOESELII L.—Waste ground by Medina, 1927.
 BRASSICA JUNCEA Coss.—Between Newport and Cowes, on several occasions.
 ERUCA SATIVA L.—Numerous plants at Newport, 1925. Several at Cowes in the same year.
 LEPIDIUM PERFOLIATUM L.—A small colony at Newport in 1924. Not seen since.
 L. VIRGINICUM L.—Waste land near Cowes, 1927.
 L. DENSIFLORUM Schrad.—Between Newport and Cowes, on several occasions.
 NESLIA PANICULATA Desv.—Waste ground, Newport.
 RAPISTRUM RUGOSUM (L.) All.—On cliffs at Ventnor; near Mill, Carisbrooke; Newport.
 LAVATERA THURINGIACA L.—Waste ground, Newport, 1928.
 ABUTILON AVICENNAE Gaertn.—River-side, Newport.
 HIBISCUS TRIONUM L.—Football field, Newport.
 LUPINUS ANGUSTIFOLIUS L.—Waste land below Newport.
 TRIGONELLA FOENUM-GRÆCUM L.—Near corn-mill, Newport.
 T. CORNICULATA L.—Waste ground, Newport, 1925.
 MELLILOTUS SULCATA Desf.—Plentiful for a year or two near Newport, but it gradually disappeared.
 TRIFOLIUM TOMENTOSUM L.—River-side, near Newport.
 ASTRAGALUS BOETICUS L.—Waste ground, Newport.
 CORONILLA SCORPIOIDES Koch—Sea Close, Newport.
 CICER ARIETINUM L.—Waste ground, Newport.
 VICIA TENUIFOLIA Roth—Totland.
 V. PANNONICA Crantz—Totland.
 V. PEREGRINA L.—Sea Close, Newport.
 LATHYRUS OCHRUS L.—River-side, below Newport.
 DIPSACUS FULLONUM Mill. First seen in a cornfield near Pan Mill, Newport, 1913. Each year since as a waste ground plant at Shide, Newport, or Cowes.
 ERIGERON MUCRONATUS (DC.) Asch.—Shide.
 AMBROSIA ARTEMISIAEFOLIA L.—Has persisted for several years near Flour Mill, Newport.
 XANTHIUM STRUMARIUM L.—Waste ground near Cowes; near Flour Mill, Newport.

- SPILANCHES DECUMBENS* (Sm.) Moore, var. *LEPTOPHYLLA* (DC.) Moore—Waste ground, Shide.
- GUIZOTIA ABYSSINICA* Cass.—Occurs frequently as a waste ground plant at Ryde, Shide, Newport and Cowes.
- HEMIZONIA PUNGENS* Torrey & Gray—Several plants on reclaimed ground, Newport.
- TAGETES MINUTA* L.—On river-mud below Newport.
- ANACYCLUS MEDIANS* Murb.—Waste ground, Newport.
- CENTAUREA MELITENSIS* L.—Waste ground, Newport and Cowes.
- CARTHAMUS TINCTORIUS* L.—Allotment ground, Ryde; reclaimed land between Newport and Cowes—of frequent occurrence.
- C. TINCTORIUS* L., var. *INERMIS* Schweinf.—Newport.
- UROSPERMUM PICROIDES* F. W. Schmidt—Newport.
- ECHINOSPERMUM LAPPULA* Lehm.—On several occasions at Sea Close, Newport.
- SOLANUM ROSTRATUM* Dur.—Football field, Newport, 1926.
- NICOTIANA RUSTICA* L.—Abundant one year on cinder-covered waste near Cowes.
- SIDERITIS MONTANA* L.—Sea Close, Newport.
- DRACOCEPHALUM PARVIFLORUM* Nuttall—Mud-bank below Newport.
- PHYSOSTEGIA VIRGINIANA* Benth.—Waste ground, Newport.
- AMARANTHUS CHLOROSTACHYS* Willd.—Allotment gardens, Ryde.
- A. ALBUS* L.—Newport, 1931.
- A. VIRIDIS* (auct.)—Named at Kew. Waste ground, Newport, 1925.
- A. HYBRIDUS* L.—Growing with mangel-wurzel in arable field at Sandown, 1930.
- ROUBIEVA MULTIFIDA* Moq.—Allotment gardens, Ryde, 1924.
- CORISPERMUM HYSSOPIFOLIUM* L.—At base of railway embankment, Ryde.
- POLYGONUM BELLARDI* All.—Waste ground, Newport; in fair quantity for several years.
- P. PULCHELLUM* Lois.—Sea Close, Newport.
- P. COGNATUM* Meisn., var. *ALPESTRE* (C. A. Mey)—Football field, Newport, 1931.
- P. AMPLEXICAULE* D. Don—Cliff-face, Shanklin.
- FAGOPYRUM TATARICUM* (L.)—Sandown, Ryde, in allotment gardens.
- RUMEX SALICIFOLIUS* Weinm.—On railway embankment and waste ground near Newport, in varying quantity for several years. Not seen in 1931.
- R. BUCEPHALOPHORUS* L.—Several plants at Sea Close, Newport, 1927.
- R. DENTATUS* L.—Plentiful on gravelly waste near Newport for several years. It did not survive the colder winter of 1929.
- CANNABIS SATIVA* L.—Waste ground at Ryde, Shide, Newport and Cowes.
- HELXINE SOLEIROLII* Req.—Apparently quite established in the turf at Bonchurch churchyard and at Totland.
- ASPHODELUS FISTULOSUS* L.—Waste ground, Newport and Cowes.
- PANICUM MILLACEUM* L.—Waste ground, Newport, Cowes and Shide.
- Var. *NIGRICANTE* Dr.—Newport.
- P. CAPILLARE* L.—Between Newport and Cowes.

P. MAXIMUM Jacq.—In fair quantity at Newport in 1924; less plentiful at Ryde and Shide; none seen after 1925.

SETARIA ITALICA (L.) Beauv.—River-bank, Cowes.

SORGHUM HALEPENSE (L.) Pers.—Waste land, Cowes, in fair quantity for two years.

GAUDINIA FRAGILIS (L.) Beauv.—Several vigorous patches in pasture land west of Ryde in 1917. A few plants in hedgebank and by roadside, 1931.

BROMUS UNIOLOIDES H. B. K.—River-bank below Newport for several years; in fair quantity on waste land near Cowes, 1928-1931.

HORDEUM JUBATUM L.—Waste land, Newport, for several years.

ELYMUS CAPUT-MEDUSAE L.—Several plants at Sea Close, Newport, 1928.

SOME BRITISH RUBI, NEW AND OLD.

WM. WATSON.

RUBUS VILICAULIS Koehl. and R. INSULARIS Aresch.

Considering that it is a widespread bramble in S.E. England and ranges across the Continent to the confines of Russia, it is strange that *R. vilicaulis* should have remained almost unrecognised and unrecorded from the south-eastern counties. It is said in the *Handbook* to be abundant in Scotland, fairly frequent in the west of England and in Wales, but not known east of Staffs and Dorset, with the possible exception of Surrey and N. Lincs.

In my experience *R. vilicaulis* is a fairly frequent bramble in Surrey and S. Essex, and I have also seen examples from S. Hants, W. Kent, Berks, Oxon, Bucks, and S. Lincs. Specimens of *R. vilicaulis* from these counties sent to our authorities for naming have been variously assigned by them as follows: examples from S. Hants, Berks, Oxon, and Bucks as "*R. Schlechtendalii*," another example from Berks as "under *R. incurvatus*," and another as "*R. leucostachys* × *Lindleianus*," and yet another as "*R. macrophyllus*." A South Essex specimen of *R. vilicaulis* was claimed to be "*R. dumnoniensis* Bab., forma, record for v.-c. 18," and strong examples from Surrey were described as a new bramble and named "*R. rhombifolius*, var. *megastachys*."

The confusion seems to date from 1897, when, according to Rogers writing in the *Journal of Botany* for that year, having sent Focke Scottish plants labelled "*R. vilicaulis* Koehl., var. *insularis* (F. Aresch.), or form near it," he received the reply, "The form called *R. insularis* Aresch. is the true typical *R. vilicaulis*, first described from Silesia, E. Germany." This view, which cannot be upheld and in his last work was relinquished by Focke, was adopted in the *Handbook*, and a specimen of *R. insularis* was sent out in the Set of British Rubi to represent *R. vilicaulis*. As a consequence *R. insularis* has in this country most often received the name *R. vilicaulis*, whilst when the true *R. vilicaulis* has been before them, our authorities have generally been at a loss for a name. As regards the identity of the plant of the west of England and Wales, it may be sufficient to refer to the specimens collected in Radnorshire in 1898 by Ley and Rogers and distributed to members of this Club as "*R. vilicaulis*." They belong really to *R. insularis*.

Lindeberg described a new species near to *R. insularis* as *R. confinis*, and this receives a full description in Areschoug's book *Some Observations on the Genus Rubus*, Vol. I., under the name of *R. insularis*, sub-sp. *confinis*. A specimen labelled "S.M. Macvicar, 22.7.1894, Moidart, Inverness. *R. vilicaulis*—W.M.R." is, it appears to me, *R. insularis*, sub-sp. *confinis* (Lindeb.).

R. RECTANGULATUS Maass.

This is a North German bramble which will be found described as a species distinct from *R. villicaulis* in Maass's account of the *Rubi* of N.E. Germany, contributed to Ascherson and Graebner's *Flora des Nordostdeutschen Flachlandes*, and is the bramble referred to in the *Handbook* as the common *R. villicaulis* of N.W. Germany. It occurs in Devon, Dorset, and in Bucks. In Dorset it was seen growing by Focke and was referred by him to *R. rhombifolius*, whilst Murray, who showed it to him, thought it was *R. stereacanthus* P. J. Muell. See *Rep. B.E.U.*, 1893. The Bucks plant was named "*R. argentatus*. Record for v.-c. 24" by Rogers.

The veteran Danish bramble-kenner, Mr K. Friderichsen, informed me a short time ago that *R. stereacanthus* P. J. M. was the same species as *R. atrocaulis* P. J. M., *R. Langei* Jensen, and *R. rectangulatus* Maass. Murray's determination of the Dorset bramble as *R. stereacanthus* would thus be equally correct with *R. rectangulatus*. *R. Langei* appears to be the forma *umbrosa*, and *R. stereacanthus* and *R. atrocaulis* the forma *aprica*. I have seen a specimen of *R. rectangulatus* gathered and named by Maass, but no example of the other forms I have quoted. On that account I retain Maass's name for the present, although *R. atrocaulis* is the earliest published. Sudre records *R. atrocaulis* for Yorkshire.

R. INCARNATUS P. J. Muell.

There seem to have been two distinct brambles represented in the specimens issued by Schultz as *R. incarnatus*. Boulay treats *R. incarnatus* as a synonym, and Focke as a race, of *R. villicaulis*; whilst Boulay states that he has also seen a more *Godroni*-like bramble issued by Schultz as *R. incarnatus*. This second bramble accords better than the first with Mueller's description, and it is the one illustrated and described by Sudre as Mueller's plant.

In 1905 Sudre distributed specimens of *R. incarnatus* which had been collected and identified by Mueller, and pointed out the differences from *R. villicaulis*. In Mueller's original description (*Versuch*, No. 28) he describes the nearly ovate-deltoid finely toothed terminal leaflets, with very entire base, completely glabrous above and greenish-grey to white felted beneath, and the not very large, unequal, curved prickles and nearly white-felted upper leaves in the panicle. The long patent prickles on the stem caused Mueller at first to identify this bramble with *R. macroacanthus* W. & N. The rachis bears large tufted, as well as paired, and short stellate hairs. The flowers are holerythrine. Mueller says that it is one of the last brambles to flower.

I consider that I have seen *R. incarnatus* P. J. Muell. from Tubney and Bladon (Oxon), Brickhill and Ivinghoe (Bucks), and Market Rasen Wood (Lincs). The Bladon and Ivinghoe specimens are named "*R. thyrsoideus*" by Rogers, the Ivinghoe specimens being claimed as a new county record for *R. thyrsoideus* for Bucks, but he was less certain of the others. The Tubney specimens he reported on as follows. "I do not see how this can be kept from *R. dumnoniensis* Bab., though I have

never seen that before with the leaflets so acuminate or stem so nearly glabrous." The Brickhill specimen was named *R. incurvatus* by Focke, and Rogers remarked, "may be a form of *R. incurvatus*, but I cannot quite match it."

R. incarnatus finds its proper position, as Sudre places it, amongst the *Argentei*, not amongst the *Villicaulis*.

R. PUBESCENS Weihe.

The true plant appears not to have been known to Rogers from Great Britain, at any rate at the time of publication of the *Handbook*. It was, however, gathered by Mr Cumming in 1913 near Kilsby Station in Northants (as *R. thyrsoides*); and again by R. W. Robbins in a hedge at Brimpton, Berks, in 1928.

R. pubescens has a narrow terminal leaflet, broadest close to the rounded, entire base, and gradually narrowed upwards into a long point. All the leaflets are exceptionally long-stalked and as a result stand far apart. These characters taken in conjunction with the considerably hairy stem, the large-based strongly hooked prickles in the middle of the flowering branch, and the large and handsome white flowers with their great show of long and spreading stamens, followed by an abundance of large subglobose fruits, will prevent confusion with any other plant which has been mistaken for it.

R. HEREFORDENSIS Sudre.

The Herefordshire examples gathered by Ley and issued in the Set of British Rubi to represent *R. pubescens* Weihe were subsequently in the *Handbook* acknowledged not to be Weihe's plant. A specimen of the same bramble collected in 1894 by Ley at Belmont, Heref., as "*R. lasiocladus* Focke?" was thought by Rogers to be "Surely nearer to *R. pubescens* and *R. argentatus* than to *R. lasiocladus*," whilst Focke simply named it "*R. argentatus* P. J. Muell." Another specimen, collected by Ley in 1904 on Wenlock Edge as "*R. lasiocladus*," was passed by Rogers as "very close to the Paddlesworth, Kent, plant, especially in the panicle. New county record."

I have seen this bramble of Ley's growing in Herefordshire at Howle Hill, Ross, in Cowleigh Park, Malvern, and near Yatton. The specimens for the Set came from Caplar. I do not know of it outside Herefordshire except on Wenlock Edge. The bramble is neither *R. pubescens*, nor *R. lasiocladus*, nor *R. argentatus*; and Sudre was the first to see this and to describe it, giving as good a description of it as was practicable from a dried specimen not accompanied with collector's notes. To supplement his description my notes made from the living plant are transcribed here.

Stem glaucescent, greenish-grey to reddish-brown, obtuse-angled with sides flat and striate, with numerous sessile glands, not many pricklets, acicles or stalked glands, but an abundance of patent and short adpressed clustered hairs. Prickles declining or falcate, yellow to purplish, moderately numerous, slender. Leaves large, pedate, subglabrous above, closely and densely white felted, and more or less pubes-

cent and hairy beneath; petiole and petiolules with numerous hooked prickles and clothed like the stem; terminal leaflet broadly obovate, broadly acuminate-cuspidate, base subcordate to subentire, with broad, unequal, more or less doubly-serrate teeth.

Flowering branch obtuse-angled, villose throughout, with sunken stalked glands, and weak yellow or purplish declining or falcate prickles. Panicle pyramido-cylindrical, with a domed top and 3-7-flowered middle branches, often containing 1-2 large ovate leaves; terminal leaflet of 3-nate leaves oval, acuminate; bracts linear, foliaceous. Buds grey felted, pubescent and glandular, segments white-edged, ending in linear tips when strong, loosely reflexed after flowering, a few patent, very white within. Petals suborbicular or ovate, suddenly clawed, rose pink. Stamens pink (reddening) much longer than the pink (sometimes green) styles. Anthers and young carpels glabrous.

RUBUS HIRTIOR nov. spec.

Study of further and better material of Sudre and Ley's *R. hirsutissimus* convinces me that it differs from the common Surrey bramble described under that name in *Rep. B.E.C.* for 1927. I therefore propose a new name, *Rubus hirtior*, for the Surrey bramble. The following description is based on a plant growing at Netley Heath, Surrey.

Turio arcuata-procumbens vel scandens obtusangulus faciebus planis striatisque glaucescens pilis divergentibus dense obductus glandulis et aciculis rarioribus instructus. *Aculei* parvi vel mediocri subinaequales e basi compressa subulati plerique patentis. *Folia* ternata et quinato-pedata utrinque viridia supra strigosa subtus imprimis in nervis pilis micantibus subvelutina marginibus inaequaliter (apicem versus saepe duplicato-) serrata, petiolo supra leviter impresso aculeis falcatis munito; *foliola* omnia contigua lata acuta vel breviter acuminata, *terminale* suborbiculare basi \pm cordata deorsum modice angustatum, *infima* longe petiolulata.

Ramus florens viridis teretiusculus turionis ad instar indutus et aculeis gracilibus armatus. *Inflorescentiae* elongatae usque (vel tantum non) ad apicem foliosae inferne interruptae ramuli intermedii breves subsascentes cymoso-partiti tomentoso-villosi aciculis glandulisque raris praeter aculeos tenues muniti. *Flores* mediocres; *petala* elliptica abrupte in unguem brevem contracta ascendente incurva, in alabastro dilute rosea deinde alba plicatula; *stamina* alba stylos virentes fere aequantia (raro paulo superantia); *sepala* cano-virenti-tomentosa post anthesin patula vel laxa reflexa; *germina* glabra.

Crescit in ericetis atque in silvis regionum meridionalium comitatus Surreiae. *Typum* in herbarium proprium deposui.

[Ref. No. 2051], Witley, Surrey, July 6, 1897, E. S. Marshall as *R. leucanthemus* P. J. M. ?; [Ref. No. 1005], Walton Heath, Surrey, July 13, 1923, W. C. Barton and H. J. Riddelsdell as *R. leucanthemus*? P. J. M.; Lockinge, Berks, 1895, G. C. Druce, det. by W. M. Rogers as *pyramidalis* Kalt.

RUBUS NITIDIODES W. Watson.

Three years ago I described a bramble under the above name in these Notes. It has now been found in four Watsonian vice-counties, in more than one river system, and seems not to have been described abroad. I therefore now give a Latin description, embodying my further observation of the plant, wild and under cultivation. It should stand among the *Grati* in the *Silvatici*.

Turio suberectus subsimplex raro unquam radicans obtusangulus faciebus planis superne vix sulcatis e viridi ochraceus deinde ruber aut saltem rubro-maculatus parce pilosus eglandulosus auctumno frondifluus. *Aculei* crebri duri plerique reclinati. *Folia* plicata margine parum undulata sat grosse serrata supra glabrescentia subtus pubescentia et breviter pilosa, petiolo inferne sulcato aculeis crebris uncinatis armato, stipulae eglandulosae late lineares; *foliola* mediocria apice acuta vel late acuminata, *terminale* ovale basi semper fere integro, *infima* breviter sed manifeste petiolulata.

Ramus florens inferne glabrescens superne pubescens parce pilosus eglandulosus foliis concoloribus nonnullis quinatis munitus. *Inflorescentiae* pyramido-corymbosae laxae compositae aculeis curvatis armatae ramuli supremi (1-7-flori) florem terminalem evidenter pedicellatum saepe longe superantes, inferiori longe pedunculati subcorymbosi foliosi erecto-patentes; pedicelli aculeis crebris falcatis intense flavis muniti. *Calyx* viridis nitidus subglaber sepala obtusa interdum foliaceo-appendiculata margine tomentosa anthesi peracta primum laxae reflexa deinde patula postremo verum sub fructu maturo erecta. *Flores* majusculi; *petala* ovalia longa dilute lilacina ascendentia incurva; *stamina* alba vel roseola inaequalia, quorum longiora stylos virentes paulo excedent; *germina* glabra; *carpophorum* elongatum pilosum. *Fructus* magni bene evoluti oblongi e drupeolis inaequalibus compositi.

Incolit loca uda in ericetis silvisque apertis, stagnorum et rivulorum ripas, etc. *Typum* in herbarium proprium deposui.

Planta vulgo sat robusta, in solo uberi optime vigens; hinc inde verum cum forma normali occurrit forma minor quae primo visu *Rubum nitidum* valde revocat.

RUBUS APRICUS Wimmer.

This bramble, which was reported in these Notes in 1927 to grow on Chislehurst Common, W. Kent, has now been found on Wimbledon Common by Mr C. Avery. Focke states that he has seen specimens from Surrey exactly like Wimmer's plant, but he did not state the locality and the new Surrey *Flora* gives none either. Given suitable conditions *R. apricus* grows into a large bush with magnificent cymose-branched panicles, revealing its relationship with *R. Koehleri* in spite of its erect fruit-calyx.

Mr Friderichsen informs me that he has found this large form himself in the South of Sleswick and points out that Wimmer's type is a forma *parvifolia*. He has therefore named the large plant var. *sub-*

calvatus. Sudre records *R. apricus* for Belgium. We appear to have it therefore in common with the adjacent parts of the Continent.

R. RHOMBOPHYLLUS M. & L.

This pink-flowered bramble, belonging to the large *R. obscurus* group, occurs, if it is correctly identified, in the Forest to the west of Canterbury. The "*R. uncinatus*" found at Mop End, Amersham, in Bucks, appears to be *R. rhombophyllus* also.

