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ERRATA

- p. 36, line 10 up : *For Achilea* read *Achillea*.
p. 66, line 5 up : *For Carrothers* read Carrothers.
p. 101, heading : *For Notes* read **Notices**.
p. 163, line 10 : *For Pica* read *Picea*.
p. 213, line 20 : *For Ardgarter* read Ardgarth.
p. 260, line 11 : *For Machinhanish* read Machrihanish.
p. 266, lines 21 & 22 up : *For Tralligyll* read Tralligill.
p. 300, line 13 : *For 'as yet C. juncella has been'* read 'as yet *C. juncella* has not been'.
p. 368, line 17 : *For MARITINII* read MARTINII.
facing p. 430, heading : *For Exhibitors* read **Contributors**.

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OF THE
BOTANICAL SOCIETY OF THE BRITISH ISLES

Editor : D. H. KENT

Vol. 2

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Continued on inside of back cover

PLATE 1



C. rostrata

Hybrid

C. pseudocyprius

A HYBRID SEDGE FROM WEST NORFOLK

By C. P. PETCH and E. L. SWANN

In late August, 1955, when botanizing on Cranberry Rough, which is on the site of the former Hockham Mere, we came across a few clumps of a sedge which one of us (E.L.S.) at first glance took to be a strange form of *Carex vesicaria* L. Fortunately the other had taken material for further examination and found that no fruit had formed. Subsequent visits to secure fresh material and to carry out further field-observations strengthened the suggestion of hybridity, for the characters appeared to be more or less intermediate between *C. pseudocyperus* L., and *C. rostrata* Stokes. On submitting material to Mr. Nelmes our tentative determination was confirmed.

Although Pearsall (1934) records this hybrid as British he gives no particulars and search in the literature has revealed remarkably few instances. There are no European specimens at Kew but Mr. Nelmes informs us that he has seen three Swedish gatherings at the British Museum. It would seem reasonable to suggest that its rarity may be due to three reasons. Although both parents are common in West Norfolk they do not usually grow together; *C. rostrata* begins to flower about a month earlier than *C. pseudocyperus*; and the plants are wind-pollinated.

The area in which we found this plant is only a few square yards in extent. One of its parents (*C. pseudocyperus*) is abundant close by but the other is about a hundred yards away. There are five colonies in all growing on the side of one of the drainage channels near alder-carr. The soil here is peat, up to 120 cm. deep, with the summer water-table not far below the surface. The Mere was drained during the 18th century. The associated flora comprises:—

Alnus glutinosa (a), *Holcus lanatus* (f), *Juncus effusus* (a), *Lysimachia vulgaris* (f), *Lythrum salicaria* (f), *Mentha aquatica* (a), *Phragmites communis* (o), *Salix cinerea* (a).

A description of the hybrid *Carex* follows.

Carex pseudocyperus × *rostrata* (Thorstenson) Kükenth., 1909, in *Engl. Pflanzenr.*, IV, 20: 758. *C. ampullacea* × *pseudocyperus* Thorstenson, 1893, in *Vet.-Akad. Förh. Stockholm*, 50: 278.—Sweden, Thorstenson. *C. Schmidtiana* Junge, 1904, in *Verh. naturw. Ver. Hamburg*, 3, Folge, 12: 22.—Germany, Junge.

Densely tufted. Stems to 75 cm. tall, 3 mm. thick above the crowded lower leaves, smooth below but scabrid towards and on the rhachis,