The stem is angled and hairy and is armed with declining unequal prickles, grouped often in twos and threes, and is furnished with short-stalked glands and acicles much as in *R. radula*. The leaves are quinately pedate, glabrous above, and softly grey-felted and hairy at first beneath, but later glabrescent; the terminal leaflet is obovate-rhomboid, simply but unevenly not very deeply serrate-dentate; the petiole with hooked prickles.

The panicle is elongate, leafy to the top, densely patently pilose; the prickles much declining and falcate, slender, long and unequal, accompanied with rather numerous stout-based pricklets. The sepals are loosely reflexed after flowering; the petals are pink, and the stamens and styles are sometimes pink and sometimes green.

R. rhombophyllus being a glabrescent plant, it is possible that *R. cinerascens* Weihe, which was found by Lejeune in Belgium and is stated by Sudre to be very like *R. rhombophyllus* only not so densely hairy, may prove to be the same plant. *R. rhombophyllus* is known from several stations in the Paris basin.

R. THYRSIFLORUS Weihe.

A bush on Putney Heath, situated in the open, last year made strong stems which became suffused in autumn with deep violet, exactly as shown in Weihe's plate. The character is a useful one for the recognition of the plant, so long as it does not lead to confusion with *R. melanodermis*, which also grows on Wimbledon Common.

RUBUS LARGIFICUS W. Watson.

This was described as a new species in *Rep. B.E.C.*, 1927. I found it first in 1922 in several stations in N.W. Kent on the Tertiary tableland, and afterwards on one of the highest parts of the North Downs, which fact led me to think it was an old form that would be found elsewhere and might be recognised if it were described. In 1930 it was met with again in some plenty in the centre of the Weald, around Tunbridge Wells. As it appears worthy of adoption into the British list of plants, and I have still found no Continental plant or description matching it, a Latin description is now given incorporating one or two fresh characters useful for its determination.

Vepres vigorosus largiter fructifer sempervirens. Turio ex arcu humili procumbens inferne hispidus viridis teretiusculus superne obtusangulus faciebus sulcatis purpurascens tomentosovillosus aculeolis et glandulis crebris et setis glanduliferis sparsis instructus. Aculei mediocres declinati. Folia quinata crebriora plicata in sole rugosa

subcoriacea supra glabra subtus canescenti-virentia in nervis prominulis micanti-pilosa; *foliola* omnia basi subcordata, *terminale* obovato-oblongum mediocriter inaequaliter et apicem versus sat duplicato-vel parte patenti-serratum.

Inflorescentiae laxae anguste pyramidalis obtusae inferne interruptae ultra medium foliosae ramuli medii racemosi 2-3-flori fere patentes; folia suprema simplicia supra glandulis purpureis conspicuis inspersa; flos terminalis subsessilis. *Rachis* angulosa robusta rigida cum pedunculis et pedicellis aculeis debilibus et glandulis stipitatis instructa, quarum pars major in villis submersae. *Flores* parvi; *petala* obovata alba ungue lato lutescente; *stamina* alba erecta stylos basi rubentes subaequantia vel interdum longe excedentia; *sepala* attenuata pallide tomentosa in anthesi reflexa postea patula deinde erecta tum denique sub fructu maturo rursus reflexa. *Germina* pilosa; *fructus* magni subglobosi.

In ericetis et ad margines silvarum. *Typum* in herbarium proprium deposui.

R. SPINULIFER M. & L.

This bramble Focke puts under *R. Koehleri* as a vaguely defined form with variable characters, presumably on account of the supposed discrepancies which he quotes between Boulay's description and Mueller's description. If Mueller's description is referred to, however, one sees that it is identical with that of Boulay in those particulars which Focke mentions. Evidently Focke has by inadvertence quoted from Mueller's description of *R. acutifolius* (page 212) instead of from his description of *R. spinulifer* (page 214). No discrepancy therefore exists, and there is no proof that *R. spinulifer* is variable or that it is vaguely defined. On the contrary it seems a particularly well marked, and (when once known) readily recognised species.

RUBUS RADULA, sub-sp. ASPERICAULIS (L. & M.).

A bramble which grows in several widely-separated localities in Kent is distinct from all the *Radulae* described in the *Handbook* and matches very well a specimen which I have seen of *R. aspericaulis* L. & M., collected and named by Questier. It is rather closely related to *R. radula* itself, and would stand as a sub-species to it in any classification which admits sub-species.

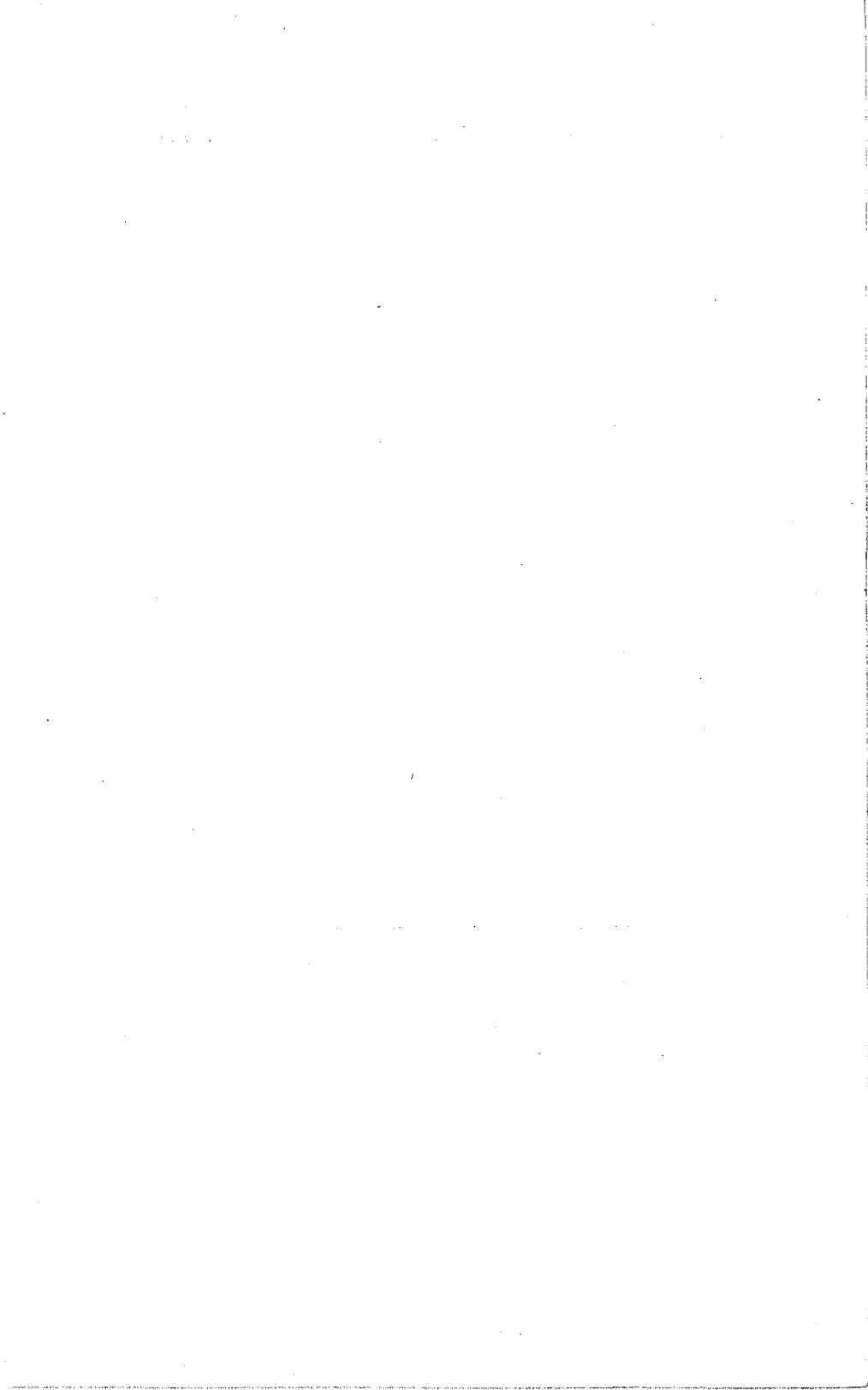
The Kentish plant has the stem robust, low-arching and then procumbent, glaucous green at first but changing to ochreous and light reddish brown, slightly pilose, angled with flat or rather concave sides, bearing many short and equal stalked glands, acicles and pricklets. Prickles with strong ochreous bases, mostly patent, a few declining and recurved. Leaves large, 3-4-5-nate and incompletely 4-nate and 5-nate, on the flowering branch as well as on the barren stem. Terminal leaflet broadly ovate or obovate, suborbicular or reniform, acute or shortly acuminate-cuspidate, the base subentire or subcordate, irregularly or rather doubly finely serrate-dentate; strigose above, at first white felted beneath then green. Petiole sulcate, armed with hooked prickles.

Panicle narrowly pyramidal, lax and short, possessing 1-2 large ovate leaves followed by linear-lanceolate subfoliaceous bracts and bracteoles. Rachis green, closely patent pilose, together with the pedicels bearing numerous short fine yellowish patent (on the rachis unequal and irregularly distributed) prickles and acicles, and short-stalked glands. Branches of the panicle 2-3-flowered, divided almost to the base. Petals pinkish to nearly white, oval, remote crumpled, with margins and apex erose, incurved. Stamens white, longer than the deep crimson styles. Sepals triangular attenuate, very white within, finely aciculate and sprinkled with stalked glands, reflexed in flower and fruit. Young carpels subglabrous. Fruit broadly ovoid or subglobose, composed of rather few but large drupelets.

In some few slight respects our plant differs from the French type, and I therefore distinguish it as a variety as follows.

Var. *CANTIANA* nov. var. A typo *recedens* foliis evidentiter pedatis supra strigosis, foliis basi magis cordatis, inflorescentiae ramulis fere ad imum partitis, petalis quae e roseolo mox albicant, denique stylis saturate purpureis.

I have met with the plant at Hayes, Chislehurst, St Mary Cray, Malling, Teston, Bigberry, and Harbledown in Kent.



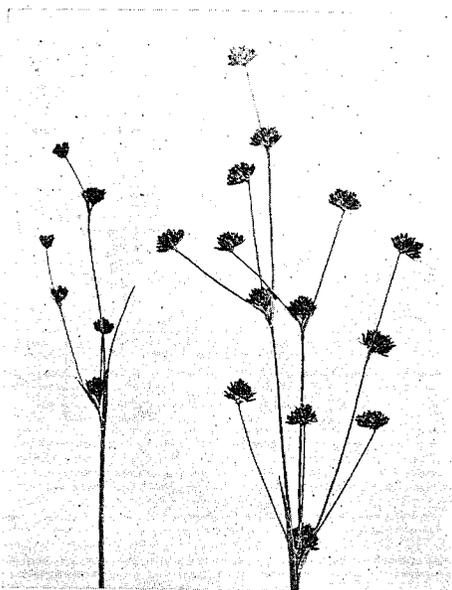


Fig. 1. *Juncus alpinus* Villars, from Widdy Bank, Durham, England, to the left and from Enskede by Stockholm, Sweden, to the right.

INVESTIGATION INTO NORTH-WEST EUROPEAN JUNCUS
ALPINUS FORMS.

DR BERTIL LINDQUIST.

These studies are concerning the species *J. alpinus* Villars, *J. anceps* Laharpe, *J. atricapillus* Drejer, *J. fuscoater* Schreber, *J. nodulosus* Wahlenberg, *J. Marshallii* Pugsley and *J. alpestris* Hartman. My investigation will be published *in extenso* in a Swedish paper. There are, however, several problems of special interest to English botany so, when Dr Druce invited me to give him a summary of my studies for his Report, I very gladly consented.

J. ALPINUS Villars.

When Villars in 1787 described *J. alpinus* he identified it with Haller's *Juncus foliis fistulosus*, *articulatis*, *panicula simplici*, *glumis aristatis* (Haller 1768) and with Scheuchzer's *Juncoides alpinum folio articulato* (Scheuchzer 1719). It may, therefore, be of some interest to inspect these forms described by Haller and Scheuchzer.

Haller's *Juncus foliis fistulosus*, etc., belongs to the *articulatus*-group and seems to be a rather low form. It has a simple panicle with up to six 1-2-flowered umbels. The perianth segments have a chestnut-coloured margin and are mucronulate: "longo mucrone ut aristata dici possint." Although the description is fairly detailed, it affords very little evidence to prove that Villars' *J. alpinus* is identical with Haller's *Juncus foliis fistulosus*, etc. Against this supposition goes Haller's detailed description of the perianth segments which are most likely to be taken as characteristics for a *J. lampocarpus*-like form. I do not think we can justifiably assume this *Juncus*, as described by Haller, to be identical with what is now called *J. alpinus* Villars.

Scheuchzer's description of *Juncoides alpinus folio articulato* on the whole agrees well with Haller's above-mentioned forms. Scheuchzer's type is also articulate and the panicle is slightly branched and simple. The flowers, the length of which he states to be 2.5 mm. or a little more, are placed two or three together in small umbels and terminate in a pointed thin mucro. This description does not fully distinguish what it is intended to describe: the size of the flowers (as well as their number in the umbels) seems to point to *J. alpinus* Villars, whereas the observation that the flowers end in a pointed mucro indicates rather that some *J. lampocarpus*-form might have been in the author's mind.

In subsequent investigations, therefore, it is no doubt advisable not to attach undue importance to references to the above-mentioned descriptions by Haller and Scheuchzer in the identification of *Juncus*-species and *Juncus*-forms.

Sprague (1928) has, however, pointed out, that already in the first volume of Villars' *Histoire des Plantes de Dauphiné* (1786, p. 378) Chaix published a description of a *Juncus alpino-articulatus*, which seems to be identical with the *J. alpinus* described by Villars himself in the following year. Chaix refers to Haller 1321, i.e., to *Juncus foliis fistulosis, articulatis, panicula simplici glumis aristatis* but gives no further description to the plant. Sprague now points out that the reference to Haller may be considered sufficient to show that the plant described by Chaix is identical with Villars' *J. alpinus* and Chaix's name, being one year older than that of Villars', he considers that *J. alpino-articulatus* Chaix ought to replace *J. alpinus* Villars. This consideration has since been accepted by Druce (1931) and Pugsley (1931). One objection to Sprague's name *J. alpino-articulatus* is that the only definite attribute Chaix has given *J. alpino-articulatus* is the reference to Haller 1321. It is probably not advisable to base an identification of Chaix's species merely on the reference to an author who in his nomenclature is pre-Linnean; all the more so as Haller's diagnosis, quoted by Chaix, might rather refer to some dwarfish form of *J. lampocarpus* than to *J. alpinus* Villars (see above). Sprague's attempt to replace Villars' *J. alpinus* by the older *J. alpino-articulatus* cannot therefore be considered to be satisfactorily grounded.

J. alpinus Villars is the first acceptable name given to forms belonging to the series of Junci under discussion and therefore it should be given priority as the name of the species in the classification of these plants.

The main type of what is now more specifically called *J. alpinus* in Scandinavia is generally a rather big type with a floriferous stem, 10-40 cm. high. The cyme is generally richly developed, with the branches emanating from two points situate at different heights on the stem. Specially characteristic are the often very large umbels with almost sessile flowers. As in all other forms studied here, the outer perianth segments are obtuse, with a marked mucro, while the inner ones are obtuse and without any mucro. The perianth generally reaches to more than $\frac{1}{2}$ of the length of the capsule. The anthers are rather short, 0.4-0.7 mm., the capsule of various colours, most often with a short mucro, 2.6-3.1 mm. long, 1.3-1.5 mm. wide and tapering somewhat rapidly.

With regard to the distribution of this type it may be said that it seems to be rather common in middle Europe as well as in south-eastern Scandinavia. As to the details of the Scandinavian distribution it may be pointed out that it is rare in Denmark where it most likely only occurs on Sjaelland and north Jutland; on the other side it is not uncommon in Scania, in Oeland, Småland, Oestergötland and Västergötland. I think its distribution has a certain relation to the present and former occurrence of *J. fuscoater* (see further on). In Britain *J. alpinus*, taken in this narrower sense, occurs rarely and in a very distinct form with dark brown flowers and very small capsules down to 2.1 mm. long. It has been found in some places in Scotland, above all in

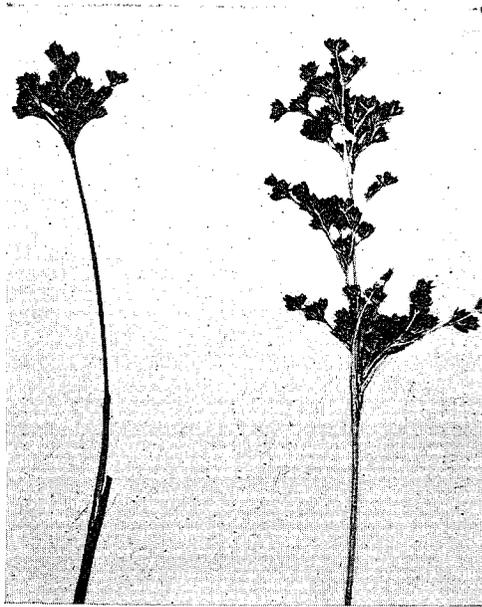


Fig. 3. *Juncus alpinus*, var. *fuscoater* (Celakovsky)
Buch., f. *subatricapillus* Neum., from Dagstorp in
Scania.



the Highlands and in one district in north England—Teesdale in Durham, where Dr Druce discovered it in 1903. About these British forms it may be said that those gathered at Ben Laidigh in Argyllshire are closely related to *J. alpestris* Hartman.

J. FUSCOATER Schreber.

In the year 1811 *J. fuscoater* was described by Schreber in Schweigger and Koerte's *Flora Erlangensis*. The description, which is very clear, lays special stress upon the semi-globular umbels of the new species and its black and shiny capsules, which end in a short mucro.

J. fuscoater is further characterised by its richly flowering umbels with practically sessile flowers and by its capsule which is generally just a little smaller than that of the normal *J. alpinus*, 2.3-2.8 mm. long, but often wider than the latter, 1.3-1.6 mm. wide. It is black, shiny and obtuse, with a very well-marked mucro, 0.2-0.3 mm. long.

The late Conservator Otto R. Holmberg found at Nosaby in Eastern Scania a great colony of this plant mixed with Wahlenberg's *J. nodulosus*. In the same locality he also found a great number of intermediate forms which he considered to be hybrids between the two named types. His supposition was confirmed by researches into their fertility which showed that plants of *J. nodulosus* and of *J. fuscoater* showed complete fertility whilst those of the intermediate type all showed a slightly but obviously reduced fertility. Similar conditions were found by the author in the north-western part of Scania at a place in the parish of Hov where the same types occurred together. In some cases I found the fertility reduced to less than 50%. My studies further showed that these plants considered as hybrids could not in most cases be morphologically distinguished from Scandinavian material of *J. alpinus* Villars. From the clear disposition of *J. nodulosus* and *J. fuscoater* to produce numerous and vigorous hybrid descendants resembling *J. alpinus* we came to the conclusion that these types could no longer be retained as separate species. I am rather inclined, with Buchenau, to place *J. fuscoater* as a variety under *J. alpinus* and thus call it *J. alpinus*, var. *fuscoater* (Celakovsky) Buchenau.

J. fuscoater is found chiefly in Eastern Europe, reaching Finland and Scandinavia in the north. In Scandinavia the localities show a markedly easterly concentration to Scania, Oelandia and Gotlandia. It is a very noteworthy fact that this plant is rather uncommon in Denmark though there seem to be numerous localities which edaphically are apt for it. The plant is quite wanting in England.

JUNCUS NODULOSUS Wahlenberg.

The most common *J. alpinus*-type of Scandinavia has often been called *J. nodulosus* Wahlenb. (Wahlenberg 1820, 1833, Fries 1828, 1835, Lindman 1918, 1926, Druce 1931, Pugsley 1931).

In Wahlenberg's *Flora Lapponica* (1812), *J. sylvaticus* is described, its chief characteristic being its mucronulate perianth segments. Wahlenberg refers to Willdenow's *J. sylvaticus*, to Schrank's and Hoppe's *J. subnodulosus* and others. He gives the habitat "locis uliginosis et

paludosis per partem sylvaticam totam omnium Lapponiarum frequenter" and adds "multum altius hyperboream versus adscendit quam sequens species." In his *Flora Upsaliensis* (1820) he also mentions *J. sylvaticus*, but he further describes a new type belonging to the same group under the name *Juncus nodulosus*. The description of *J. sylvaticus*, as well as its synonyms, are to some extent altered, so that Wahlenberg's description now apparently refers to some form that is more closely related to *J. lampocarpus*. A good description is given of the new *J. nodulosus*, stress being laid upon the obtuse inner perianth segments and the long mucronulate capsule. As a synonym *J. subnodulosus* is given, to which in 1812 was referred by his description of *J. sylvaticus*. That Wahlenberg by the name *J. sylvaticus*, in the year 1812, really meant to indicate a *J. alpinus*-form is verified in *Flora Suecica* (1826), where he refers to *J. sylvaticus* 1812 as a synonym of *J. nodulosus*. This seems to be the reason why the species *J. sylvaticus*, which is never found in Scandinavia, has appeared in Swedish floristic literature up to quite recent times.