erect up to the slightly drooping inflorescence. *Leaves* overtopping the spikes, 6-12 mm. wide, flat or flattish, glaucous below, bright green above, scabrid on the margins and principal nerves and very rough on much of both surfaces, longly attenuated towards the apices. *Spikes* 5, rarely 6, dense-flowered, slightly drooping, sometimes slightly curved or flexuous, fastigiate, and approximate, i.e. arising from nodes which are 3-6 cm. distant from one another, uppermost $1\frac{1}{2}$ -2 male, terminating the stem, slenderly cylindric, 8 cm. long, about 3 mm. thick, lateral spikes female (except the uppermost which has a male upper half), stoutly cylindric, 6.5-12 cm. long, 8-10 mm. thick (including the long spreading beaks of the utricles), upper scarcely or shortly, lower rather shortly peduncled, lowest slightly compound at base. *Bracts* (lower) subfoliaceous, much longer than the whole inflorescence, upper bracts reduced, none sheathing. *Female glumes* more or less oblong to elliptic-lanceolate, apex obtuse, 3-4 mm. long (excluding awn), whitish to light, bright brownish with a greenish midrib, awn flattened, ciliate-hispidulous, 0.5-4 mm. long. *Utricles* ovoid or, beak included, ovoid-lanceoloid, inflated, often somewhat shrunken, 5-6 mm. long (including stipe and beak with teeth), 1.8-2.2 mm. broad, distinctly rather many-nerved, narrowly but distinctly marginate, glabrous, straight, obliquely to subpatently spreading, light-greenish to light yellowish-green, tapering gradually into a beak; *beak* at the base gradually and above scarcely tapering, rather compressed, 2-2.5 mm. long, narrowly marginate, smooth, bidentate; *teeth* 0.5-1 mm. long, slender, firm, each tooth gradually tapering, together sometimes erect but usually moderately diverging. *Achene* undeveloped.

V.c. 28, W. Norfolk. Cranberry Rough, Hockham, August 1955, C. P. PETCH and E. L. SWANN (Herb. Kew.).

The following is Kükenthal's description of European specimens. "Rhizoma laxe caespitosum interdum stoloniferum. Culmus validus triqueter parce scaber. Folia 3-5 mm. lata, vaginae basillares brunneae parce reticulatim fissae. Spiculae 5-6, superiores 2-3 ♂, inferiores ♀ cylindricae remotiusculae pedunculatae subnutantes. Squamae ♀ lanceolatae acuminato-aristatae ferrugineo-fuscae. Utriculi lanceolato-ovati subinflato-trigoni multicostati, in rostrum longum bidentatum subsensim desinentes steriles, crura porrecta (breviora quam in *C. pseudocyperus*)".

It will be seen that the leaves of the Norfolk plants are wider and male spikes fewer than in Kükenthal's description.

The Norfolk hybrid differs from *C. pseudocyperus* L., in its partly glaucous leaves; its only slightly pendulous, less crowded, longer, looser-flowered, spikes, fewer male spikes; its less oblong, much longer (but shorter-awned), not always whitish female glumes; and its utricles ovate-lanceolate, less strongly and rather fewer nerved, less spreading, brighter and more yellowish green, more inflated, with teeth slightly shorter and more diverging.

It differs from *C. rostrata* Stokes in its wider, flatter and partly greenish leaves; its more pendulous, longer, fewer male, more numerous female, more crowded and fastigate spikes; its differently shaped, obtuse, not reddish-brown with silvery margins, awned, female glumes; and its utricles differently shaped, longer (5-6 not 4-5 mm.), relatively narrower, and more stoutly nerved, slightly less spreading, tapering gradually (not abruptly contracted) into the beak, which is more flattened, much longer, more distinctly marginate and with much longer and somewhat firmer teeth.

A later visit brought to light a few clumps of a plant that appears to be intermediate between the hybrid and *C. rostrata*. A few achenes had developed and this may well be accounted for by its being nearer one of the fertile parents. The leaves are darker and more glaucous green and slightly less flat; spikes more erect and slightly stouter; female glumes oblong-ovate to elliptic, 3.5-5 mm. long, dark brownish and but little awned; utricles mostly ovoid or ellipsoid, 5-6 mm. long, 2-3 mm. broad, rather less distinctly and fewer nerved, darker and more yellowish green, more abruptly and more shortly and slenderly beaked; beak shorter in proportion to the rest of the utricle; teeth shorter, less firm and slightly more divergent. Kükenthal (1909) has the hybrid divided into "*A. superpseudocyperus* Junge, *B. intermedia* Junge, and *C. super-rostrata* Junge" but his descriptions do not fit our plant very well.

The accompanying photograph shows the hybrid with parents, and the bracts have been removed to show the inflorescences more clearly.

The writers are much indebted to Mr. E. Nelmes for his interest and assistance in the preparation of this paper.

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KÜKENTHAL, G., 1909, Cyperaceae, in Engler, A., *Das Pflanzenreich*, **4**, 20.
PEARSALL, W. H., 1934, Some hybrid carices, *Rep. Bot. Soc. & E.C.*, **10**, 682-685.

THE MILITARY ORCHID IN SUFFOLK

ANONYMOUS

Orchis militaris L. is one of the rarest of British plants. Although the nineteenth century produced a good many scattered records for the orchid and in places it was 'seen in considerable numbers', it appears to have been unknown as a British plant from about 1914 until rediscovered by J. E. Lousley in May 1947. All the British records appear to be in the Chilterns and North Downs areas.

The discovery of a large population of the Military Orchid in Suffolk in June last year was therefore particularly surprising, not only because of the size and vigour of the population, but because the locality was more than 60 miles from any previous record.

The plant in its newly-discovered Suffolk locality is strictly confined to a calcareous, partly-shaded habitat not unlike that described for its other known British stations. The colony contained at least 500 plants in all stages of development from seedlings with single leaves to magnificent plants in full flower up to 18" tall with as many as 42 flowers per spike. On the 2nd June, when the colony was first discovered, only a few spikes had opened their lowest flowers. Well over 100 spikes were in flower or in bud. Extensive damage was caused by some animal which bit through the flower-stalk, mostly just beneath the inflorescence, and also caused leaf-damage (see plate 3). This may be slug-damage, but slugs have not been seen actually at work. The following data show the fate of the flowering spikes:—

5th June	Well over 100 flowering spikes developing. Some last year's dead fruiting stalks visible.
8th June	At least 10 spikes eaten off.
22nd June	Only 35 spikes flowering; remainder had been eaten off.
1st July	29 flowering spikes left. Nearly all flowers were now open, and some capsules were developing.
9th July	18 spikes left, with flowers and capsules.
18th July	16 fruiting spikes.
17th August	16 fruiting spikes (now brown) with 65 capsules.
20th Sept.	At least 21 ripe capsules containing dust-like seed. Basal leaves and fruiting stems were brown and withered, but young single-leaved plants were still green.

PLATE 2



Flowering spikes of *Orchis militaris*.

PLATE 3



Group of flowering plants of *Orchis militaris*, showing animal damage

The age of the colony is of considerable interest. Various lines of evidence suggest that it could not be much less than 10 years, and probably not more than 50. About 20 years seems a reasonable estimate. Its discovery emphasises yet again that relatively well-known territory can yield, on careful scrutiny, botanical 'finds' of first-class importance. As a by-product of the Distribution Maps Scheme, *Orchis militaris* is very impressive!

SPIRANTHES SPIRALIS (L.) CHEVALL. IN BRITAIN, 1955

By F. H. PERRING

On 6th September 1955 a letter was published in "The Times" from Canon Barker of Ellisfield, nr. Basingstoke, commenting on the fact that 'Lady Tresses' had appeared in masses on a south-facing lawn in north Hampshire. In the previous year there had been but a few specimens and the plant had not been known there in earlier years. A few days later "The Times" printed nine more letters which reported similar occurrences from places as far apart as Groombridge in Kent, Kingwood, Henley-on-Thames, Oxon, and Braunton, North Devon. Following this Dr. Walters and I wrote to "The Times" asking other readers for information on the extraordinarily profuse flowering of this species in southern England this season. As a result we received over 50 letters, nearly all of which confirmed the general impression that either the species had occurred in new localities or was much more abundant than usual in old ones. The majority of records were for lawns which correspondents explained had not been cut for some weeks during the unusually long hot dry spell in mid-summer. This agrees well with V. S. Summerhayes' remark in *Wild Orchids of Britain* that at one locality in Somerset the species used to flower regularly on a tennis court immediately under the net, where the mowing was not quite so vigorous as elsewhere.

In addition to "The Times" records I have received reports from some county referees and I have extracted data from literature and herbaria. Records already acquired by the Maps Scheme have also been incorporated. The map (Fig. 1) shows the distribution of *Spiranthes spiralis* for three periods of time:

1. Solid dot. 10 kilometre grid squares in which the species was reported as flowering in 1955.
2. Cross. Squares from which the species has been recorded since 1930 but not in 1955.
3. Circle. Squares from which the species was recorded before 1930 but not subsequently.

The map shows an interesting apparent change in the range of the species in the last 25 years. If Ireland is excluded (as "The Times" survey surely did not operate there) then of the 72 records for 1955 only 5 (7%) fall to the north and east of a line drawn from the Thames Estuary to Anglesey, whilst 67 fall to the west.