At the same time as Wahlenberg gave the name to and described *J. nodulosus*, C. J. Hartman published some very good diagnoses of the same plant under the name *J. rariflorus*. His species is characterised by erect branches in the panicle, umbels with 2-4 flowers, and by obtuse perianth segments which are shorter than the mucronate capsule. Besides the main form he describes a variety β *obtusatus* with obtuse capsules and larger flowers which is said to occur in the Lule Lapp-district. In a supplement to the synonyms (*l.c.*, p. 451) he points out that his *J. rariflorus* is identical with Wahlenberg's *J. nodulosus*—a remark of special interest in connection with the question of priority of these names.

J. nodulosus differs from *J. alpinus* not only in the shape and size of the umbels but also in the shape of the capsules. The umbels are generally few-flowered (2-5 up to 10-flowered), often less numerous than those of *J. alpinus*. The essential difference between these two types is, however, that solitary, or in some cases, numerous flowers in the umbels of *J. nodulosus* are distinctly pedicelled. The capsules vary very much in shape but are generally oblong, up to 4 mm. in length, gradually tapering and with a very short mucro or none at all. But occasionally we find specimens with shorter and more obtuse capsules, with a more distinct mucro. Such types often have dark flowers and are no doubt the types that have suggested Hartman's description of β *obtusatus*. They are not, however, confined to the northern part of Scandinavia.

Many authors (Buchenau 1890, etc., Pugsley 1931) have attached special value to the colour of the flowers and the capsules in their taxonomic treatment of these types, but that point of view cannot be maintained, seeing that in actual fact the colour shows a very wide variation. Moreover the shape of the capsule and such characteristic features cannot possibly serve any useful taxonomical purpose in the classification of *J. nodulosus*.

Thus *J. rariflorus* and its var. *obtusatus* in the first edition of Hartman's *Flora* are (as specimens in the herbaria in Upsala and Stockholm

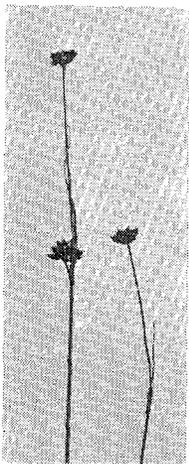


Fig. 2. *Juncus alpinus*, var. *fuscoater* (Celakovsky) Buch., from Martebo, Sweden.

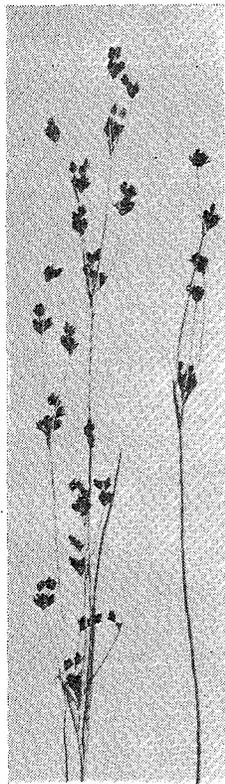


Fig. 4. *Juncus alpinus*, var. *rariflorus* (E. Fries) Hartman, from Stehag in Scania (left) and from Garpenberg in Dalecarlia (right).



clearly show) exactly identical with *J. nodulosus* Wahlenb., and partly identical with *J. ustulatus* in the second and third editions and *J. alpinus* in the following. The variety *rariflorus* of *J. alpinus* is identical in the later editions of this Flora with Wahlenberg's species. Hartman, in the latest editions of his flora, as well as Neuman (1901) and Lindman (1918, 1926), have overlooked the peculiar differences between *J. alpinus* Villars and *J. nodulosus* Wahlenberg.

Concerning the taxonomic value of this type it may be mentioned that a few isolated cultures have been made in order to get an idea of its constancy. Material was obtained, as already mentioned, from north-western Scania. Forms with distinctly pedicelled flowers and oblong capsules produced in their non-isolated descendants even forms with rich-flowering umbels and almost sessile flowers. The colour of the capsule varied very much in the cultures from light brown to black. It has already been pointed out how Mr Holmberg, the late Conservator of Lund, at Nosaby in Scania discovered numerous intermediate forms between *J. nodulosus* and *J. fuscoater* in a locality in which both these species were found and how he came to the conclusion that these forms were hybrids between these two species, showing a slightly but definitely diminished fertility. This renders it somewhat inconvenient to retain *J. nodulosus* and *J. fuscoater* as separate species, and this idea is supported by the occurrence of quite a number of intermediate forms in the herbaria from regions where these species occur together.

J. nodulosus has a very wide distribution within Scandinavia and Finland and reaches the coastal areas of the Arctic Ocean. It seems to be quite rare in Iceland and Greenland, but occurs more abundantly in Canada and the northernmost part of the United States. I am inclined to refer Buchanan White's specimen gathered at Blair Atholl in the Highlands of Scotland to this species. Pugsley says that the specimen in herb. Marshall is almost certainly conspecific with his *J. Marshallii*, but I do not agree with him, for, in examining also the material of Buchanan White's plant in Dr Druce's herbarium, I noticed that the Blair Atholl plant had more acute capsules, often of a pale or light brown colour and agreed very well with some Scandinavian forms which undoubtedly must be referred to *J. nodulosus*. But I must point out that the determination of this specimen will ever be quite vague. There are also certain other specimens among the British material I have seen, which incline me to suppose that *J. nodulosus* must be present in Britain.

JUNCUS MARSHALLII Pugsley.

In the November number of the *Journal of Botany*, 1931, H. W. Pugsley has drawn our attention to a hitherto neglected type belonging to this group, which he has named *Juncus Marshallii* and of which he gives a good diagnosis. He characterises it especially as possessing an irregularly branched panicle with few and small umbels and distinctly pedicellate flowers, about 2 mm. long, partly sessile. The capsule is small, scarcely reaching above the perianth. Pugsley mentions that his

new species is fairly closely related to *J. nodulosus* Wahlenb., but that it is distinguished from the latter by its smaller and darker flowers and its shorter and more obtuse capsules. In connection therewith Pugsley discussed *J. nodulosus* and its taxonomic characters, to which indeed he gives too extreme a characterisation, influenced apparently by the description that Lindman (1926) gives of the plant. It has here been pointed out that the shape of the *J. nodulosus* capsule varies a good deal, and this Hartman (1820) had already remarked. The length of the capsules varies from 2.6 mm. up to about 4 mm., with numerous short forms in the northern part of Scandinavia as well as in the south-eastern parts, the latter character probably due to some influence of *J. fuscoater*.

On the other hand the very good material to be found in Scandinavian herbaria representative of Pugsley's new species shows that the typus from north Scotland upon which the diagnosis has been based (like the *J. alpinus* and the *J. nodulosus* of Scotland) has an extremely small capsule, in this case between 2.1-2.3 mm., while that of other Scandinavian and Icelandic specimens in most cases is much bigger and reaches about 2.6 mm. With reference to this character all transitions between the long-fruited *J. nodulosus* and *J. Marshallii* occur, the intermediate forms being often referred to Lindman's form *J. nodulosus*, f. *dissolutus*. This would indicate that Pugsley's new species is very probably more closely related to *J. nodulosus* than it was at first supposed to be.

But a close relationship is also demonstrable between *J. Marshallii* and Hartman's *J. alpestris*, the small dark-flowered alpine and arctic form. The latter attains, in some cases, to the height of the fully developed *J. Marshallii* and then often shows the same type of panicle though the flowers are mostly still sessile and even somewhat larger. In other cases we find small forms of *J. alpestris* with smaller flowers than usual and with one or two shortly but distinctly pedicelled flowers.

It does not seem at all advisable therefore to keep Pugsley's species separate from the others here mentioned, and I do not think it is out of the question that it might equally correctly be classified directly under the var. *rariflorus* (*J. nodulosus*) as a sub-variety.

After studying the available material of this type from the herbaria in Stockholm, Upsala, Lund, Oslo, Bergen, and København, and after having seen British specimens of the plant in the Cambridge herbarium and in Dr Druce's herbarium, I should like to characterise it qualitatively in the same way as Pugsley, with particular reference to its partly sessile and partly long pedicellate flowers and to its relatively short and dark capsules and flowers; quantitatively, however, I intend to supplement his data regarding the length of flowers, anthers and capsules.

This interesting type has a rather distinct distribution, occurring frequently within the atlantic districts of north-western Europe, where it is found in north Scandinavia, Iceland and Scotland (rare). It seems to be of a little more atlantic character than the other types. It may

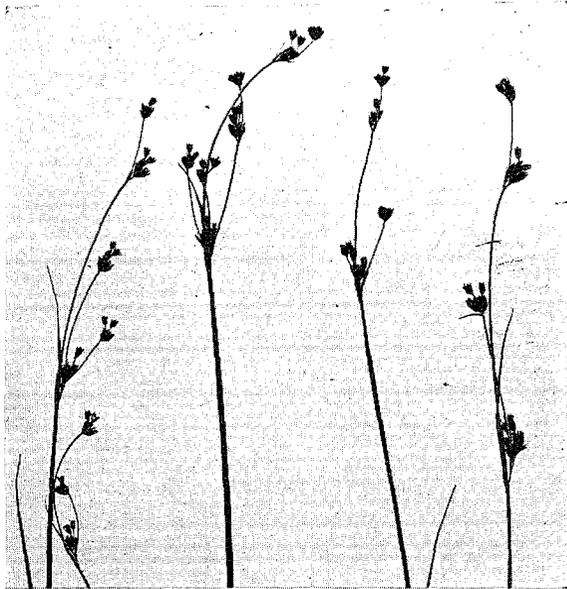


Fig. 5. *Juncus alpinus*, var. *Marshallii* (Pugsley) Lindquist.
The three specimens to the left from Loch Ussie, in Scotland,
that to the right from Rimarvatn on Iceland.



be remarked that I cannot accept the specimen No. 27780 collected at Newfoundland by Fernald and referred to by Pugsley as belonging to this type, nor the plant collected by Buchanan White at Blair Atholl in Scotland. Both ought to be referred to *J. nodulosus*.

JUNCUS ALPESTRIS Hartman.

C. J. Hartman gave, in conjunction with his description of *J. rariflorus*, a diagnosis to a related type which he named *J. alpestris*. He distinguished this from *J. rariflorus* by its rich-flowered umbels and by its simpler panicle with few umbels. Kvikkjokk is named as the locality for this type. In the following edition of Hartman's Flora this species was reduced to a variety and called *J. ustulatus* β *alpestris*; in the fourth edition it was omitted altogether, though it was mentioned that sometimes *J. alpinus* varied with rich-flowered dark brown umbels when it is identical with *J. alpestris* Hartman 1820. The same note appears in the fifth edition of the same flora, in which a further variety, γ *uniceps*, is distinguished with the diagnosis "one or two inches with 1-2 small umbels at the top." In the eleventh edition of Hartman's Flora (1879) we find the species from 1820 noted as *J. alpinus*, var. *alpestris*, but in the twelfth it has entirely disappeared, and only *f. uniceps* is representing these types. In modern Swedish literature *J. alpestris* Hartman is noted only by Lindman, who (1918) names it *J. alpinus*, sub-sp. *mucroniflorus* and (1926) *J. nodulosus*, var. *rariflorus*, a name by which Hartman never intended to denote this plant.

As just mentioned, Hartman's species is characterised chiefly by its reduced umbellate panicle. The branches of the panicle are often erect or subarcuate and terminate in a rich-flowered umbel from the basis of which another branch sometimes develops. The flowers are generally dark brown to black, subsessile or with solitary shortly pedicellate flowers.

J. alpestris is not quite so characteristic as the other here-studied types. Morphologically and taxonomically it is closely related to *J. alpinus*, from which it is distinguished by the much reduced umbellate panicle and the sometimes shortly pedicellate flowers. Moreover, it often has slightly wider bracteoles than the other species. It seems to change into *J. alpinus* often without any real limit and intermediate forms between these two types are not rare in Scandinavia. The *J. alpinus* in England shows, in some cases, a close relationship to *J. alpestris*. On the other hand *J. alpestris* also closely resembles *J. Marshallii* Pugsley in the size of the flowers and specially in the type of the panicle. It may further be mentioned that this type is sometimes difficult to distinguish from small forms of *J. alpinus*, var. *rariflorus*, *f. grandiceps*.

In the second edition of Wahlenberg's *Flora Suecica* (1833) Laestadius describes a variety of *J. nodulosus* which he calls var. *biceps* et *uniceps* and about which he says that its flowers are placed together in one or two umbels and that it occurs near Karesuando in north Sweden.

Laestadius' variety has always been regarded as a good variety and sometimes even as a species. A study of its forms and their relation to *J. alpestris* shows, however, that it is very closely connected with this type, into which it directly changes even on the same rhizome. This is good reason therefore to regard this plant as only a form under var. *alpestris*, and call it var. *alpestris*, f. *uniceps* Hartman.

JUNCUS ANCEPS Laharpe and **J. ATRICAPILLUS** Drejer ap. Lange.

These two species are not known as British although they are in a certain sense extreme atlantic flora-elements. *J. anceps* is distributed through France, Italy and north-western Africa, and *J. atricapillus* from Sweden (very rare) and western Denmark along the western coast of the European continent to the west-Mediterranean areas. Although *J. atricapillus* is very closely related to *J. alpinus* and *J. fuscoater* and where they are in touch with each other give rise to several hybrids, they are in several specific characters so taxonomically separated from the *J. alpinus* form that I consider it most convenient to put those two forms taxonomically separate from *J. alpinus* and *J. fuscoater*. *J. anceps* and *J. atricapillus* differ mainly from the others in the length of the anthers and in the shape and size of the capsules and also, in general, in the type of the panicle. Even their distribution area is quite separate from that of the other types. They need not here be further discussed, but references are given to the full description of these types.

- A. Antherae longae, 0.6-1.3 mm., capsula matura, 2.2-2.6 mm. longa, 0.9-1.1 mm. lata, oblonga-ovata, breviter acuminata, distincte mucronata.
1. Caules et inflorescentia robusta, antherae 0.9-1.3 mm. longae, capsula fulva, 2.3-2.6 mm. longa, 0.9-1.1 mm. lata. *J. anceps*.
 - a. Inflorescentia contracta, ramulis brevibus. f. *coarctatus*.
 - b. Inflorescentia dissoluta, ramulis longis. f. *hercegovinus*.
 2. Caules et inflorescentia minus robusta, antherae 0.6-0.9 mm. longae, capsula castanea vel fuscoatra, 2.5-2.8 mm. longa, 1.0-1.1 mm. lata. var. *atricapillus*.
 - a. Inflorescentia contracta, subcapitata, ramulis brevibus. f. *congestus*.
 - b. Inflorescentia dissoluta, ramulis longis. f. *sparsiflorus*.
- B. Antherae breves, 0.3-0.7 mm., capsula matura vulgo majora, (2.2)-2.6-3.9 mm. longa, 1.2-1.6 mm. lata, obovata, oblongo-ovata vel oblonga.
1. Capsula plerumque obovata, 2.3-2.8 mm. longa, 1.3-1.6 mm. lata, perigonia paullo longiora, distincte mucronata.
 - a. Inflorescentia contracta, ramulis brevibus. *J. alpinus*, var. *fuscoater*, f. *subatricapillus*.
 - b. Inflorescentia non contracta. var. *fuscoater*.
 2. Capsula oblongo-ovata vel oblonga, (2.2)-2.6-3.9 mm. longa, 1.2-1.5 mm. lata, perigonium subaequans vel plerumque multo superans, mucro adest, sed minus prominens.
 - a. Inflorescentia decomposita, ± ramifera.
 - i. Flores semper sessiles vel subsessiles *J. alpinus*.
 - ii. Flores ± pedicellati.
 - † Flores pedicellati, saepe numerosi.



Fig. 6. *Juncus alpinus*, var. *alpestris* (C. J. Hartman) C.
Hartman, from Dovre in Nørway.



- §. Flores fere omnes aequaliter pedicellati, pallescentia vel castanea, capsula perigonium plerumque multo superans.
var. *rariflorus*, f. *dissolutus*.
- §§. Flores 2-6, aequaliter pedicellati, reliqui sessiles vel subsessiles, fuscoatra, capsula perigonium vulgo subaequans. var. *Marshallii*.
- §§§. Flores fere omnes inaequaliter pedicellati, capitulis magnis. var. *rariflorus*, f. *grandiceps*.
- †† Flores 1-3, distincte pedicellati.
- §. Capsula oblonga—oblongo-ovata, pallida vel castanea. var. *rariflorus*.
- §§. Capsula obtusior, oblongo ovata, atrofusca.
var. *rariflorus*, f. *obtusatus*.
- b. Inflorescentia simplex umbellata, uni vel bicapitata. Capitula magna.
- i. Capsula oblonga, perigonium multo superans.
var. *rariflorus*, f. *grandiceps*.
- ii. Capsula oblongo-ovata, obtusa, fuscoatra, perigonium paullo superans.
† Inflorescentia capitulis 3-8, flores interdum pedicellati. var. *alpestris*.
- †† Inflorescentia capitulis 1-2 (3), flores sessiles vel subsessiles. var. *alpestris*, f. *uniceps*.
- c. Planta pygmaea, capitula pauciflora vulgo unica.
- i. Antherae et capsula ut in A.2. var. *atricapillus*, f. *pumilus*.
- ii. Antherae 0.4-0.7 mm. longi, capsula obovata, mucronata.
var. *fuscoater*, f. *acicularis*.
- iii. Antherae 0.4-0.7 mm. longi, capsula oblongo-ovata, mucronata. var. *alpinus*, f. *nanus*.
- iv. Antherae 0.4-0.7 mm. longi, capsula oblonga, plerumque non mucronata. var. *rariflorus*, f. *pygmaeus*.

JUNCUS ANCEPS Laharpe, 1827.

Syn.: *J. sylvaticus*, var. *b. anceps* Cosson et Durieu, 1854-67.

J. anceps, var. *genuinus* Buchenau, 1883.

J. atricapillus, b. *anceps* Richter, 1890.

J. littoralis (Salzman) Duval-Jouve, 1872.

J. fuscoater Pospichal, 1897, non Schreber, 1811.

Perennis. Rhizoma horizontale, longum, pallidum vel fuscum, diam. 3-9 mm. Caules floriferi, robusti, erecti, plerumque compressi, 20-26 cm. alti, 2-5 foliati. Folia basalia vaginiformia; folia caulina laminata, 10-30 cm. longa, subarcuata vel arcuata, vulgo distincte articulata, vaginis saepe compressis, rubescentibus vel pallidis vel fuscis. Inflorescentia decomposita vel supradecomposita, ramis numerosis erectis vel arcuatis, interdum abbreviatis. Bractee florum ovatae vel lanceolatae, aristato-mucronatae, membranaceae, capitulis brevioribus. Capitula plerumque numerosissimi, 3-9-florifera, pallida vel fulva, floribus omnino sessilibus vel subsessilibus. Flores fulvi quam in *Juncus alpino* minores, 2.2-2.6 mm. longi; tepalis aequilongis, externis duris distincte carinatis, mucronatis, internis omnino obtusis destructione marginis membranacei, plerumque specie acutis. Tepala capsulam aequantia vel $\frac{3}{4}$ capsulae superantia. Stamina 6, usque 2 mm. longa, filamenta linearia,

alba, antherae quam in *Junco alpino* longiores, 0.9-1.3 mm. longae. Capsula trigona-elliptica, ovata vel ovato-lanceolata, sensim angustata acuta, fulva saepe quam in var. *atricapillus*, minor, 2.3-2.6 mm. longa, 0.9-1.1 mm. lata, mucrone ca. 0.2 mm. longo. Semina pallida vel fusca, anguste obovata obtusa, 0.4-0.7 mm. longa, rectangulariter reticulata.

Planta atlantica et occidentali-mediterranea; habitat in Gallia, Italia, Algeria et Tunesia.

Forma *COARCTATUS* Lindquist, nov. f. Inflorescentia valde contracta.

Forma *HERZEGOVINUS* Lindquist, nov. f.

Syn.: *J. anceps*, sub-sp. *Herzegovina* Sagorski, 1901.

Planta minus robusta habitu ad var. *atricapillus* vergens. Inflorescentia dissoluta, ramis minus numerosis quam in *Junco ancipite*.

Var. *ATRICAPILLUS* Buchenau, 1883.

Syn.: *J. fuscoater*, sub-sp. *coarctatus* Meyer, 1836 (nomen nudum).

J. articulatus, sub-sp. *atricapillus* Hartman, 1879.

J. alpinus, sub-sp. *atricapillus* Krok, 1889.

J. atricapillus Drejer, 1838 (nomen nudum).

J. atratus Fries, 1842, non Krockner.

J. atricapillus Drejer ap. Lange, 1851.

Caules minus robusti, (10)-15-30-(40) cm. alti, 2 usque 3-foliati. Folia 10-30 cm. longa, stricta vel subarcuata, plerumque distincte articulata. Inflorescentia 1-10-(15) cm. longa, decomposita vel supradecomposita, interdum compacta, ramis numerosis elongatis vel abbreviatis, ± arcuatis. Capitula castanea vel fuscoatra, 2-7-florifera, floribus breviter pedicellatis vel sessilibus. Flores castanei vel fuscoatri, 2.5-2.8 mm. longi quam in *Junco alpino*, paullo minores sed majores quam in var. *ancipite*. Tepala capsulam saepe aequantia vel $\frac{3}{4}$ capsulae superantia. Antherae quam in *Junco alpino* longiores, sed quam in var. *ancipite* minores, 0.6-0.9 mm. longi. Capsula fulva vel fuscoatra vel atra quam in var. *ancipite* major, 2.5-2.8 mm. longa, 1.0-1.1 mm. lata, oblongo-ovata, acuminata, distincte mucronata, mucrone ca. 0.2 mm. longo. Semina ut in *Junco alpino*.