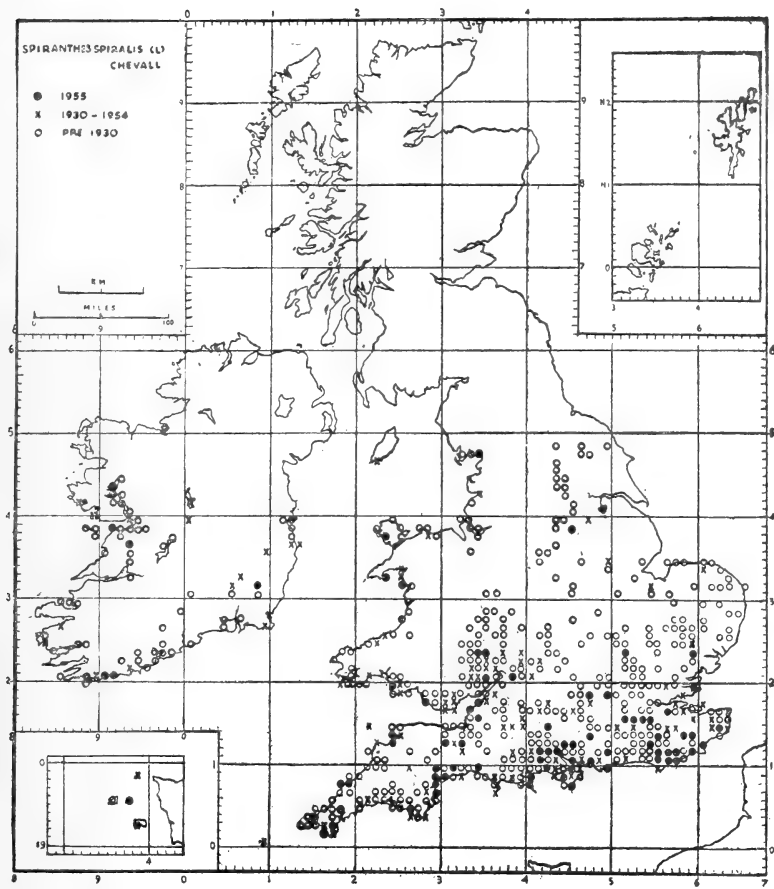


Figure 1

Over the period 1930-54, of 100 records 10 (10%) are to the east and 90 to the west. Of the records before 1930 no fewer than 121 (27.5%) are to the east and 318 to the west. Is this a real change of range, however? *Spiranthes spiralis* is much more frequent in the south and west and occurs every year in some coastal localities; for example, a lady living near St. Catherine's Point, Isle of Wight, writes that she has noticed it on her lawn every year for 73 years. It may be that in favourable seasons the plant extends its range to the north and east where it establishes itself in new localities for a number of years before dying out. If these localities are noted over a period of 200 years, records would accumulate for many parts of the north and east though in no one year need there have been a greater percentage of occurrences than there have been in 1955.

This situation raises a special problem in the mapping of species which are sporadic over part of their range, where they are rare not only in space but in time. A map using symbols to indicate records in a particular age group as has been done in Fig. 1 would, with these results, normally suggest that a species is being reduced in range, but as we now see it may be due to the accumulation of old sporadic records and it may be impossible to distinguish between the two.

Nevertheless it seems unlikely that this effect can wholly account for the differences in past and present distribution patterns of *Spiranthes*. The almost complete absence of records from the whole of East Anglia in the last 25 years, from the Midland counties and the Yorkshire limestone, leads to the belief that the plant was at one time more frequent. This belief can to a certain extent be supported by figures. If we assume that effective recording started about 1780 then between that date and 1930 the 121 records from the north and east would accumulate at the rate of 0.8 records per year. If the plant were as frequent in the period between 1930 and 1954 inclusive, 20 records would be expected. In fact there were only 10. From the south and west there are records from 318 squares over the 150 years 1780-1930, i.e. 2.12 records per year. Therefore in the 25 years since 1930, 53 records would be expected. The actual figure is 90. (1955 records are excluded as a special effort has been made to acquire records for this year). These figures suggest that the species is at least as frequent as formerly in the south and west but only about half as frequent in the north and east.