Planta atlantica; habitat in litoribus Europae occidentalis in Suecia (rarissima), in Jutlandia Daniae, in regionibus maritimis Germaniae, Bataviae et Belgiae, in Gallia et Africa occidentali-mediterranea.

Forma *CONGESTUS* Lange, 1856. Inflorescentia contracta, saepe subcapitata.

Forma *SPARSIFLORUS* Lange, 1856, p.p. Inflorescentia ramulis paullo numerosis, elongatis, ± dissoluta.

Forma *PUMILUS* Lindquist, nov. f. Planta pygmaea, usque 15 cm. alta, capitula plerumque unica, pauciflora. Capsula ut in var. *atricapillo*.



Fig. 9. *Juncus anceps*
Laharpe, from Palavais
in France.

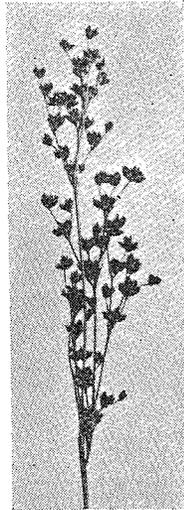


Fig. 7. *Juncus alpinus*, var. *alpestris*
(C. J. Hartman) C.
Hartman, f. *uniceps*
Krok, from Karesu-
ando in northern
Sweden.

JUNCUS ALPINUS Villars, 1787.

Syn.: *J. alpino-articulatus* Chaix, 1786 (nomen nudum).

J. geniculatus v. Paula Schrank, 1789.

J. mucroniflorus Clairville, 1811.

J. intermedius Poiret, 1813.

J. fuscoater Meyer, 1822, Kunth, 1841, non Schreber, 1811.

J. obtusiflorus Eichwald, 1830.

Perennis. Rhizoma breve horizontale, pallidum vel fuscum, non fibrosum, internodiis distinctis, diam. 2-6 mm. Caules floriferi, erecti, teretes vel compressi, 2-5-foliati, (1)-10-40-(60) cm. alti. Folia basalia vaginiformia; folia caulina laminata, 4-10 cm. longa, ± compressa et articulata, canaliculata, vaginis subcompressis, rubescentibus vel pallidis. Inflorescentia decomposita, anthelata elongata, usque (2) 5-20 cm. longa, ramis saepe numerosis, erectis-patentibus. Bracteeae florum late ovatae, aristato-mucronatae, membranaceae, ferrugineae vel fuscae, capitulis brevioribus. Capitula plerumque numerosa, 3-8-flores, pallida vel castanea vel fuscoatra, floribus sessilibus. Flores (2.1)-2.5-3.0 mm. longi, pallidi vel castanei vel fuscoatri. Tepala aequilonga, ovata vel oblongo-ovata, obtusa, marginibus membranaceis, externa dorso carinata et distincte nervosa, margine membranaceo, apicem versus involuto, apice vel prope apicem distincte mucronata, interna omnino obtusa, plana, trinervosa. Tepala vulgo $\frac{2}{3}$ capsulae superantia. Stamina 6, usque 1.5 mm. longa; filamenta linearia, alba; antherae flavae, breves, 0.4-0.7 mm. longae. Capsula trigona, oblongo-ovata vel ovata, obtusa, pallida vel castanea vel fuscoatra (2.2) 2.6-3.1 mm. longa, 1.3-1.5 mm. lata, apicem versus sensim angustata, mucrone brevi. Semina pallida vel castanea, 0.4-0.7 mm. longa, oblongo-ovata, rectangulariter reticulata.

Planta Europae, Asiae et Americae septentrionalis. In Europa media et Scandinavia austro-occidentali frequens; in Scandinavia septentrionali et in Britannia rarior.

Durham (66). Widdy Bank, 1909, G. C. DRUCE (Hb. Dr.); Widdy Bank near Langdon Beck, August 1930, G. C. DRUCE (Hb. Dr.); Winch Bridge, August 1930, G. C. DRUCE (Hb. Dr.).

Kirkcudbright (73). Loch Greenoch, 1910, E. WEST (Hb. Oxon).

Mid Perth (88). Meall na Saone, near Luib, 1889, E. S. MARSHALL (Herb. Cantab.); Meall Chuirn, near Luib, 1889, E. S. MARSHALL (Herb. Cantab.).

E. Perth (89). Glen Shee, 1892, E. S. MARSHALL (Herb. Cantab.).

Easternness (96). Glen Ennich, July 1887, G. C. DRUCE in *Ann. Scot. Nat. Hist.*, 122, 1894 (Hb. Dr.).

Argyll (98). Ben Laigh, 1893, E. S. MARSHALL (Hb. Dr.).

Forma NANUS Neuman, 1901. Planta pygmaea, usque 10 cm. alta, capitula unica, pauciflora.

Var. FUSCOATER (Celakovsky) Buchenau.

- Syn.: *J. lampocarpus*, δ *fusco-ater* Celakovsky, 1867.
J. alpinus, β *fuscoater* Buchenau, 1890.
J. fuscoater Schreber ap. Schweigger et Koerte, 1811.
J. ustulatus Hoppe, 1819.
J. microcarpus Nolte, 1828.

Caules 15-55 cm. alti, 2-3-foliati. Folia 5-20 cm. longa, stricta vel subarcuata, indistincte articulata. Inflorescentia 3-15 cm. longa, decomposita vel supradecomposita, ramis floriferis patentibus. Capitula subrotunda, plerumque atra, floribus numerosis, semper sessilibus. Flores fuscoatri vel atri, 2.4-2.8 mm. longa; tepalis capsulam aequantibus vel $\frac{3}{4}$ capsulae superantibus. Antherae ut in *Juncus alpino*, 0.4-0.7 mm. longae. Capsula fuscoatra vel atra, basi plerumque pallida vel castanea, 2.3-2.8 mm. longa, 1.3-1.6 mm. lata, obovata, apice mucronata. Semina ut in *Juncus alpino*.

Planta Europae orientalis; habitat in Scandinavia australi ut in Oelandia, Gotlandia, Scania et Dania orientalis.

Forma SUBTRICAPILLUS Neuman, 1901. Inflorescentia contracta, subcapitata, ramulis brevibus.

Forma ACICULARIS Lindquist, nov. f. Planta pygmaea, usque 10 cm. alta, capitula plerumque unica, pauciflora. Capsula ut in var. *fuscoatro*.

Var. RARIFLORUS (Fries) Hartman.

- Syn.: *J. nodulosus*, β *rariflorus* Fries, 1828.
J. alpinus, β *rariflorus* Hartman, 1849.
J. articulatus, var. *pelocarpus* Gray, 1856, non Meyer, 1822.
J. alpinus, var. *insignis* Buchenau, 1890.
J. alpinus, var. *affinis* Ascherson & Graebner, 1904.
J. alpinus, sub-sp. *nodulosus* Lindman, 1918.
J. sylvaticus Wahlenberg, 1812, non Willdenow.
J. nodulosus Wahlenberg, 1820.
J. rariflorus Hartman, 1820 (vide Hartman, 1820, p. 451).
J. affinis Brown, 1823.
J. Richardsonianus Schulthess, 1829.
J. ustulatus Hartman, 1832, non Hoppe, 1819.
J. pelocarpus Gray, 1848, non Meyer.
J. elongatus Vasey in herb. apud Engelman, 1868.

Caules (1)-10-30-(45) cm. alti, 2-foliati. Folia 3-20 cm. longa, stricta vel subarcuata, \pm articulata. Inflorescentia 3-18 cm. longa, decomposita, ramis erectis vel patentibus. Capitula pallida vel castanea vel raro fuscoatra, minus numerosa, 2-5-(10) florifera, floribus perpauca distincte pedicellatis, pedicellis usque 4 mm. longis. Flores pallidi vel castanei, 2.6-3.0 mm. longi. Capsula tepalis usque $\frac{1}{2}$ - $\frac{1}{2}$ superans. Antherae ut in *Juncus alpino*, 0.4-0.7 mm. longae. Capsula pallida vel castanea vel interdum fuscoatra, oblonga vel oblongo-ovata, sensim



Fig. 8. *Juncus anceps* Laharpe, from Piccino di Palazzetti in Italy.

angustata, indistincte mucronata, 2.6-3.9 mm. longa, 1.3-1.5 mm. lata. Semina ut in *Juncus alpino*.

Planta borealis circumpolaris; habitat in Scandinavia, Fennia, Britannia (rarissime), Islandia, Groenlandia et America septentrionali.

E. Perth (89). Blair Atholl, 1887, F. BUCHANAN WHITE (Herb. Dr.).

Forma *OBTUSATUS* Lindquist, nov. f.

Syn.: *J. rariflorus*, β *obtusatus* Hartman, 1820.

Capsula obtusa, atra, 2.6-3.1 mm. longa. Flores atrorubentes. Habitat in Scandinavia septentrionali, in Fennia et in America septentrionali, verisimiliter etiam alibi.

Forma *DISSOLUTUS* Lindman, 1918. Flores fere omnes longe et aequaliter pedicellati. Capsula pallescens vel castanea, perigonium plerumque multo superans.

Forma *GRANDICEPS* Lindquist, nov. f. Inflorescentia simplex vel umbellata. Capitula magna, floribus fere omnibus inaequaliter pedicellatis. Capsula oblonga, perigonium multo superans.

Forma *PYGMÆUS* Lindquist, nov. f. Planta pygmaea, usque 10 cm. alta, capitula pauciflora, vulgo unica. Capsula oblonga, pallida vel castanea, indistincte mucronata.

Var. *MARSHALLII* (Pugsley) Lindquist, nov. var.

Syn.: *J. Marshallii* Pugsley, 1931.

Caules graciles, erecti, 1-2-foliati. Inflorescentia decomposita, usque 10 cm. longa, ramis floriferis rectis vel flexuosis, capitulis 1-8-floris. Flores nunc subsessiles, nunc usque 6 mm. pedicellati. Flores minimi, 2.0-2.6 mm. longi, castanei vel fuscoatri, tepala subaequilonga. Antherae minimae, 0.3-0.6 mm. longae. Capsula 2.1-2.6 mm. longa, obovata, obtusa, mucronata, fuscoatra vel atra, tepala subaequans vel paullo superans.

Planta borealis; habitat in Scandinavia septentrionalis, praecipue in Norwegia occidentalis, in Islandia et rarissime in Scotia.

E. Ross (106). Loch Ussie, 1892, E. S. MARSHALL (Herbs. Cantab. and Dr.).

Var. *ALPESTRIS* (C. J. Hartman) C. Hartman, 1879.

Syn.: *J. ustulatus*, β *alpestris* Hartman, 1832.

J. alpinus, α *genuinus* Buchenau, 1890.

J. alpinus, var. *mucroniflorus* (Clairville) Ascherson & Graebner, 1904.

J. nodulosus, var. *rariflorus* Lindman, 1926, non Hartman.

J. alpinus, sub-sp. *mucroniflorus* (Clairville) Lindman, 1918.

J. alpestris Hartman, 1820.

Caules (10) 15-25 cm. alti, 1-2-foliati. Folia 1-5 cm. longa, erecta vel subarcuata, saepe distincte articulata. Inflorescentia 1-6 cm. longa, umbellata, ramis erectis vel patulis, plerumque paullo arcuatis; in f.

unicapite capitula vulgo unicapitata vel bicapitata. Capitula fuscoatra vel atra, 4-10-florifera, floribus sessilibus vel raro singularibus, breviter sed distincte pedicellatis. Flores fuscoatri, 2.7-3.2 mm. longi, petalis capsulam parum sed distincte superantibus. Antherae 0.4-0.7 mm. longae. Capsula fuscoatra vel atra, 2.9-3.2 mm. longa, 1.3-1.5 mm. lata, late-ovata—oblongo-ovata, breviter mucronata. Semina ut in *Junco alpino*.

Planta arctica et alpina; habitat in Scandinavia et Fennia septentrionali, in Islandia, Groenlandia et America septentrionalis, necnon in Alpibus satis rare.

Forma UNICEPS Krok.

Syn.: *J. alpinus*, f. *uniceps* Hartman, 1889.

J. alpinus, f. *uni-biceps* Neuman, 1901.

J. nodulosus, β *biceps* et *uniceps* Laestadius ap. Wahlenb., 1833.

J. nodulosus, var. *biceps* Laestadius, 1839.

J. alpinus γ *uniceps* Hartman, 1849.

J. lampocarpus, var. *pygmaeus* Buchenau, 1890, non Salis-Marschlin, 1833.

J. alpinus, var. *Requienii* Richter, 1890.

J. Requienii Parlatores, 1852.

Planta 2-15 cm. alta, 1-foliata, uniceps vel biceps, ramis erectis strictis. Distributio ut in var. *alpestris*; etiam in Corsica.

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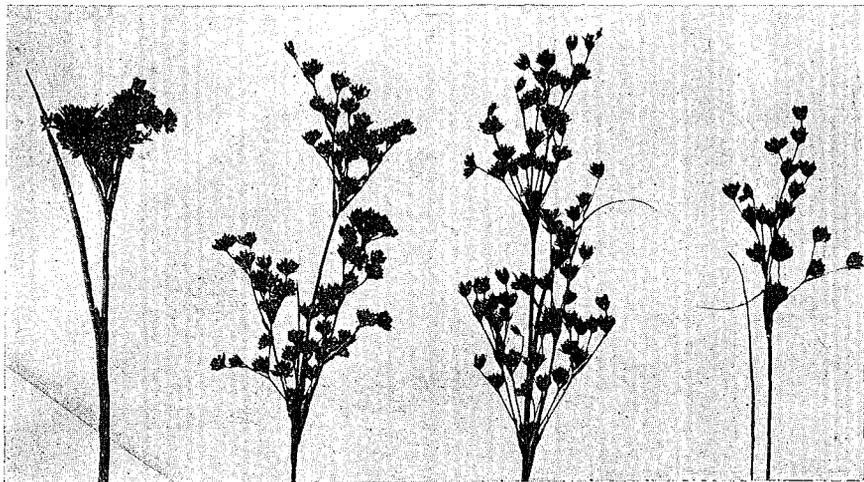


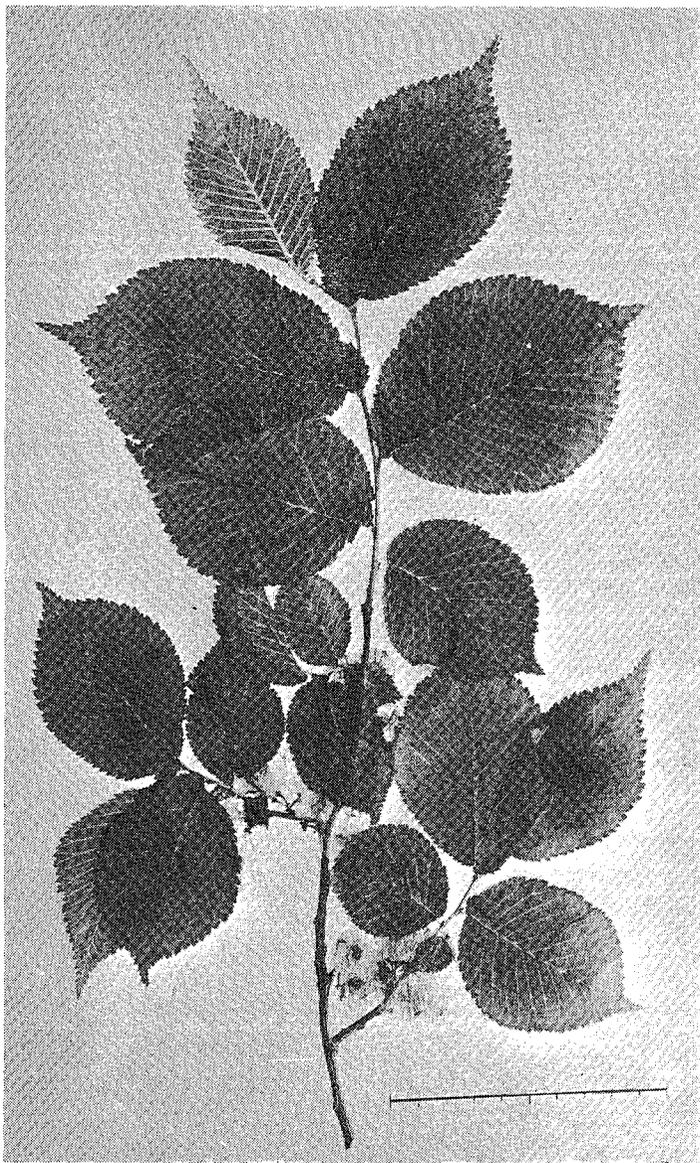
Fig. 10. *Juncus anceps*, var. *atricapillus* Buch. To the left *f. congestus* Lange, from Faarupklit, in Denmark; in the middle, two specimens of the real var. *atricapillus*, and to the right the *f. sparsiflorus* Lange, all from Dagstorp, in Scania.

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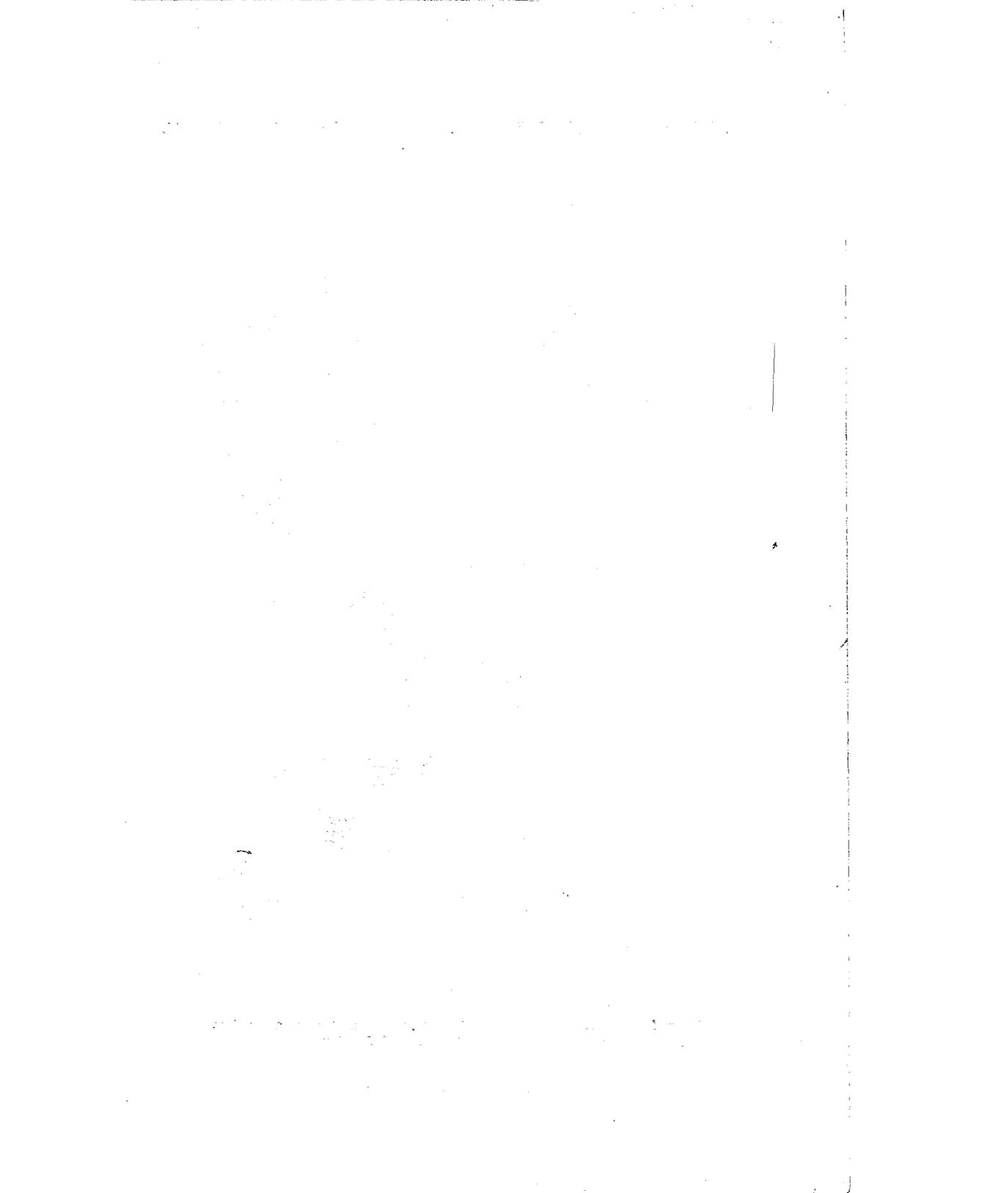
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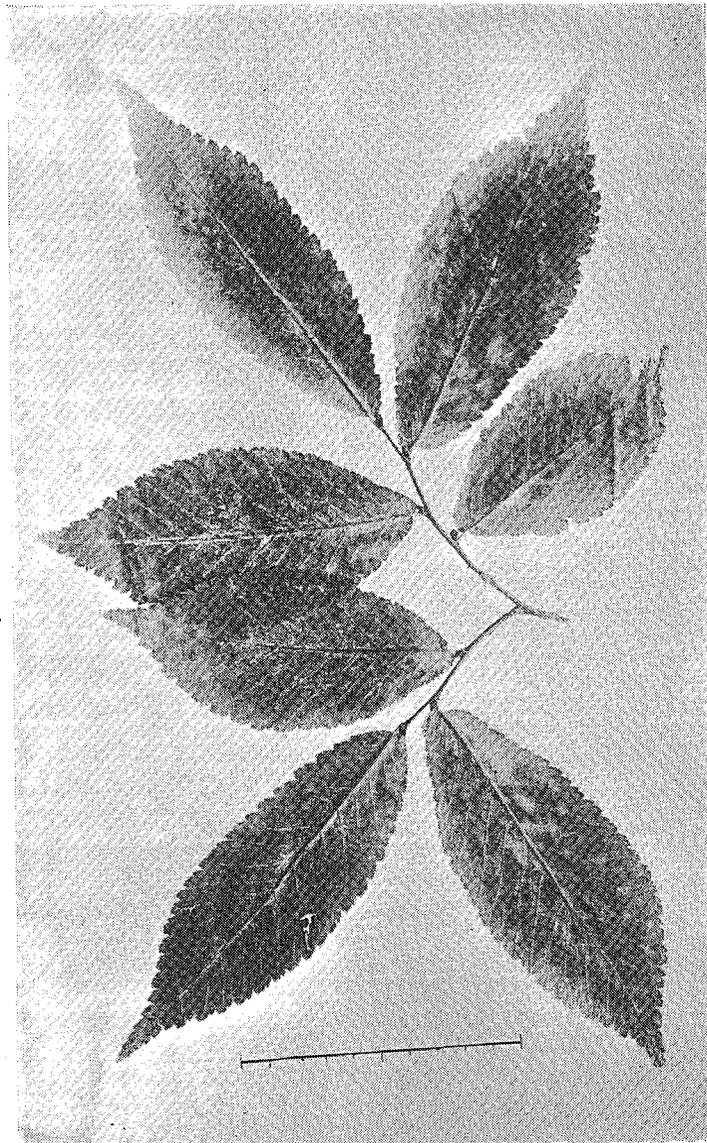
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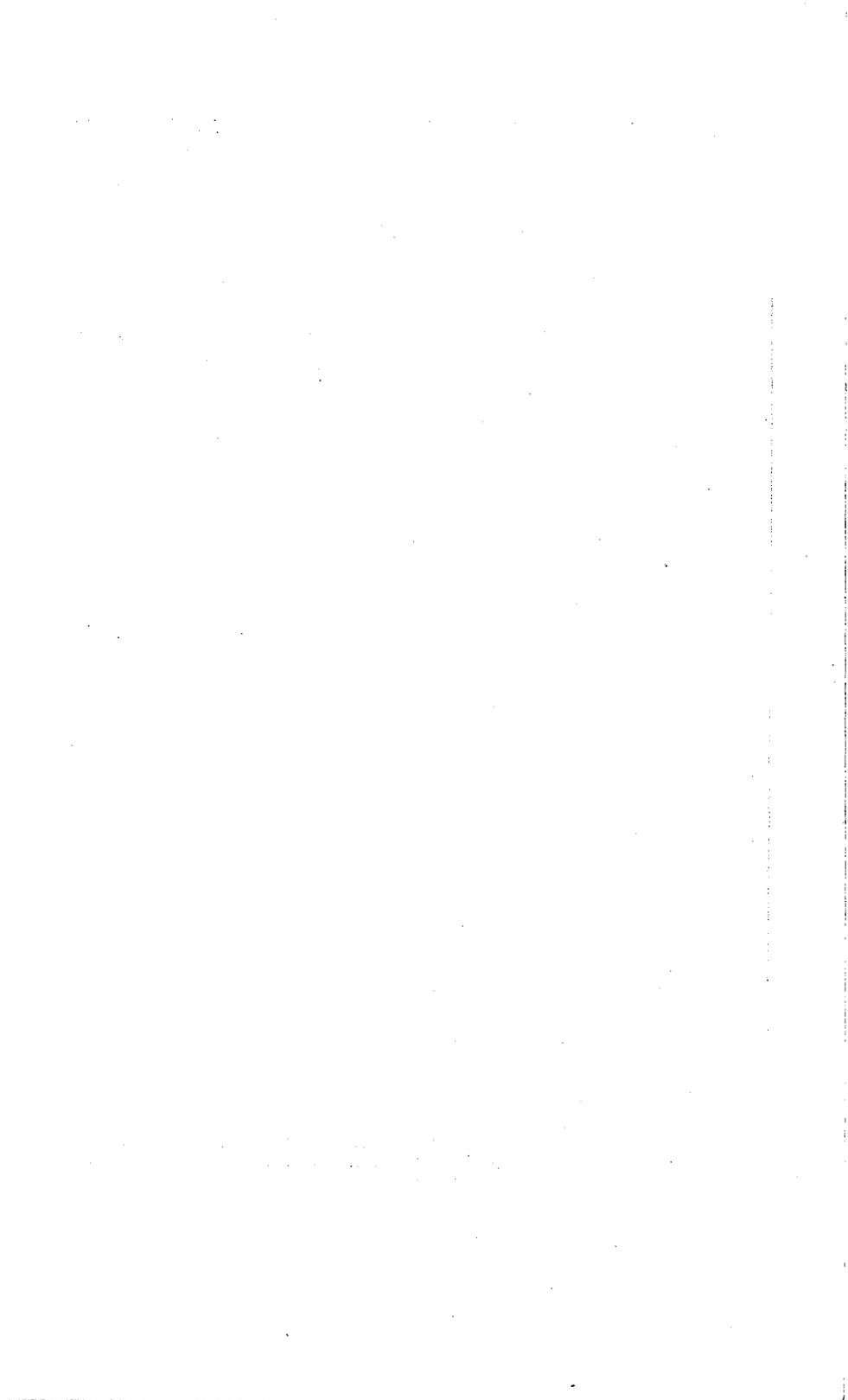


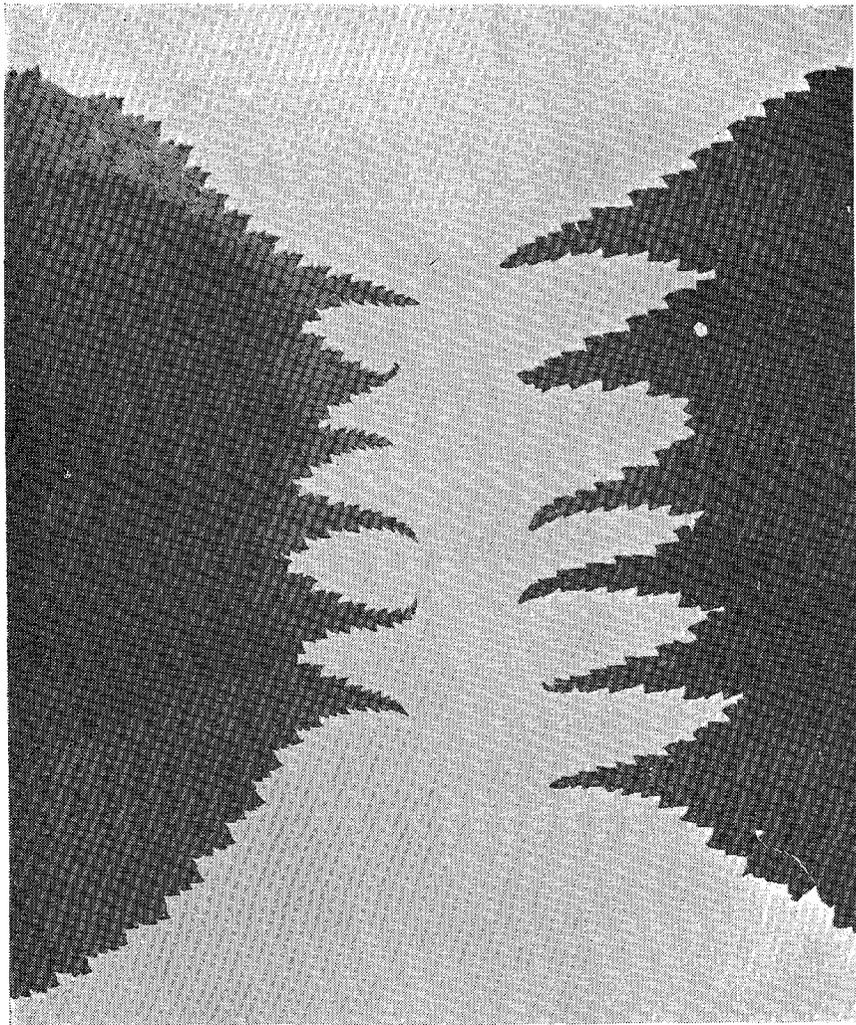
Ulmus glabra, var. *scabra* Lindquist, nov. var. Extremely broad-leaved form, from Vallstena : Aloena on the island Gotland, Sweden.





Ulmus glabra, var. *montana* Lindquist, nov. var. Extremely narrow-leaved form, from Offerdal, Jamtland, Sweden.





Leaves of Elms showing differences in the serrature. To the left var. *scabra*, from Skaralid, in Scania, Sweden; to the right var. *montana*, from Skikkisjoberget, in Lapponia, Sweden.

TWO VARIETIES OF NORTH-WEST EUROPEAN ULMUS
GLABRA HUDSON.

Dr BERTIL LINDQUIST.

The species *Ulmus glabra* Hudson must be regarded as a highly polymorphic species, due mainly to the intense cultivation of this tree during late historic times. The *spontaneous* North-west European forms of this species seem, however, to be less polymorphic. As a result of an investigation into such forms, based on a large statistic material, it was found that two extreme types of *Ulmus glabra* could be distinguished, differing systematically in several mean characters. Thus, one of them, which is here called var. *scabra*, is characterised by its hairy, 2-5-year-old twigs and its very broad, thin, and almost acutely-serrate leaves; the other, which is here called var. *montana*, by its almost glabrous, 2-5-year-old twigs with several lenticels and its quite narrow, thick, and almost obtusely-serrate leaves. These types are considered to be real varieties of the species (= *U. glabra*), with fertile hybrids and with numerous intermediate forms. They seem to have well-separated distribution areas in North-western Europe: var. *scabra* occurring in middle Europe and northwards to Denmark, south and middle Sweden and Finland; var. *montana* in north England and Scotland and also in northern and western Norway and in northern Sweden. In another paper published in Swedish there will be brought evidences for the supposition that the North Swedish elm must have migrated into Sweden from England via Norway and not from middle Europe via South Sweden. There will be several hybrids between these two types of elm also within areas where only one of them occurs spontaneously, due to the fact that both types during the last three centuries have been widely planted in British as well as Middle-European, Danish, and Swedish gardens.

Short Latin diagnoses are here given for these varieties:—

Ulmus glabra, var. *scabra* Lindquist, nov. var.

Verisimiliter synonymae: *U. campestris* L., 1753, p.p. *U. scabra* Miller, 1768. *U. major* Reichenbach, 1850, non Smith, 1812. *U. tridens*, *U. germanica* Hartig, 1851. *U. scabra* sub-sp. *major* Koch, 1872 (?).

Arbor cortice saepe tenue, ramulis junioribus (2-5-ennibus) ± pubescentibus, lenticellis paucis. Folia lato-ovata, distincte acuminata, tenuia, exsiccata circ. 30-100 μ .

Ulmus glabra, var. *montana* Lindquist, nov. var.

Verisimiliter synonymae: *U. campestris* Miller, 1768. *U. montana* Stokes, 1776; Smith, 1807; Reichenbach, 1850. *U. scabra* sub-sp. *montana* Koch, 1872 (?).

Arbor cortice saepe crassiore, ramulis junioribus (2-5-ennibus) subglabris vel glabris, lenticellis saepe numerosis. Folia lanceolata—lanceolato-ovata, apicem versus sensim angustata, indistincte acuminata quam in praecedente crassiora, exsiccata circ. 80-240 μ .

TEN DAYS IN COUNTY KERRY.

GERTRUDE FOGGITT.

Kerry is a favoured land, with a flora as interesting as the scenery is enchanting. It was in search of some of her unique treasures, more especially certain of the *Hieracia*, and the *Saxifrages* of Brandon Mountain, that we made a ten days' expedition thither in June of last year. The better to accomplish our purpose we took our gar with us—a very wise proceeding as it proved, for distances are considerable, and trains, even when they exist at all, are of the slowest and fewest. We found it easy enough to transport a car to the Free State, entailing only the filling up of innumerable forms and the deposit of £10, speedily returned, while the main roads proved to be excellent, and even the by-roads not too bad.

We crossed to Kingstown, and the first night was spent at Limerick, which gave us the opportunity of seeing the acres of *Scirpus triquetus* beside the Shannon, right in the town itself. It was delightful to see the plant in quantity and all fresh and clean, having before only paddled in Thames mud for a few dirt-encrusted specimens, or narrowly escaped sliding down the steep slippery banks of the Medway or the Arun. There seemed to be no *Scirpus carinatus* with it at Limerick, the reason, I suppose, being that the other parent, *S. lacustris*, is here replaced by *S. Tabernaemontani*.

Then on to lovely Killarney, where the paler foliage of the *Arbutus* (in red berry) stood out conspicuously among the other trees. *Euphorbia hyberna* fringed the roadsides; both *Hymenophyllums* hung from rocks all starred with *Saxifraga Geum* and *umbrosa*, and quantities of *Neottia Nidus-avis* of quite enormous size grew beneath the woods. Also there was the Killarney Fern in quite delightful quantity, but, perchance, it were wiser to give no nearer direction. One of our first objectives was the Laune River, where we sought for *Potamogeton nitens*. We tried for it in several places, finding the plant in many forms, but it was either not flowering at all or the flowers had been eaten off, and only near Beaufort Bridge did we hit on one perfect specimen.

We did not stay at Killarney, but continued on that same day by the finest drive, surely, in Ireland, through Windy Gap with its glorious view of the Reeks, to Kenmare, where we made the comfortable Great Southern Hotel our headquarters for three days. Our first excursion was to the Lower Lake of Cloonee for *Sisyrinchium angustifolium*, there in great abundance and beauty. *Elatine hexandra* was on the shore, and *Bartsia viscosa* along the edge. Two days later was a longer excursion to Derrynane, by Blackwater Bridge and Sneem, between hedger glorious with *Fuchsia* and thickets of *Osmunda*. *En route* we halted

by the long narrow roadside Lough of Fadda, where *Eriocaulon septangulare* was in abundance and *Isoetes echinospora* showed star-fish like beneath the water in the shallow parts. In a bog on the opposite side of the road was *Utricularia minor* in quantity.

We stopped near the school-house at Glenlough for *Carex punctata*, which we knew grew in a marshy field there, and at a wayside marsh at Castle Cove, where the American "Tear-thumb" (*Polygonum sagittatum*) yet lingers. Originally introduced in American grain at a mill now long since disappeared, it still persists, and, oddly enough, has worked its way upstream at least a mile to wet meadows above, whose stone and turf hedges are fringed with *Lastraea aemula*, and where *Osmunda* grows in forests. As we neared Derrynane we began to see *Simethis bicolor* among the smooth grey rocks on the landward side, and as we turned the corner at West Cove it was in really great plenty just off the road. It is pleasant to note that so rare and beautiful a plant runs no risk of extermination. *Asplenium marinum*, *Carex extensa*, and other uncommon sea plants were on the coast hereabout.

But it was to hunt *Hieracia* that we had primarily come to Kenmare, and by a most merciful dispensation of Providence the rarest of these seem to frequent certain bridges in the neighbourhood which afford well-marked localities easy to identify. Morley's Bridge over the Roughty River was our first objective, a high and beautiful structure gracefully spanning a swift and rocky stream. Here was growing *H. sparsifolium*, but we looked almost fruitlessly for *H. Scullyi*, there recorded. At Poulgorm Bridge, another very lofty structure over the Clydagh, *H. sparsifolium*, var. *oligodon* (Linton), was obtained almost at risk of one's neck, but we had to retrace our steps to Drohidnagower Bridge, again over the Roughty, before we found *Scullyi*—a most attractive plant—in quantity.

That afternoon we left the high road at Blackwater Bridge and embarked on a beautiful but exciting track which led us up and up among the mists to Ballaghbeama Gap—a very high pass among the mountains, where *Saxifraga hirsuta* and *Pinguicula grandiflora* grew upon the dripping rocks. From here the road dropped down, in desolate country, to Bealalaw Bridge over the Caragh River, Glencar. On this bridge *H. orimeles* lives a lonely life, but in profusion.

But our chief objective was the ascent of Brandon Mountain for the famous Saxifrages there only to be found. For this expedition our party was reinforced by those indefatigable hunters, Lady Victoria Russell and Miss Vivian, and we shifted our headquarters to Dingle, a remote and typical Free State town. Brandon Mountain, 3127 feet high, stands a mighty rampart to the south-east coast of Kerry, and is dedicated to the famous Irish saint Brandon (or Brendon), for whom it is claimed that he discovered America a thousand years before Columbus was ever thought of.

It was certainly a coincidence that of all the days of the year we should have hit—all unknowingly—upon St Brandon's day (June 29) to ascend his particular hill. It proved a day of rare beauty in a season

when fine days were few, and we motored out to the little village of Ballybrack, from which the ascent begins, and breasted the hill whose grassy slopes seemed destitute of any flowers whatsoever. Unwittingly we marvelled at the well-marked track up this desolate mountain and the huge cairn of stones a few hundred feet below the summit, to which we also (luckily as we afterwards thought) were minded to add our tribute. After this the ascent became steep and toilsome, but soon Miss Vivian spied under a rock the first of the four treasures we came to seek, *Saxifraga sponhemica*. Soon after this the summit came into view with its Holy Well and cairn, on and around which was growing *Saxifraga groenlandica* in small but well-marked patches (also, be it said, *Saxifraga umbrosa*). It was here, too, that we became aware of the import of the day we had chosen, for the first members of a great concourse were already arriving, and soon on all sides we saw the pilgrims of St Brandon swarming up the hill to circle around the Holy Well, repeating their orisons to his praise. Ultimately they proved very useful to us since they showed us where practically the only path leads to the other side of the summit. For Brandon Mountain, looking so grassy and tame from Ballybrack, is behind sheared away into huge perpendicular precipices of sheer rock, where only in two places is it possible to scramble very steeply down to the broken ground and lake far below. For which reason let no botanist attempt the mountain save on a clear day, or evil may well befall him.

Growing upon the rocks of this precipitous side was abundance of *Saxifraga rosacea*, more *sponhemica*, and a much less quantity of the fourth and most attractive saxifrage which bears Dr Druce's name.

We were indeed blessed in our day, for next morning brought rain and low mist, so that we could see scarce a yard before us as we motored over the lovely Connor Pass. Only once did we stop to pick, almost at a venture, on the streaming rocks, *Saxifraga hirsuta*, which there abounds. We reached sea-level again at Castle Gregory, where are a range of remote and highly attractive sand dunes, among which it was a great joy to find quantities of *Arabis ciliata* along with any number of less rare dune plants. We lunched at Tralee, and, having some time on hand, ran out to Ballybunnion in search of *Scirpus parvulus*. And there it was, pricking its way upwards through the mud flats on either side of the big bridge over the river Cashen, but too early to be in flower.

This was practically the last of our Kerry hunting, but we had one more happy day of Irish botanising in Co. Wexford while waiting for the Rosslare-Fishguard crossing. First we sought the shingly shore of Lady Island Lake, where the acres of *Diotis* with its white flannelly leaves made an unforgettable sight, though the flowers were only in early bud. A very few miles away a long stretch of rough, rushy meadow land, bordering an estuary, was as golden with the handsome yellow flowers of the American *Sisyrinchium californicum* as a May meadow with buttercups—its origin in that lonely spot a mystery worthy of a botanical Sherlock Holmes.

Lastly we spent some enjoyable hours among the long range of sand dunes and low-lying meadows (full of sheep-ticks be it said) north of Wexford Harbour. A fine dune flora was there—*Epipactis palustris*, *Orchis incarnata* and *praetermissa*, *Chlora*, *Juncus acutus*, etc.; but we had not time to walk as far as Raven Point for the *Equisetum Moorei* we hoped for. Positively our last flower in Ireland was *Cerastium apetalum* between the sleepers of the railway that bore us to the landing stage—and home.

FLORA OF THE STORDAL IN NORWAY.

A. W. TRETHERY.

I fished the Stor River from the middle of June till the last week of August in 1931. It runs into the Geiranger Fjord on the west coast, about half-way between Aalesund at the bottom of the fjord and Geiranger at the top. Sport was bad because salmon, grilse and sea trout were much less plentiful than in the two previous years, so I had plenty of time to spend in looking for wild flowers, the second string to my bow in Norway. I searched the valley of the river from the fjord to the waterfall about ten miles up the stream, which is as far as the sea-fish can go. The valley is, on the average, about a mile broad. Half is under the plough and half is woodland or hay meadow. The flora is not exceptionally interesting.

Arnica montana L., from which the medical arnica is made, is very abundant. It is a handsome golden-yellow composite, with opposite branches and leaves, up to two feet in height, bearing several flowers with broad rays, sometimes three inches across. It is cut with the hay in July or August. The local name is Tobak (tobacco). *Ranunculus platanifolius* L. was also plentiful.