It would be too simple to suggest that the difference is related entirely to macro-climatic changes. There are other factors which are probably equally responsible. The absence in the London area is certainly in part due to population pressure and the same may be said of the Yorkshire limestone where its disappearance is paralleled by that of *Anemone pulsatilla*. Where habitats are given in nineteenth century floras of East Anglia several records

are from 'Moors'; for example, in Babington's *Flora of Cambridge* (1860) 'Sawston Moor', 'Moor at Snailwell', and in the herbarium at Cambridge there is a specimen collected by F. Robinson in 1915 labelled 'damp heathland, Foulden' (W. Norfolk). These moors are not of acid peat but are wet base-rich meadows. As was pointed out in a recent paper* the extensive drainage of the fens has caused the disappearance or serious reduction of many species of fen and marsh in Cambridgeshire. Damp meadows may have dried out at the same time and the general level of relative humidity must certainly have fallen, creating a drier micro-climate and conditions less suitable for the growth of *Spiranthes*. 'Moors' however are not the only localities mentioned for East Anglia and there were at one time records from lawns in Suffolk which have not been confirmed in recent years.

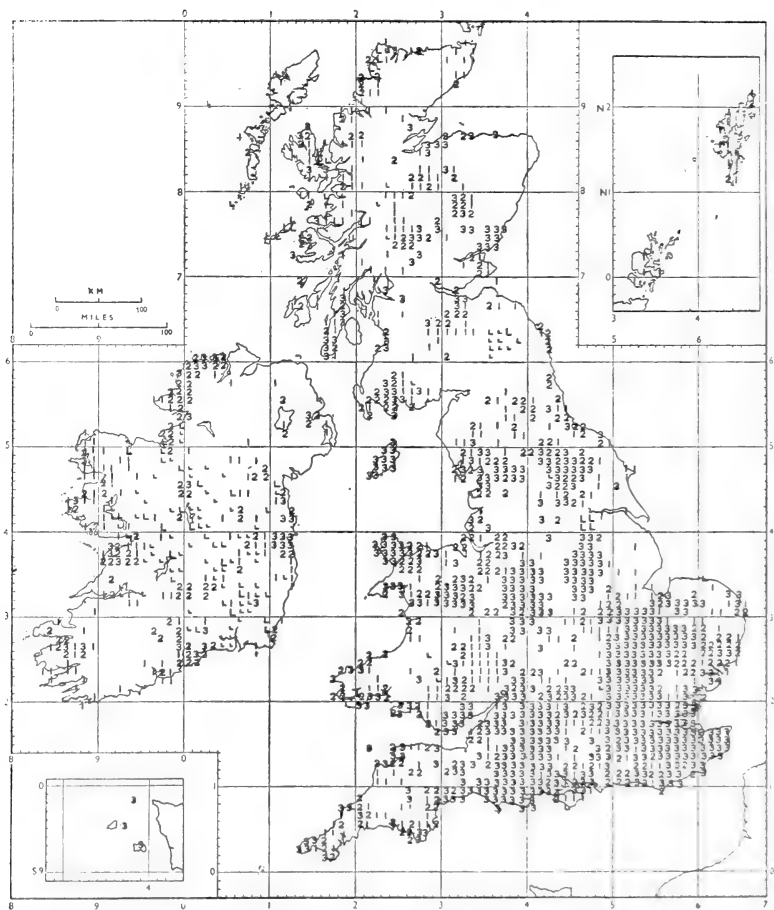
If in East Anglia, the most continental part of Britain, *Spiranthes* used to occur in damp meadows it is not surprising that it should be most abundant on the coast of England in the south and west, where the rainfall is higher, and that inland it is most frequent around the two large estuaries, the Bristol Channel and Southampton Water, where the effect of the higher relative humidity is experienced furthest from the sea.

From the survey of literature and herbaria the vice-comital distribution of *Spiranthes spiralis* is: 62(1), H.21(1), S.; 1-30, 32-41, 44-46, 48-60, 62-65, 69, 71, (47); H. 1-9, 11-13, 15-18, 20, 21, 25, 26, 28, (10). There is no further confirmation of the record for Montgomeryshire. The original record in *Topographical Botany* gives no locality. No locality is known for the record from N. Tipperary.

The vice-counties from which *Spiranthes spiralis* was recorded in 1955 are: 1-6, 9-19, 23, 24, 30, 34, 36, 41, 46, 48, 49, 52, 63, 69. H. 3, 9, 12, 21, 26, S.

More information, particularly of records since 1930, would be welcomed.