There were a few shrubs of *Sorbus fennica* Kalm in the woods, and some in the gardens were used as hosts for grafting pears and apples, like crab apple used for stock in England.

In one spot on the shingle by the river, on the right bank near the tail of Lady Pool, I found some plants of a Lupine, just the same sort of place in which I have seen it on the Scotch Dee. The flower had gone, but in one case the stem, leaves and pods remained. I took this plant to the Natural History Museum, but sent a leaf and a pod to Professor Jean Holmboe, of Oslo, who thought it must be *Lupinus polyphyllus*, a species cultivated in Norwegian gardens. There is no garden near the spot, but the seed could have been washed down a stream which joins the river close by, coming from the road. It is the first time I have seen a Lupine wild in Norway.

As on the Sundal, I found *Silene acaulis* L. growing at sea level close to the fjord, but not *Astragalus alpinus* L., which is common on the lower reaches of the Laerdal, Gula and Sundal. Nor did I see *Saxifraga cotyledon* L. or *Myricaria germanica* (L.).

The most striking feature of the valley was the extraordinary abundance of *Hieracia* of the meadow and woodland types. Some of them are, I believe, similar to the species found in the north of Scotland, but I do not know enough about this difficult genus to commit myself to any attempt at identification. The range of forms seemed unusually wide, so I gathered a large number of plants, pressed them, and brought

them back for the Natural History Museum in Cromwell Road without classifying them. This is what I did in 1930 with specimens of the same genus found by me at an altitude of 3000 feet in the Telemark, near the Hardanger Fjord, south of Bergen. I understand that after they have been identified tentatively at South Kensington they are sent through the herbarium of the Oslo University Museum to the Norwegian expert for his opinion and that this work may eventually facilitate the naming of the British species.

There was a daily service by motor car up the valley to a saeter on a branch of the river at a height of 1200 feet. I went there several times and climbed up to about 2000 feet, looking for alpine plants without any great success, only the usual kinds—*Ranunculus glacialis* L., *Cerastium trigynum* Vill., *Arabis alpina* L., etc. I certainly did find *Gentiana nivalis* L. and *Andromeda hypnoides* L., which are local rather than rare. The latter had an uncommon habit—it did not trail over rocks but grew in patches like *Silene acaulis*, with beautiful short-stalked pearly flowers more numerous and conspicuous than usual. Some Norwegians who climbed for other purposes up to 5000 feet brought me specimens found there, but nothing more than I had found myself, so it does not appear that I missed much. I collected some *Hieracia* on the high ground in the same way as in the valley.

This was my fifteenth visit to Norway and my first was in 1894. We were stopping at a hotel this year, not in a farmhouse as I have generally done. From our window we could see the fjord, and sometimes a big liner of 10,000 to 15,000 tons passed up the narrow channel, taking tourists to see the Geiranger waterfalls. There was practically no traffic of this kind in the old days, at least in ships of other nations, and it cannot benefit the Norwegians much as compared with the visits of fishermen who rent the water, and generally the farmhouse, besides purchasing their food and employing boatmen or gaffers and domestic servants. Our sport is getting worse and worse owing to over netting. The big liners in the fjord reminded me of 1913, when I fished the Laerdal. One morning at the end of July I climbed over a low ridge on my way down the river to our lowest pool, which was tidal. When I reached the top of the ridge and looked down into the narrow channel of the fjord, to my amazement I saw a large armed cruiser. It was a German warship, part of the Kaiser's escort. He was paying a visit to the Norwegian fjords and was not altogether a welcome guest. He did me some good, however. We had caught nothing in that part of our water for a week or two, but that morning I got three salmon, and my belief is that Behemoth caused enough disturbance to frighten up the river fish that had been lying in salt water. Anyhow, we gave one of the fish to the ward-room mess to promote international good feeling, as we thought in those days. This reminds me again of a Sunday morning at Barnstaple after 1918. I was fishing the Taw in April, but did not fish on Sundays. I looked out of my window about 8 o'clock into the street and saw pass in front of me several elephants and camels.

For a moment I thought I was back in India and looking at part of some sportsman's camp equipage returning from a shikar trip. Then, as I was regarding it as a hallucination, the truth flashed across my mind, it must be part of a circus, as indeed it was, on the way to Bideford. But to return to the Stordal. Is this my last visit to Norway, or shall I find myself at Hull or Newcastle next June en route? The fishing gets worse and worse and even my second or botanical string is getting frayed. Collecting Hieracia, which one does not understand, for want of more interesting specimens may be useful work, but it resembles netting rather than angling.

A VISIT TO MOROCCO, 1931.

A. W. TRETHERWY.

Early in 1931 I travelled for about three months in Tangiers and French Morocco searching for wild flowers, but not getting off the beaten track. My object was to spend the first three months of the year comfortably in a pleasant climate with sufficient occupation to escape boredom and without incurring much expense or undergoing great fatigue. If the trip had been made later in the year the results would have been better, but the most trying part of the English winter would not have been avoided. The journey from London to Tangiers takes only four days, and I know of no country where so many plants foreign to the British Isles can be found at this season without a much longer journey. The voyage to the Canaries or Madeira occupies about the same time, but their area is much smaller, and their flora has been more studied. I gathered that Morocco was not so well represented in the Kew herbarium and its specimens more welcome there. It was satisfactory that the whole of my collection was accepted *en bloc*. I attached nearly 500 numbers to specimens and though the same number sometimes covered several plants or pieces of plants, owing to differences in the stage of growth, the same species was at other times represented by several numbers owing to variations of habit or differences of locality. Making a very rough calculation, I should say that there were more than 450 species, and over 1000 specimens with or without labels. Mr A. R. Horwood, who identified them at Kew, has kindly prepared a separate list of those species which he considers to be the rarest, and only those contained in his separate list are mentioned by name in the body of this paper.

After spending a few days at Tangiers I went by rail to Casablanca, the terminus of the line along the coast, thence further south by motor bus to Mazagan, Safi, and Mogador. All these places are on the sea, and it was not till reaching the last that I found the climate warmer or the vegetation more advanced than at Tangiers. It was possible to go on to Agadir, as far as it was comfortable or safe to go then, but I decided to stop, thinking that the results were not likely to justify the trouble of the journey and the roughness of the accommodation. After a long stay at Mogador, I returned to Casablanca, halting a few days there and at each of the other places mentioned south of it. Then I went to Fedhala and Kenitra, both of which are on the railway north of Casablanca but south of Petit Jean, the junction for Tangiers and Fez. Without staying at Petit Jean I went on to Meknes, on the line to Fez, put in about a week there, then carried on to Fez, and after a longer stop returned to Tangiers by rail, whence I sailed to England.

In about the same period of 1930 I had covered nearly the same ground, but then I stopped at Rabat on my way to Casablanca, and

from Casablanca I made a side trip inland to Marrakech instead of going south along the coast to Mogador. The collections of the two years did not overlap nearly so much as might have been expected. I did not take this year the same species again as I got last year unless there were special reasons for repeating the item, but the number of new kinds more than made up for the old ones that were missing. This is certainly not the result that might have been expected as I was slightly earlier in 1931 and vegetation less advanced than in 1930. Where there are many species the relative outturn is very difficult to explain. It seems to depend just as much on occasional variations of weather as on the general character of the season. I may be getting out of my depth, but it seems to me that a good yield of one kind and a bad one of another on the same ground may be related as cause and effect and not be independent; moreover, that the results of previous years may have to be considered. The question is intricate even for the farmer who has worked the same land all his life; for the wandering collector it is insoluble.

I shall now give an account of my finds at each place with dates of my visits and some description of localities. If any reader wishes for more detailed information to help him in the search for any particular species and writes to me at Artillery Mansions, Victoria Street, London, S.W.1, I shall do my best to supply it.

TANGIERS. I arrived at the end of December 1930 and stopped for the first few days of January 1931, getting specimens Nos. 1-19, including:—1, *Andryala Cossyrensis* Guss.; 2, 3, *Calendula bicolor* Cav.; 6, *Ranunculus Ficaria* L., var. *intermedia* Ball.; 7, *Cytisus tridentatus* Vukot, var. *lasiantha* Boiss.; 12, *Scilla monophylla* Lam. It was too early for most things except field weeds.

I returned on March 24th and stopped for the first few days of April 1931, getting specimens, Nos. 375-491, including—375, *Erodium Botrys* L.; 377, *Ornithogalum unifolium* Gmel.; 379, *Ornithogalum orthophyllum* Ten.; 386, *Helianthemum (Fumana) glutinosum* Benth., var. *viride* Ten.; 387, *Erodium cicutarium* L'Hérit., var. *numidicum* Poir.; 388, *Antinoria insularis* Parl.; 389, *Alsine emarginata* Brot.; 393, *Cynoglossum clandestinum* Desf.; 396, *Hyoseris radiata* L.; 399, *Astragalus*, cf. *Bourgaeanus* Coss.; 400, *Aristolochia baetica* L.; 401, *Lythrum flexuosum* Lag.; 405, *Astrocarpus Clusii* J. Gay; 410, *Armeria* ? *simplex* Pomel, but leaf margin not ciliate; 420, *Biserrula Pelecinus* L.; 424, *Erodium cicutarium* L'Hérit., small form; 428, *Thapsia garganica* (L.) Cass., broad leaves; 434, *Araujia albens* Don; 444, *Helianthemum Tubervaria* Mill.; 445, *Reseda media* Lag.; 447, *Festuca caeruleascens* Desf.; 450, *Erica umbellata* L.; 453, *Ranunculus muricatus* L., var. *major*; 454, *Simethis bicolor* Kth.; 457, *Scorzonera (Podospermum) laciniata* L.; 464, *Scilla mauretanicus* Schousb.; 466, *Scrophularia sambucifolia* (L.) Dur.; 470, *Cistus florentinus* Lam.; 474, *Lavatera trimestris* L.; 477, *Vicia vestita* Boiss.; 479, *Ranunculus macrophyllus* Desf.; 481, *Malope malacoides* L.; 483, *Thymus ciliatus* Benth.; 485, *Polygala* ? *baetica* Wh.; 487, *Bellis sylvestris* Cyr., var. *pappulosa* Boiss., very large; 488,

Cistus populifolius L.; 491, *Cytinus Hypocistis* L.; 492, *Malcolmia littorea* R. Br.; 494, *Scrophularia sambucifolia* (L.) Dur.

Near the town of Tangiers the best localities are:—(a) The Plage with the fields and marshes behind the railway station, extending to the houses of the town and the foot of the hill which towers above the station next to that of Tangiers itself, and has a big white villa at the top of it. (b) The slopes of the hill mentioned in (a), especially near the top. (c) The fields on both sides of the road leading from the terminus of the Bueyes auto-bus to the golf course, most of the plants here are field weeds, and they begin to flower very early in the year. (d) A continuation of (c) the land on both sides of the road from the approach to the golf course up the hill towards Cape Spartel; at the top of the hill another road from Monte comes in. The best spots are the top of the hill and the bottom of the hill between the road and the stream which forms the boundary of the course.

Under the guidance of Mrs Kay, widow of General Kay, R.A., who was stopping at Tangiers for the winter, I visited several places at a greater distance than those mentioned above. She takes a great interest in flowers and kindly accompanied me in her car on several occasions. I may mention "the Caves of Hercules" near Cape Spartel. One passes a marsh, then some dry, undulating, bare ground, and finally undergrowth of *Cistus* bushes, all of which tracts we found productive. On the way to the pig-sticking place a marsh proved fruitful, and beyond it some fields near a Spanish outpost. It was too wet to reach the pig-sticking place itself, but I believe that in fine weather it thoroughly deserves a visit. Mr Harris's garden close to the sea beyond the railway contains some interesting weeds, carices and grasses, in the uncultivated parts. Admission is free, and it is not likely that any objection would be taken to the gathering of wild plants provided that the cultivated plants were untouched. Tangiers on the whole seems to me as good a place for flowers as any other I saw in Morocco.

CASABLANCA. I stopped on 5th and 6th January 1931 on my way south from Tangiers, but I found I was too early. I got only specimens 20-22, including:—20 and 21, *Romulea bulbocodium* L., var. *grandiflorum* Tin. The Plage between the railway station and the sea is the best locality near the town.

On my way back I stopped about three miles from Casablanca at the Hotel Anfa, on high ground more than a mile from the sea, surrounded by fields and waste land, from February 13th to 20th. Here I got Nos. 155-165, including:—158, *Pieridium maroccanum* Ball; 159, *Muscari neglectum* Guss.; 161, *Diploaxis siifolia* Kze.; 163, *Anacyclus radiatus* Pers., var. *ochroleucus* Ball. I found Capt. St George Whyte stopping there, and he very kindly sent to me in March some other specimens which he found near the sea after my departure. I believe that this locality would repay a later visit. It is easy to work and there is plenty of ground of various kinds.

MAZAGAN. On my way south I stopped here from January 7th to 12th, finding Nos. 23-34, including:—Nos. 24, 25, *Dipcadi mauritani-*

cum Drummond & Wright; 28, *Romulea grandiscapa* Gay; 31, *Androcymbium punctatum* Baker; 33, *Picridium gaditanum* Willk. *Dipcadi* and *Androcymbium* were common, especially the former, which was often thickly covered with small grey maritime snails. The latter closely resembles a *Crocus* except that its leaves accompany the flowers. On my return I was here for a few days in the middle of February 1931, and got specimens 148-154, including:—153, *Celsia Barnadesii* Don (= *C. laciniata*); 154, *Fagonia cretica* L.

If I come to Mazagan again it will be a short visit to two places which can be seen the same day. The first is the Valley of the Oued (river) at Azemmour on the road from Casablanca to Mazagan. The second is the tract, on the south-east of the same road, half-way between Azemmour and Mazagan, managed for experimental cultivation by the Prison Department. A permit has to be obtained for access to the second. I should apply for it through the British Consul at Mazagan. The middle of March would be quite soon enough.

SAFI or SAFFI. I stopped here from 12th to 15th January 1931, getting specimens 35-41, including:—37, *Genista monosperma* Lam. It was too early and the weather was wet. A very common plant in the Mahomedan cemeteries here is *Tiarta* (*Withania fruticosa* Boiss.). "May the *Tiarta* soon grow over you," is an Arab curse.

On my return I stopped here from 6th to 9th February 1931, getting specimens 121-147, including:—123, *Helianthemum ellipticum* Pers.; 125, *Fagonia cretica* L., high shrubby form with dark flowers; 126, *Calendula suffruticosa* Vahl; 134, *Plantago amplexicaulis* Cav.; 135, *Malcolmia ramosissima* Desf.; 136, *Romulea grandiscapa* Gay; 140, *Allium subhirsutum* L.; 141, *Linaria Tournefortii* Poir., var. *minor* Lge.; 147, *Antirrhinum tortuosum* Bosc. Dr and Mrs Badger, of the Medical Mission, take a keen interest in the flora and gave me much help, but it was too early to find many flowers except along the face of the cliff below the Marabout of the Sidi bu Zid, a little way beyond the official residence of the British Consul north of the town. The cliff rises steeply from the sea to the Marabout and is a sun-trap with paths leading along its face from south to north.

MOGADOR. I came here on 16th January 1931 from Safi, and stopped till February 6th, on which day I returned to Safi. I got specimens 42-120, including:—50, *Sonchus tenerimus* (L.) DC., and a small form resembling var. *maritimus* Ball; 56, *Polycarpaea nivea* Ait.; 66, *Linaria sagittata* Poir.; 67, 70, *Andryala* aff. *ragusina* (L.) DC.; 68, *Odontospermum odorum* Sch. Bip.; 71, 72, cf. *Andryala mogadorensis* Ball; 79, *Cheiranthus semperflorens* Schrad.; 82, *Aristolochia longa* L.; 86, *Orobanche tetuanensis* Ball; 90, *Nonnea phanerantha* Viv.; 97, *Viola arborescens* L.; 99, *Odontospermum imbricatum* Ball; 102, *Picridium tingitanum* Desf.; 103, *Argania sideroxyton* R. & S.; 104, *Leucojum trichophyllum* Schousb.; 105, *Anagallis collina* Schousb.; 106-108, *Romulea grandiscapa* Lowe; 118, *Nolletia chrysocomoides* Coss.

Mogador is surrounded on three sides by the sea or barren sands. There is really only one exit, branching at various distances from the town. To look for flowers one has to walk or drive along a road for some distance and then search on a sandy soil among scrub jungle. There are rivers and water courses which can be followed. All the country is much the same. It is difficult to give directions for guidance. On the whole I found the tract round the village Diabat and to the south of it near the intake of the water supply the most productive. The Misses Broome, who have lived at Mogador for years, take a great interest in the flora and gave me much help.

I have described above how I turned back from Mogador and revisited the places up to Casablanca on my way north. On February 20th, 1931, I went from Casablanca (Hotel d'Anfa) to Fedhala, a small town on the sea coast and railway about ten miles north of Casablanca, a thriving place with a busy port and a salt manufactory. It all belongs to a French Company who, in addition to the commercial business, have made it a pleasure resort for Casablanca. It is very crowded with bathers in the summer, and for the last few years attempts have been made, without much success, to attract English visitors in the winter. The Company has started a large hotel, the Miramar, which is kept open during the winter, with accommodation for 80 visitors, and a golf course of nine holes in charge of an English professional. I stopped there in 1930 and 1931 for about a week each year, and in 1930 was for some days the only visitor at the hotel. In 1931 there were several English people besides myself, including Miss Hooker, the daughter of Sir Joseph Hooker. She took much interest in my work for Kew and made some notable contributions when we met again at Fez. The manager of the hotel in both years was M. T. Maef, a Frenchman, who speaks English well and has been for some time in London. He was most obliging and did all he could to help me. It is an excellent centre for botanical work. The only trouble is that no cars or carriages can be hired. M. Maef, in 1930, arranged a trip for me with a local tradesman who was visiting farms to deliver goods. In 1931 he had a car of his own which he kept as a private speculation. He took me as a passenger for several afternoons on very reasonable terms. I got in this neighbourhood Nos. 166 to 216:—Nos. 166-186 at Fedhala itself, chiefly on and near the golf course and on the beach near the hotel; 187-199, from the Cascade, a place which, with Casablanca and Fedhala, makes an equilateral triangle more or less, and is much frequented on holidays; 200-216, from forests on the Fedhala-Boulhaut road, and at Boulhaut itself, a town about 15 miles distant. The following numbers deserve notice:—167, *Malcolmia littorea* R. Br.; 173, *Erodium cicutarium* L'Hérit., var. *bipinnatum* Cav.; 174, *Rumex lacerus* L.; 180, *Armeria mauritanica* Willd.; 182, *Teucrium fruticans* L.; 183, *Nonnea phanerantha* Viv., colour form, yellow green, similar to plants collected by Hooker & Ball, seen by me on the golf links, the only form found there, and seen by me nowhere else in Morocco; 184, 185, *Sonchus*, cf. *arborescens* Salzm.; 190, *Nonnea*, cf. *micrantha* Boiss. & Reut.; 194, *Smilax*

aspera L., var. *mauritanicum* Desf.; 201, *Astragalus baeticus* L.; 202, *Thrinacia tuberosa* DC.; 203, *Anemone palmata* L.; 208, 209, *Biscutella Apula* L.; 215, *Orchis Morio* L.; 216, *Orchis tridentata* Scop. If I ever go there again I shall pay more attention to a tract on the Boulhaut road, where it crosses a big river by a high bridge soon after crossing the railway by Fedhala Station, from the far bank over the bridge along the road for a mile or more up to a big French vineyard. At my request M. Maef took Miss Hooker there.

MAMORA FOREST. February 27th, 28th, 1931, I spent at Kenitra, a town some miles north of Rabat on the coast and the railway towards Petit Jean, on the edge of the forest, which stretches back half-way to Rabat. In 1930, I went to the forest by rail from Rabat for a few hours and did well enough to think it advisable to make a stay for a day or two at Kenitra in 1931. The result was not quite satisfactory. There was certainly much vegetation but little variety, and few new species. The trees are all cork oak like those at Boulhaut, but there is more open ground than at Boulhaut. I got Nos. 217 to 240, including:—218, *Armeria simplex* Pomel; 221, *Malcolmia Broussonetii* DC.; 222, *Linaria bipartita* Willd., var. *brevipes* Ball; 223, *Gagea fibrosa* Roem. & Sch.; 224, 225, *Leucojum trichophyllum* Schousb.; 233, 234, *Passerina virgata* Desf., many forms; 236, *Linaria simplex* DC.; 237, *Hypochaeris leontodontoides* Ball; 238, *Ornithogalum orthophyllum* Ten.; 239, 240, *Orchis Morio* L.

MEKNES. From Kenitra I went to Meknes on March 1st, 1931, and stopped there about a week at the Transatlantique Hotel. It is a fine building, stretching along the high ground above a stream on the far slope of which is the town of Meknes with its many large mosques, each of which has the characteristic four-sided tower so frequent in parts of Morocco with its peculiar, uncompromising aspect. These buildings were made a few hundred years ago by Christian prisoners. At sunset, especially from the hotel veranda, the scene presents a weird view, grim and minatory.

Ye shall take no use for your money, nor your faith for a ransom sell;
Ye shall make no terms with the infidel, but smite his soul to hell.

The Old Pindaree.—Sir Alfred Lyall.

About twenty miles north of Meknes are the ruins of the Roman town of Volubilis, still in a good state of preservation. The old approach road from a distant seaport was pointed out to me, and I could imagine a legion marching in through a neighbouring defile on its way to relieve part of the garrison. This was no mushroom town. It must have lasted for centuries and been abandoned only when the pressure of the barbarian hordes obliged the withdrawal of troops for concentration in the imperial city. The ruins seemed to contain some interesting plants, though it was too early for good specimens. I should not be surprised to find traces of the Roman horticulture.

In Meknes is a chemist's shop kept by a Mr Powell, an Englishman, who spends his time between Meknes and Hyères in the south of France.

He knows a good deal about the local flora, is acquainted with the French botanists, and in his own subject—Lepidoptera—has acquired an international reputation.

I went to Volubilis for an afternoon and got Nos. 241-248, including:—241, *Arenaria spathulata* Desf.; 243, *Diplotaxis auriculata* Dur.; 246, *Linum Munbyanum* Boiss. & Reut.; 247, *Andryala laxiflora* DC. At Meknes itself, I got Nos. 249-267, including:—251, *Linaria Tournefortii* Poir., var. *minor* Lge.; 252, *Linaria*, cf. *reflexa* Desf.; 255, *Ranunculus Ficaria* L., var. *grandiflora* Sch.; 257, *Arum hygrophyllum* Boiss.; 258, *Ranunculus macrophyllus* Desf.; 259, *Carex fissirostris* Ball; 260, *Chrysanthemum (Otospermum) arvense* Salzm. The best ground near Meknes is below the Transatlantique Hotel on the side remote from the town. Go down the Volubilis road and at the foot of the hill on which the hotel stands you will find a quarry with an octroi post close to a stream. Walk on the road towards Volubilis with the stream on your right hand and search the slopes, fields, and waste ground on both sides of the stream, also the market gardens if nobody objects. Another place is on the other side of the town. Go right through the town from the hotel to the Aguedal and Mulay Ismail's storehouses, then search for flowers by a stream just beyond these two places.

FEZ. From Meknes I went to Fez by rail, but if I had been going later in the year I should have been inclined to go by road via Volubilis in a private car, looking at the plants on the way. There is, I believe, some good ground between Volubilis and Fez on a hilly part of the road which I have never seen, so I do not say any more about it fearing to mislead the reader by giving incorrect information. It will be worth his while if he is on the spot to make inquiries. At Fez I was unlucky with the weather. I had been there in the previous year and done well. This year, being rather later, I expected great things, in spite of the season being more backward, but the rain upset everything. The soil is chiefly stiff red clay of the kind which was described as "loving" by the midland agriculturists years ago when it clung to our boots out partridge shooting. It could be freed from the roots of the plants with difficulty, and even extrication of roots from the ground was tedious and fatiguing. The vegetation was so wet that drying was difficult, and even when there was a hot sun to dry the plants satisfactorily there were often damp days afterwards, which undid the work in spite of all precautions. Considering these difficulties the collection was not bad, though under favourable conditions it would have been a good deal better. I got Nos. 268-374, including:—272, *Sisymbrium erysimoides* Desf.; 278, *Ranunculus flabellatus* Desf.; 279, *Biscutella eriocarpa* DC.; 281, *Convolvulus gharbensis* Batt. & Trab.; 282, *Euphorbia pubescens* Vahl; 283, *Nonnea phanerantha* Viv., with unusual corolla lobes; 292, *Diplotaxis auriculata* Dur.; 293, *Psychine stylosa* Desf.; 297, *Chrysanthemum macrotum* Dur.; 298, *Thrinacia tuberosa* DC.; 302, 352, *Triguera ambrosiaca* Cav.; 307, 307A, *Fritillaria oranensis* Pomel; 308, *Picridium intermedium* Sch. Bip.; 313, *Linaria Tournefortii* Poir.; 318, *Hyacinthus romanus* L.; 322, 322A, *Scrophularia sambucifolia* L.; 323, *Cen-*

taurea seridis L.; 331, *Anchusa*, cf. *atlantica* Ball; 338, 338A, *Centaurea seridis* L., var. *decurrens* Batt. & Trab.; 341, 341A, *Sonchus tenerrimus* L., form near var. *maritimus* Ball; 343, *Cynoglossum clandestinum* Desf.; 345, *Lychnis (Melandryum) macrocarpa* Boiss. et Reut.; 348, *Narcissus (Corbularia) Bulbocodium* L. (from Talouat, see No. 349); 349, *Morisia hypogaea* Viv. (This I did not find myself; it was brought to me at Fez by Miss Hooker, mentioned above, from Talouat, where she went on a sight-seeing trip); 356, *Fumaria bracteosa* Pomel; 366, 367, *Solenanthus lanatus* DC.; 372, *Carex stenophylla* Wahl.; 374, 374A, *Ranunculus Ficaria* L., var. *grandiflora* F. Sch. The best localities need not be mentioned, because they are all known to Miss Cooper, one of the staff of the British Consulate, who has been residing at Fez for many years, and who was kind enough to take or direct me to all the new localities which I visited in 1931. I am sure that she will be so good as to give similar help to any traveller interested in the flora who asks for her assistance. She has studied the neighbourhood carefully.

This paper is written mainly for the purpose of showing what useful contributions can be made to the herbaria of Kew and the Natural History Museum by a tourist with a smattering of botanical knowledge who goes abroad for his pleasure and does not wish to spend much money or endure much fatigue. He can have a pleasant occupation without discomfort. I have gone to Norway many times to fish and made the collection of wild flowers a second string to my bow, contributing thousands of specimens to the Natural History Museum. Before beginning to collect, one should, however, make sure that the specimens are likely to be accepted. This one can do by inquiring at the museums which are the countries or parts of countries insufficiently represented in their herbaria and whence therefore many more specimens are required. It is disappointing to spend much time in gathering and pressing plants only to find that nobody wants them. The herbaria are already well stocked with specimens from such interesting ground as the Alps. It will be difficult to find much there along the tourist routes with which the museums are not already supplied, but there are some accessible places which have been disregarded because the flora is uninteresting. Professor Jean Holmboe, of Oslo, once said to me: "You are not likely to find anything at Kongsvoll (perhaps the best ground in Norway) which we require, but send us as much as you like from Stjordal, for we have very little from that valley, as the flora is too uninteresting to attract botanists."

BOTANISING IN SICILY.

C. D. CHASE.

To a botanist Sicily is a very satisfactory place to go sight-seeing in. In the Pitti and the Uffizi there are no flowers except in Botticelli's pictures, but a Greek temple in Sicily is generally set in a veritable garden of wild flowers and the ancient stones of Greek theatres and Roman amphitheatres harbour many delightful little plants quite unknown to our northern flora. All visitors to Sicily come back with glowing accounts of the beauty of the wild flowers in spring. As a matter of fact Sicily, a comparatively new country, speaking geologically, is not very rich in species compared with the south of Spain or Greece. Probably Sicily has few more species than Corsica or Sardinia; certainly less than 2000 all told. What strikes the eye of the tourist is the massed effect of huge quantities of individuals of a few showy species. Take away these few species and the result would not be particularly striking. These species are the yellow marigold (*Chrysanthemum coronarium*); two yellow Crucifers, *Hirschfeldia adpressa* and *Biscutella lyrata*; the Viper's Bugloss (*Echium plantagineum*), which varies in colour but may perhaps best be described as purple; the light blue borage and *Convolvulus tricolor*, whose three colours are blue, yellow, and white, the blue predominating. Other flowers, of course, enter into the colour scheme but these are the chief. This vivid colouring is seen to great effect in the waste ground around the temples at Segesta and Girgenti.

The following notes are the result of a fortnight spent in Sicily in the spring with a party organised by Leplay House. The tour started at Palermo and the botanists of the party made two ascents of Monte Pellegrino, which seemed the most promising ground in the immediate neighbourhood of the overgrown capital with its 350,000 inhabitants. Monte Pellegrino rises to almost 2000 feet above the Mediterranean, and the climb is well worth while for the view from the top, apart altogether from the flowers, which were not without interest. These included, besides many species with a wide Mediterranean range, *Fedia cornucopiae*, *Linaria reflexa*, *Calendula stellata*, the huge yellow Umbellifer, *Ferula communis*, *Celsia cretica*, *Medicago rugosa*, *Sedum coeruleum*, *Brassica pubescens*, *Prasium majus*, *Antirrhinum siculum*, *Tetragonolobus purpureus*, and the large grass, *Ampelodesmos tenax*. These plants are, I think, mostly confined to the southern part of the Mediterranean.

From Palermo we travelled by road to Girgenti, making a long tour to visit the temples of Segesta and Seliunte, and a very beautiful and interesting drive it was. Many plants were noted at these two places and along the roadside. Amongst them were the dwarf palm,

Chamaerops humilis, the only member of its order which is native in Europe; it has a certain commercial value, the tough fibres of its leaves being used for various purposes; *Ophrys lutea* and *O. Bertolonii*; *Asphodeline lutea*; *Artemisia arborescens*; *Vicia narbonensis*, var. *serratifolia*; *Allium subhirsutum*; the very pretty little Iris, *Sisyrinchium*, whose blue and white flowers are so ephemeral; *Hyoseris scabra*; *Micromeria microphylla*, and, of course, various forms of *M. graeca*; *Tetragonolobus biflorus*, which is only known from the south of Italy and Sicily, and *Asparagus albus*.

At Girgenti (or Agrigento, as the present régime call it) the common species were flowering in vast abundance. On the walls of one of the temples were *Phlomis fruticosa* and *Antirrhinum tortuosum*; the latter we had seen before in one of its few French stations on the walls of the Roman amphitheatre at Fréjus. A hurried visit to the sea-shore yielded *Matthiola tricuspidata*; *Centaurea sphaerocephala*; *Orlaya maritima*; *Ononis variegata*, and *Anthemis fuscata*.

Our next centre was Enna, perched high on its isolated hill, 3000 ft. up in the very centre of the island. Owing to the altitude, vegetation was not so advanced as on the coast: indeed, some of the party complained of cold at Enna. Enna is the place where, at a remote period, Proserpine was carried off by the god of the lower regions while she was gathering flowers in the meadows. Things have altered considerably in many ways since then and there are now no flowering meads on that rather bleak summit. In the middle ages and till quite recently the place was called Castrogiovanni. It has now assumed again its classical name. The hill of Enna and Monte Altesina (nearly 4000 ft.) ten miles to the north, which was visited by some of the botanists, would doubtless have yielded more plants of interest a month or two later. Near Lake Pergusa, a short distance south of Enna, were growing *Orchis italica*; *Ophrys speculum*; *Lycium europaeum*, and *Smyrniium perfoliatum*. In the immediate vicinity of Enna we saw *Matthiola tristis* and *Hermodyctylus tuberosus*, and, on the walk from Enna to Monte Altesina, *Tillaea muscosa*, no larger than in England; *Orchis tridentata* and *O. papillionacea*; *Carex divisa* (this and *C. glauca* were the only sedges we saw in Sicily), and *Pyrus amygdaliformis*.

It was a great change to come down from the mountain top of Enna, which we left in a thick mist, to the bright sunshine of Syracuse. The Hotel Villa Politi and its gardens were looking their best. The same evening we visited the Greek theatre, amongst whose stones was growing a little plant of Euphorbiaceae, *Andrachne telephoides*. Of all the places we visited in Sicily, Syracuse seemed to have the richest flora, rich, I mean, in the number of species. The best ground was the rather bare limestone between the railway and the sea to the east of the town and on the slopes of Epipolae. The following may be mentioned:—*Ornithogalum arabicum*, a very handsome plant; *Ononis reclinata*; *Teucrium capitatum*; *Malva cretica*; *Poterium spinosum*; *Smyrniium rotundifolium*; *Onobrychis Caput-galli*; *Linum strictum*; *Scorzonera deliciosa*; *Salicornia fruticosa*; *Frankenia hirsuta*; *Romulea bulbocodium*;

Hedysarum capitatum; *Centaurea nicaeensis*; and in a bean field, *Ornithogalum narbonense*; *Phalaris brachystachys*; *Bupleurum fontanesii* and *B. protractum*; *Andropogon distachyon*; *Hymenocarpus circinnatus*; *Medicago scutellata*, and *M. ciliaris*.

By the river the Papyrus is quite naturalised and the large white *Orobanche speciosa* grows.

Our last stay was at the popular resort of Taormina, not quite on the slopes of Etna but not far from that interesting volcano. Of course, an ascent to the top is out of the question in April, the upper parts of the mountain being still under snow. Anyone who wishes to gather the half-dozen or so endemic plants for which Etna is known botanically must seek them in the late summer. The lower slopes of the mountain are exceedingly fertile; even the weeds in the lemon groves and vineyards seemed larger and brighter than elsewhere.

On the cliffs at Taormina were growing tufts of *Scabiosa cretica* and shapely bushes of *Euphorbia dendroides*. Other plants between the town and the sea were *Thalictrum calabricum*, *Ajuga orientalis*, *Moricandia arvensis*, *Linaria chalcipensis*, and *Aceras anthropophora*. A climb to the top of Monte Venere beyond Mola (3000 feet) was rewarded by the little orchid, *O. brancifortii*.

Altogether, in our fortnight in Sicily we saw just under 400 species.

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1888. pp. 17, 116, 364, On Scottish Plants; p. 115, Nomenclature of *Sparganium*; p. 349, E. Kent Plants.
1889. p. 117, *Calamagrostis borealis* in Scotland; p. 153, *Festuca heterophylla* in Oxon; p. 200, Scottish Plants; p. 315, N. Berks Plants; p. 377, A Northamptonshire Potamogeton; p. 384, Preparing a Flora of Bucks.
1890. p. 39, Scottish Plants; p. 121, *Crepis foetida*; p. 218, *Carex tomentosa*; p. 227, Oxford Plants; p. 315, *Helianthemum guttatum*; p. 343, *Spergula pentandra* in Ireland.
1891. p. 173, Segregates of *Spergula arvensis*; p. 304, Irish Plants; p. 307, Berks Plants; p. 308, Bucks Plants; p. 377, *Acer campestre*.
1892. p. 56, *Galium sylvestre*; p. 86, *Lepironia mucronata*; p. 282, E. Gloucester Plants.
1893. p. 22, *Lagurus ovatus*; p. 183, *Sonchus palustris*; p. 184, *Euphorbia Esula*; p. 217, *Phegopteris calcarea*; p. 327, Flora of Berkshire.
1894. p. 181, *Sagina Reuteri*; p. 240, *Sherardia arvensis*.
1895. p. 24, *Oniscus tuberosus* and Wilts Plants; p. 56, *Deschampsia discolor*; p. 62, Flora of Berks; p. 153, *Arabis petraea*; p. 282, Cornwall Plants; p. 282, Plymouth Casuals; p. 314, *Melampyrum pratense*, var. *hians*; p. 316, *Artemisia Stelleriana*; p. 344, *Sonchus palustris*, *Bromus interruptus*; p. 377, *Medicago lupulina*, var.
1896. p. 41, Hieracia Records; p. 87, Westernness Plants; On "London Catalogue," 95, 271; p. 328, Berkshire Flora; Wettstein's *Euphrasia* (reviewed); p. 432, N. Devon Plants; p. 432, *Melampyrum pratense*, var. *hians*; p. 479, *Mimulus Langsdorffii*.

1897. p. 13, *Bromus interruptus*; p. 132, Henry Boswell (portrait); p. 284, *Tolypella intricata*; p. 313, *Nitella translucens*, *Carex elongata*; p. 362, *Vicia villosa*, var., *Potentilla norvegica*, *Caucalis nodosa*; p. 449, *Rosa sepium*, Bedford Plants, *Coronilla varia*; p. 460, Account of Oxford Herbarium; p. 491, *Deyeuxia stricta*, var. *borealis*.
1898. p. 222, *Helleborus occidentalis*; p. 225, *Fragaria muricata*; p. 227, *Poa flexuosa*; p. 274, *Dianthus deltoides*; p. 275, Bicheno's Herbarium; pp. 275 and 348, Berkshire varieties; p. 319, *Bromus interruptus*; p. 104, Flora of Berkshire (reviewed).
1899. p. 368, *Carex rhynchophylla*.
1900. p. 240, Proposed Flora; p. 501, Appointed Mayor of Oxford.
1902. p. 108, New Hybrid Grass; p. 181, Anglesey and Carnarvon Plants; p. 231, *Helianthemum Breweri*; p. 350, Kentish Plants; p. 391, Cumberland Plants.
1903. p. 103, Kent Plants, Cumberland Plants; p. 174, *Poa laxa*; p. 286, *Meum athamanticum*; p. 289, *Campanula persicifolia*; p. 350, *Valerianella discoidea*; p. 351, *Asplenium germanicum*, *Arabis verna*; p. 359, Notes on *Rhinanthus*; p. 406, *Deyeuxia neglecta*; p. 408, *Glyceria distans*, var., *Arrhenatherum avenaceum*, var., *Senecio palustris*.
1904. p. 9, S. Devon Plants; p. 26, *Poa Chaixii*, *Salsola Kali*, var.; p. 54, Westmorland Plants; pp. 65 (t. 457), 209, *Bromus interruptus*; p. 89, *Galeopsis*; p. 302, Rep. B.E.C. (reviewed); p. 309, Essex and Kent Plants; p. 313, *Scrophularia Ehrharti*; p. 385, *Aster Linosyris*.
1905. p. 14, Additions to the Berkshire Flora; p. 99, *Linaria Cymbalaria*, *Galium sylvestre*; p. 188, Spanish and Portuguese Grasses; p. 217, *Holosteum umbellatum*; p. 217, Supplement to "Top. Bot."; p. 220, *Cheiranthus erysimoides*; pp. 274, 307, Walney Island Plants; p. 313 (t. 474), *Koeleria splendens*; p. 354, British Koelerias.
1906. p. 29, Cornish Plants; p. 60, On George Don; p. 72, Essex and Suffolk Plants; p. 137, *Sagina alpina*; p. 178, *Gagea lutea*; p. 179, *Plantago lanceolata*, var. *sphaerostachya*; p. 241, *Juncus tenuis*; p. 320, *Rosa agrestis*, *Agrostis verticillata*; p. 394, Isle of Wight Plants; p. 405 (t. 483), *Salvia Marquandii*; p. 426, *Matricaria discoidea*.
1907. p. 21, *Plantago lanceolata*, var. *sphaerostachya*; p. 33, Cheshire Plants; p. 34, *Ophrys Troilii*; p. 112, Huckleberry; p. 163, *Alnus rotundifolia*; p. 164, *Stipa membranacea*; p. 211, Spanish and Portuguese Carices; p. 248, Irish Plants; p. 282, Dillenian Herbaria (reviewed); p. 380, *Calamagrostis lanceolata*; pp. 395, 419, Channel Islands Plants; p. 411, *Linaria arenaria*.
1908. p. 8, *Helleborine* v. *Epipactis*; p. 127, List of British Plants (reviewed); p. 163, La Gasca and his "Hortus Siccus;" p. 335, Welsh records; p. 384, Dorset Plants. -

1909. p. 27, *Epipactis purpurata*; p. 87, *Salvia horminoides*; p. 108, *Schoenus ferrugineus*; p. 110, *Orobanche reticulata*, var. *procera*; p. 270, Followers of Man; pp. 302, 356, *Carex canescens*; p. 318, Comital Census Numbers; p. 323, *Orchis ericetorum*; p. 356, Botany of Worcestershire (review); p. 384, *Thymus spathulatus*; p. 444, Short Notes.
1910. p. 23, *Festuca maritima*, *Tilia platyphyllos*; p. 55, *Zannichellia gibberosa*, Cornish Plants; p. 56, N. Devon Plants; pp. 61, 78, Botanist's Pocket Book (reviewed); p. 78, *Rhinanthus* v. *Alectorolophus*; p. 98, British Carices; p. 164, *Salsola Kali*, var. *tenuifolia*, *Barbarea stricta*; p. 183, Plant Records; pp. 195, 233, Berkshire Plants; p. 257, Sibthorp's Lincolnshire Plants; p. 259, Durham Plants; p. 260, *Juncoides pallescens*; p. 269, Middlesex Plants; p. 281, *Spiraea Ulmaria*, var. *denudata*; p. 285, *Hieracium carenorum*.
1911. p. 23, Azores Plants; p. 66, Middlesex Plants; p. 67, Sibthorp's Plants; p. 117, *Chaerophyllum aureum*; p. 128, *Juncus Leersii*; p. 128, *Draba muralis*; p. 234, *Vicia sylvatica*, var. *condensata*; p. 235, *Euphorbia Lathyris*, *Plantago lanceolata*, var. *sphaero-stachya*, *Tolypella intricata*; p. 274, Suffolk Plants; p. 276, *Potamogeton coloratus*, *Filago spathulata*; p. 300, *Orobanche Ritro*, var. *Hypochaeroides*; p. 301, *Orobanche reticulata*, var. *procera*; p. 302, Cornish Plants; 370, *Cirsium acaule* × *arvense*; p. 325, Rep. B.E.C. (reviewed).
1912. p. 76, Corbyn's Cambridge Plants; p. 97, *Allium sphaerocephalum*; p. 133, *Orobanche Picridis*; p. 201, *Alchemilla acutidens*; p. 257, *Helleborine* v. *Epipactis*; p. 259, *Ranunculus ophioglossifolius*, *Scilla campanulata*; p. 287, *Prunella laciniata*.
1913. p. 18, Linnaeus's "Flora Anglica;" p. 60, *Polygala Babingtonii*; p. 89, *Sagina scotica*; p. 103, *Sagina procumbens* forma, *Stellaria aquatica*, var. *scandens*; p. 137, *Spergularia atheniensis*; p. 225, *Iris versicolor*, Culinary Mints; p. 226, *Papaver hybridum*; p. 260, *Viola calcarea*; p. 264, Flora of Oxon and Bucks.
1914. p. 155, Druce's Morisonian Herbarium (reviewed); p. 158, Rep. B.E.C. (reviewed).
1915. p. 356, Article 45 of Vienna Code; p. 373, Greek Plants.
1916. pp. 38, 66, Greek Plants; p. 172, *Hydrilla verticillata*; p. 181, *Juncus castaneus*; p. 215, B.E.C. Report; p. 335, W. Sherard's Jersey Plants.
1917. p. 55, *Carex basilaris*, *Calamintha nebrodensis*.
1924. p. 309, *Lotus siliquosus* in Berks; p. 198, *Orchis Fuchsii* Druce.
1925. p. 138, What is *Orchis candidissima* Krockner?
1926. p. 46, "Native" British Plants.
1928. p. 122, *Rumex glomeratus*; p. 245, *Diploaxis tenuifolia*, var. *integrifolia*.
1929. p. 22, Charlotte G. Trower (obit.); p. 26, *Scorzonera humilis*; p. 155, *Polygonum calcatum* and *Poa irrigata* in Britain; p. 159, Botany of Cyprus (abstr.); p. 217, Arthur Bennett (obit.).