*Notes on the flora of Cambridge (v.c. 29), Perring, F. H., Walters, S. M., and Sell, P. D., *Proceedings of the Bot. Soc. Br. Isles*, 1, 471 (1955).



BOTANICAL SOCIETY OF THE BRITISH ISLES DISTRIBUTION MAPS SCHEME

Fig. 1. State of Returns at March 1956

- 3 10 km. square in which >250 species are recorded
- 2 10 km. square in which >150 species are recorded
- 1 10 km. square in which >50 species are recorded
- 1. 10 km. square in which >150 species are recorded in literature
- 1. 10 km. square in which >50 species are recorded in literature

**B.S.B.I. DISTRIBUTION MAPS SCHEME; SURVEY OF 1955
RECORDING, AND SUGGESTIONS FOR RECORDING IN 1956**

By S. M. WALTERS and F. H. PERRING

By November 1955, about 250,000 records for 887 10-kilometre grid squares had accumulated, an average of about 280 per square covered. There remained 2,600 squares with under 50 records; from at least 300 of these, however, full information is promised, and there are therefore some 2,300 squares underworked. The map, fig. 1, shows the state of the returns.

The 1955 response in recording has been gratifying, and much useful information has been gained, which enables us to make suggestions and recommendations for 1956. Two recording excursions in particular might be used as examples of what is practicable in underworked areas. These are, the B.S.B.I. meeting in Galloway in June and an excursion, organised from the Cambridge Botany School, in north Montgomery and adjoining counties in August.

During the week's recording in Galloway seventeen 10-kilometre squares were visited and a total of about 4,000 records was made; the average per square was about 230. The fewest species were found in the montane squares. Here it was difficult to reach a total of over 150. Although the highest parts of those squares were not visited, it seems unlikely that a thorough search would yield much more than another 50. In contrast the coastal squares, particularly those on the south, were relatively rich and over 300 species were recorded in a day from 25/43, the Whithorn square. During the first few days the object was to work the squares around Newton Stewart as thoroughly as possible, but later in the week new habitats were visited wherever they might occur. As a result over 630 species of flowering plants were seen during the period. Although by this method less frequent species may have been missed in some of the squares, there are records which will show relatively, though not absolutely, the pattern of distribution of a great many more species than would otherwise have been possible.

The distributions fall into six main groups:— (see fig. 2)

- (a) The ubiquitous; e.g. *Bellis perennis*, *Plantago lanceolata*, *Plantago major*, *Cynosurus cristatus*, *Dactylis glomerata*, *Conopodium majus*, *Athyrium filix-femina*, *Poa annua*.
- (b) The lowland; (absent from mountain squares with most land over 500' and little arable land); e.g. *Geranium dissectum*, *Glechoma hederacea*, *Geum urbanum*, *Capsella bursa-pastoris*, *Veronica persica*.

- (c) The upland; (most frequent in the north and east though not confined to the mountains, less frequent in coastal squares because of the lower rainfall); e.g. *Carum verticillatum*, *Thelypteris oreopteris*, *Juncus kochii*, *Eriophorum vaginatum*.
- (d) The intermediate; (excluded from both mountain and coast); e.g. *Alchemilla vulgaris* agg., *Geum rivale*, *Carex curta*, *Antennaria dioica*.
- (e) The coastal; (this comprises species not confined to maritime habitats, but to cliffs and dry places near the sea); e.g. *Helianthemum chamaecistus*, *Astragalus danicus*, *Vicia bithynica*, *Vicia lutea*, *Leontodon leysseri*, *Festuca arundinacea*, *Trisetum flavescens*, *Helictotrichon pubescens*, *Humulus lupulus*, *Koeleria gracilis*.
- (f) The montane; (found only in north and east squares with high rainfall and altitude); *Lycopodium selago*, *Hymenophyllum wilsoni*, *Hieracium diaphanoides*, *Meum athamanticum*, *Cryptogramma crispa*, *Salix herbacea*.