1930. p. 121, *Alchemilla tenuis* in Herts; p. 346, *Carex aquatilis* in Scotland; p. 188, *Scilla non-scripta*, var. *Lacaillei*.
 1931. p. 107, *Juncus* "alpinus" in Teesdale.

THE SCOTTISH NATURALIST.

- 1883-4. pp. 126, 176, 217, 258, The Botanical Work of George Don of Forfar; p. 229, *Trifolium agrarium* and *Carex vesicaria*, var. *dichroa*.
 1885-6. p. 12, The Botanical Work of George Don of Forfar (cont.); p. 26, Botanical Notes; p. 76, Notes on Scottish Plants.
 1887-8. p. 94, Review of the London Cat., Ed. 8.; p. 330, Some Additions to the Scottish Flora; p. 350, Rediscovery of *Deyeuxia neglecta*.
 1889-90. p. 43, Plants of Peebleshire; p. 144, Don's Plants, *Agrostis rubra*; p. 239, *Agrostis canina*, var. *scotica*, *Pseudathyrium flexile* in Easternness.
 1891. p. 91, Scotch Equiseta, *Cerastium arcticum*. Don's plant of *Ranunculus nivalis*.

THE ANNALS OF SCOTTISH NATURAL HISTORY.

1892. pp. 127, 178, Plants of Glen Spean; p. 253, Notes on English Botany, Supplement; p. 273, *Sagina alpina* in Scotland.
 1893. p. 32, *Alchemilla vulgaris*; p. 122, Plants of Glen A'an, Banffshire; p. 123, Notes on some Scottish Plants; p. 250, *Rosa resinoides* Crépin in Mid Perth.
 1894. p. 58, Extracts from B.E.C. Report for 1892; p. 122, *Juncus alpinus* in Easternness.
 1895. p. 35, Notes on the Flora and the Rocks of Cnoc-an-t'-Sasunnaich in West Sutherland; p. 123, *Poa humilis* in W. Ross and W. Sutherland.
 1896. pp. 38, 107, Notes on the 9th Ed. of the London Catalogue of British Plants; p. 126, Scotch Hieracia in the Fielding Herbarium at Oxford; p. 259, *Festuca ovina* L., var. *supina* Hackel in South Aberdeenshire.
 1897. p. 53, A Visit to the Loch of Spynie in search of *Utricularia Bremii*; p. 54, Notes on Plants observed about Forres and Findhorn; p. 55, *Caltha radicans* Forst. in S. Aberdeen; p. 127, Scotch Euphrasiae; p. 128, Scotch Carices; p. 260, *Carex* from Ben Lawers.
 1898. p. 122, Plants of West Ross, *Rosa dumetorum* Thuill., *Poa cenisia* All., var. *flexuosa* (Wahl.), a new species of grass in Scotland; p. 242, the "Flora of Perthshire;" p. 243, *Carex xanthocarpa* Degl., *Agrostis pumila* L.
 1899. p. 29, Notes on the Flora of Wigtownshire; p. 58, *Carex rostrata* × *vesicaria* in Glen Callater, *Deyeuxia stricta* H.B.K., var. *borealis* in Perthshire, *Saxifraga groenlandica* L.; p. 120, New Varieties of Scotch Carices; p. 185, Wigtownshire Plants, *Crataegus oxyacantha* L.; p. 186, an early Scottish locality for *Sparganium affine* Schnitzl.

1900. pp. 164, 225, Notes on the Flora of Perthshire; p. 252, *Rubus argentatus* in Scotland.
1901. p. 35, Notes on the Flora of South Aberdeenshire; p. 104, Notes on the Flora of Forfarshire; p. 121, Notes on the Flora of Argyllshire; p. 121, Notes on the Flora of Kincardineshire; p. 177, Three Species of *Rhinanthus* new to Scottish Flora.
1903. pp. 37, 122, Notes on the Flora of East Sutherlandshire; p. 53, Memorial to George Don; p. 54, Scottish Hieracia; p. 123, *Viola Pesneaui* in Scotland; p. 166, Notes on the Flora of Western Ross-shire; p. 226, Notes on the Flora of Eastern Ross-shire.
1904. p. 36, Notes on the Flora of Westernness; p. 114, Plants of Perthshire; p. 168, Plants of Caithness.
1905. p. 47, Notes on the New Edition of Babington's "Manual of British Botany;" p. 59, On a new sub-var. of *Poa annua* in Wigtown; p. 239, Plants of Roxburgh, Haddington and Berwick; p. 247, *Ranunculus reptans* in Mid Perth; p. 248, *Caltha radicans* in Mid Perth, *Rudbeckia laciniata* in Perth.
1906. p. 30, Two species of *Koeleria* new to Scotland; p. 58, Scottish Hieracia; p. 59, Scottish Carices; p. 217, Nomenclature of Plants.
1907. p. 96, Notes on the Flora of Berwickshire; p. 122, *Hieracium nigrescens*, var. *commutatum* on Ben Heagsarnich, Mid Perth; p. 241, Nomenclature of British Plants.
1908. pp. 39, 106, Plants of Sutherland and Caithness; p. 122, Notes on Plants from Scotland; p. 259, On the British Plant Lists and their Discrepancies, *Agropyron Donianum* on Ben Lawers, *Festuca ovina*, var. *alpina*, Scottish Roses.
1909. p. 96, On the British Plant Lists and their Discrepancies; p. 121, *Montia lamprosperma* Cham. in Scotland; p. 122, *Solidago* sp.; p. 258, *Carex helvola* Blytt on Ben Lawers.
1910. pp. 39, 95, Plants of some Southern Scottish Counties; p. 46, Critical remarks upon the Cyperaceae-Caricoideae as treated in Das Pflanzenreich by George Kükenthal.
1911. p. 38, The Alpine Cerastia of Britain; p. 56, *Rhinanthus Ferrieri*; pp. 96, 164, Scottish Plants chiefly from Skye, Peebles, Selkirk, and Kirkcudbright; p. 103, Scottish Hieracia; p. 251, *Montia verna* Necker; p. 252, *Castalia candida* in Scotland, *Sagina glabra* Koch in Scotland.
1912. p. 154, Linnaeus' "Flora Anglica."

THE NATURALIST.

1909. p. 97, The Oxford British Plant List.
1910. p. 128, *Helleborine atro-rubens* Druce, var. *Crowtheri*, nov. var. p. 227, Plants of the Steep Holme.
1914. p. 125, *Poa irrigata* Lindman in Britain; p. 189, *Orchis praetermissa* Druce.
1926. p. 145, *Impatiens glandulifera* and other Adventive Plants in Britain.

BOTANICAL RECORD CLUB REPORTS.

1880. pp. 168-175, Catalogue of West Ross-shire Plants (N.C. Records).
 1883. p. 64, List of New Records for Kirkcudbright; pp. 65-75, Plants observed in the County of Wigtownshire (mostly N.C.Rs.).

Besides the above papers, Dr Druce was largely responsible for the N.C.Rs. of the Counties of Berks, Bucks, Oxon, Northants, Angus, Easternness, Westernness, E. Ross, Banff and S. Aberdeen, which appeared in the Reports.

THE IRISH NATURALIST.

1899. p. 199, Irish Rubi; p. 198, Notes on the Flora of the Counties of Armagh, Down, Antrim and Derry.
 1907. p. 146, Notes on a Botanical Expedition to Ireland in September 1906.
 1909. p. 209, Notes on Irish Plants.
 1911. p. 117, The British Utriculariae.
 1912. p. 235, Notes on Irish Plants.

ANNALS OF BOTANY.

1896. Vol. x., No. xl., December, p. 621, The Occurrence of a hybrid Gentian in Britain; p. 622, The hybrids of *Linaria vulgaris* and *L. repens* in Britain.

JOURNAL OF THE LINNEAN SOCIETY.

- A new variety of Cow-wheat, *Melampyrum pratense*, var. *hians* (Read June 5, 1884).
 On a New Species of Grass, *Bromus interruptus*, in Britain (Read December 5, 1895), vol. xxxii.
 On the Occurrence of *Carex helvola* Blytt in Britain (Read March 2, 1898), vol. xxxiii.
 On the British Species of Sea-Thrifts and Sea-Lavenders (Read December 6, 1900), vol. xxxv.
 On *Poa laxa* and *Poa stricta* of our British Floras, vol. xxxv.

ASHMOLEAN NATURAL HISTORY SOCIETY OF OXFORDSHIRE.

The inauguration of the Society was effected in 1880, when Dr Druce played a leading part in its foundation. He was Secretary from its inception (1880) till 1887, and Treasurer from 1880 to 1932 except for the years 1887 (part) to 1889. He has been President four times, 1895-1897, 1905-1906, 1915-1916, 1928-1929, the last Centenary year of the Ashmolean Natural History Society. Besides giving numerous Lantern Lectures to the Society, he gave annually a Christmas Lecture for Children from 1900 to 1930, only missing 1912, when, owing to indisposition, he had a deputy to deliver his Lecture for him.

Accounts of the Ruskin Reserve at Cothill, p. 21 (1902), p. 20 (1908), p. 19 (1916); *Ulmus Plotii* Druce, p. 33, 1911 (and plate); *Orchis praetermissa*, p. 30, 1914 (and plate); *Ewelme Plants*, 1796-9, p. 23, 1917; Additions to the Berkshire Flora, p. 21, 1918; Mosses and Liverworts of Oxfordshire, p. 25, 1921; Obituary Notices of W. Baxter, p. 22, 1903; H. E. F. Garnsey, p. 26, 1903; F. T. Richards, p. 16, 1905; H. Willett, p. 16, 1906; W. Osler, p. 23, 1919; A. M. Bell, p. 20, 1920.

Besides the above papers he wrote the yearly Sectional Report of Field Botany, of which Section he was President since the foundation of the Society.

THE BOTANICAL EXCHANGE CLUB OF THE BRITISH ISLES.

First contributed plants for Exchange in 1878 when he sent *Rosa tomentella* from Gayton and Rothershope, Northants. In 1879, he sent *Lepidium Smithii*, a form with yellow anthers, from Kingsthorpe, Northants; *Carex vulpina*, b. *nemorosa* Rebentisch, from Fotheringay, Northants. From 1880 onwards he was a regular contributor to the Exchange Club (excepting the year 1886) as well as making many N.C.Rs. which are published in the Reports.

He was the Distributor for 1888, 1892 (being the largest single contributor of specimens, sending 759), 1897, and 1903, and Secretary of the Club, 1902, on the resignation of Mr C. Bailey. From 1902, besides being the Secretary and Treasurer of the Club, and compiling the Plant Notes, Book and Obituary Notices, etc., he was often the largest contributor of specimens for Exchange (e.g., 1911, 1912, 1916, 1923).

- 1913. pp. 405-440, Notes on Nomenclature.
- 1914. pp. 88-108, Supplement to Botanical Society Report for 1914: Part I., *Erophila*; Part II., *Orchis maculata* and *O. Fuchsii*.
- 1916. pp. 523-550, Supplement to Report of Bot. Soc. and Exchange Club for 1916: John Goodyer, of Mapledurham, Hampshire, 1592-1664; pp. 601-653, Nomenclatorial Notes, chiefly African and Australian.
- 1917. pp. 149-189, Notes on the British Orchids, chiefly the Palmate Section.
- 1918. pp. 443-480, Supplement: Additions to the Berkshire Flora.
- 1919. pp. 731-799, Supplement: The Extinct and Dubious Plants of Britain.
- 1920. pp. 179-190, Supplement: *Bursa pastoris* Weber, studies by E. Almquist, introduction by G. C. Druce (pp. 11).
- 1921. pp. 309-316, *Orchis latifolia*, *praetermissa*, *maculata*, *purpurella*; pp. 457-546, Flora Zetlandica.
- 1922. pp. 625-8, *Orchis latifolia*; pp. 756-66, Herbaria; pp. 786-796, Botanising in Norway; pp. 809-813, The History of the Botanical Society and Exchange Club of the British Isles.
- 1923. pp. 322-328, *Orchis maculata* and *O. Fuchsii* Druce; pp. 335-366 and 5 plates, Supplement: The Foundation of the Oxford Botanic Garden and its Tercentenary.

1924. pp. 623-657, Additions to the Flora Zetlandica; pp. 661-666, Canon John Vaughan and his Herbarium; pp. 691-694, Mrs Delany and Bucks Plants, Nomenclatorial Note.
1925. pp. 919-924, A Note on Nomenclature; p. 933, Presentation to the Honorary Secretary (G. C. Druce); pp. 949-957, Huntingdonshire Plants; pp. 966-977, Egypt and Palestine; pp. 978-983, Norway and Sweden.
1926. pp. 145-152, Le Lautaret; pp. 169-174, Note on Nomenclature.
1927. pp. 463-493, British Plants contained in the Du Bois Herbarium at Oxford, 1690-1723; pp. 539-548, A Visit to the Canaries.
1928. p. 851, British Brambles by C. G. Trower (edited by G. C. Druce); pp. 867-883, "British Plant List," Notes on the Second Edition, and Additions and Corrections. Supplement: The Flora of West Ross, pp. xxxvii. + 112 (1929).
1929. pp. 177-198, The British Erophila.
1930. p. 437, *Magnolia grandiflora*; pp. 469-471, Plants new to the Cyprus Flora; p. 479, Dr Druce's Eightieth Birthday.

MISCELLANEOUS.

- The Botany for the Victoria County History of Berkshire, pp. 47; Buckinghamshire, pp. 40; Bedfordshire (with others), pp. 32; Northamptonshire, pp. 38; Huntingdonshire, pp. 50; Oxfordshire, pp. 30; The Genus *Cerastium* for Moss's Cambridge Brit. Flora, iii. (1920), pp. 43-56; The Genus *Montia* for Moss's Cambridge Brit. Flora, iii. (1920), pp. 3-6.
- Helleborine* Hill or *Epipactis* Adans.? Bulletin of the Torrey Botanical Club, xxxvi., p. 543, 1909.
- What is *Convallaria odorata* Mill.? *l.c.*, xxxvi., p. 409, 1909.
- Linnaeus' "Flora Anglica." Scottish Botanical Review, p. 154, July 1912.
- The International Phytogeographical Excursion in the British Isles. Additional Floristic Notes, by G. C. Druce. New Phytologist, vol. xi., No. 9, November 1912.
- Artemisia Stelleriana* Bess. in Scotland (comm. by Dr R. S. MacDougall). Trans. and Proc. Bot. Soc. Edin., April 1900.
- Notes on Scottish Plants, *l.c.*, vol. xxvi., part ii., p. 147.
- Some Gloucestershire Plants. Proc. Cotteswold Nat. Field Club, vol. xiv., part ii., January 1903.
- Notes on the Botany of Otmoor. Trans. and Papers of Oxf. Archaeol. Soc., No. xl., 1900.
- Address on the Unveiling of the Monument to George Don at Forfar, September 8, 1910, ptd. by Parker & Co., Oxford, 1910.
- President's Address, British Pharmaceutical Conference, Dublin, and Dundee, 1902.

TRAVEL.

- "North African Experiences," being Notes of a Tour in the Spring of 1900. Reprinted from Chemist and Druggist, pp. 38 (1900).

- "A Pharmacist Abroad"—Athens, Smyrna and Constantinople. Reprinted from the *Pharmaceutical Journ.*, February 24, 1906, pp. 14 (illustr.).
- "A Pharmacist in Constantinople." Reprinted from *do.*, May 19, 1906, pp. 12 (illustr.).
- "A Pharmacist Abroad," Wanderings in Greece and Turkey. Reprinted from *do.*, December 2, 1905, pp. 8.
- "Southern and Eastern Sketches"—Sicily, etc. Reprinted from *do.*, August 1 and November 26, 1903 (illustr.), pp. 22.
- *do.*, February 27, 1904 (illustr.), pp. 16.
- Syracuse, *do.*, May 21, 1904 (illustr.), pp. 27.
- Corfu and Greece, *do.*, January 7, 1905 (illustr.), pp. 20.
- Madeira and the Azores. Reprinted from *Chemist and Druggist* (1890) (illustr.), pp. 16.

CORRECTIONS.

In "Report Bot. Exch. Club," 1928, vol. viii., part v. (August 1929).
P. 665, line 2 from top of page, for "in Trans." read "communicated to the."

In "Report Bot. Exch. Club," 1928, vol. viii., part vi. (August 1929).
P. 913, line 1 from bottom of page, for "Lorns" read "Loons."

In "Report Bot. Exch. Club," 1929, vol. ix., part i. (August 1930).
P. 9, column 1, line 4 from top of page, for "Edmondstone" read "Edmondston."

P. 24, line 2 from top of page, for "4286" read "4280."

P. 118, line 5 from top of page, for "Carrston" read "Cairston."

P. 119, line 4 from top of page, and page 129, line 25 from top of page, for "Runcat" read "Runcie."

P. 127, line 21 from top of page, for "[B.905]" read "[3905]."

P. 129, line 17 from bottom of page, for "Northdale" read "the Burn of Aith;" and, in line 16 from bottom of page, for "the same place" read "Northdale."

P. 135, line 4 from top of page, for "[394]" read "[3911]."

P. 137, line 2 from top of page, for "Redland" read "Rendall;" and, in line 7 from top of page, for "Dullant" read "Dullans."

P. 137, lines 7 and 8 from top of page—"×PHYLICIFOLIA=LUDIFICANS F.B.W. Burn of Dullans, Fetlar, Zetland, a planted shrub, Johnston."

NOTE.—This hybrid is shown under 650/9 SALIX AURITA L., instead of under 650/8 SALIX CAPREA L., as determined by Mr J. Fraser, namely, "SALIX CAPREA × PHYLICIFOLIA."

P. 137, line 15 from top of page, for "Bank" read "Burn."

P. 140, line 14 from bottom of page, for "Ferber" read "Fieber;" and, in line 8 from bottom of page, for "Une" read "Urie."

P. 143, line 12 from bottom of page, for "Den of Dunkadale" read "Dee of Durkadale."

At the following places, for "Johnston in Trans. Bot. Soc. Edin., 1928," and "1929" read Johnston in his "Additions to the Flora of Orkney" (1929):—

P. 24, lines 5 and 29 from top of page.

P. 25, lines 5 and 15 from top of page.

P. 26, lines 1 and 4 from top of page.

P. 107, line 10 from bottom of page.

P. 108, line 16 from bottom of page.

P. 115, line 19 from bottom of page.

P. 118, line 6 from top of page.

P. 121, line 20 from top of page.

P. 126, line 12 from bottom of page.

P. 136, lines 21, 10 and 1 from bottom of page.

P. 137, line 2 from top of page.

P. 144, line 1 from top of page.

On page 25, line 23 from top of page, and page 26, line 16 from bottom of page, *add* See H. H. Johnston's "Additions to the Flora of Orkney" (1929).

At the following places, *for* "Johnston in Trans. Bot. Soc. Edin." *read* Johnston in his "Additions to the Flora of Shetland" (1929)—

P. 102, line 9 from bottom of page.

P. 106, line 8 from bottom of page.

P. 144, line 1 from bottom of page.

On page 32, line 5 from bottom of page, and on page 142, line 14 from bottom of page, *add* See H. H. Johnston's "Additions to the Flora of Shetland" (1929).

NOTE.—Colonel H. H. Johnston's Eleventh (1928), Twelfth (1929), Thirteenth (1929), Fourteenth (1931), and Fifteenth (1932) Papers on "Additions to the Flora of Orkney, and his Second (1928), Third (1929), and Fourth (1929) Papers on "Additions to the Flora of Shetland" were not published in the "Transactions of the Botanical Society of Edinburgh." They were printed privately for him by Messrs Neill & Co., Ltd., Edinburgh.

In "Report Bot. Exch. Club," 1930, vol. ix., part iii. (August 1931).

P. 363, line 5 from bottom of page, *after* "Orkney" *add* [4065];
and, in line 4 from bottom of page, *for* "[1458]" *read* "[346]."