Further investigation might show that these groups are not valid. *Geum rivale*, group (d), is generally regarded as a hill plant associated with *Trollius europaeus* in Scotland and might therefore be expected to have an upland distribution. *Carum verticillatum*, group (c), we understand, does grow in damp pastures close to the shore, but under the lower rainfall conditions

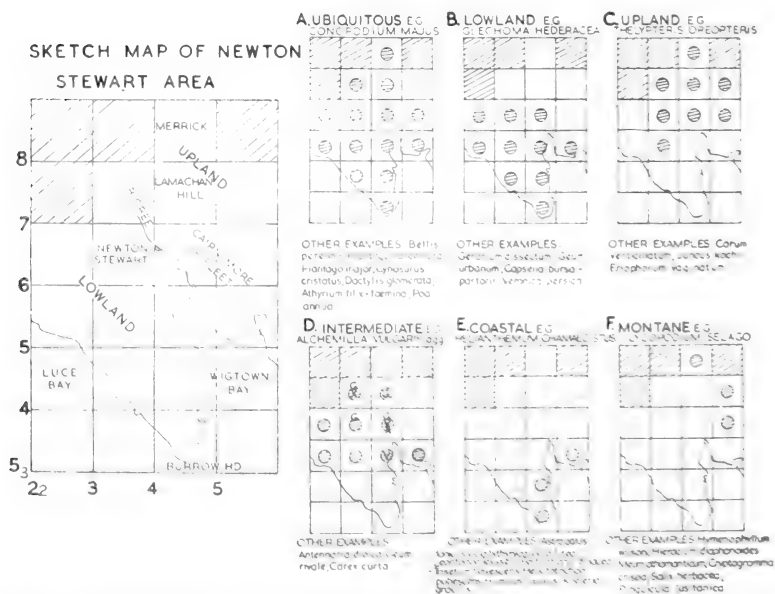


Fig. 2. Distribution patterns from Galloway data (explanation in text).

there are fewer damp pastures, *Carum verticillatum* is correspondingly rarer, and whereas in the uplands it was recorded constantly, a party of six did not see it once during a whole day in the Whithorn square, in the extreme south.

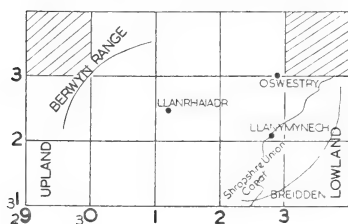
The student excursion to Montgomery did not concentrate exclusively on recording. Nevertheless, in the fortnight August 13th-27th, thirteen squares round Llanrhaiadr-ym-Mochnant (on the Montgomery-Denbigh border, to the south east of the Berwyn range) were more or less adequately sampled, and a total of over 600 vascular plants recorded.

Distribution patterns were revealed by the recording (fig. 3) which it is interesting and instructive to compare with those derived from the Galloway meeting. The following points emerge from a comparison of the data (a selection of which is represented in figs. 2 and 3):—

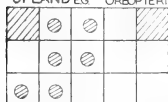
- (a) In both areas *Poa annua*, *Plantago lanceolata*, *Cynosurus cristatus*, *Dactylis glomerata*, *Athyrium filix-femina*, are ubiquitous, though *Conopodium majus*, ubiquitous in Newton Stewart, has an intermediate distribution in Wales. This probably reflects the relatively greater gradient of altitude in the Welsh area in which the most western square, 23/92, has little or no ground below 1,000 ft., whereas in the Merrick square, 25/48, north of Newton Stewart, the altitude on the shores of Lake Trool is only 250 ft.
- (b) *Glechoma*, *Capsella* and *Veronica persica* have a lowland distribution in both areas—the last two, weeds of cultivation, excluded from the highlands for obvious reasons. *Glechoma* may be restricted by climate.
- (c) In both areas *Thelypteris oreopteris* shows a very similar pattern, but the absence of other species with similar patterns in both areas emphasises the suggestion that this upland group may not be valid.
- (d) There is no overlap of species in the intermediate group but if *Alchemilla vulgaris* agg. is broken down into its segregates, then in both areas *Alchemilla xanthochlora* has an intermediate distribution.
- (e) There is a strong relationship between the calcicole flora in Wales and the coastal flora in Scotland. *Helianthemum chamaecistus* is only one example, but there are many others which are not illustrated in the figures, e.g. *Koeleria gracilis*, *Festuca arundinacea*. In both areas these were the only dry base-rich habitats.
- (f) The montane distribution is well marked in both areas but there are only a few species in common, e.g. *Lycopodium selago*, *Cryptogramma crispa*.

Experience on these and other recording trips in 1955 has shown that a day's visit to a 10-kilometre square by one or two competent botanists at any time in the summer season (June to September inclusive) can yield between 150 and 300 species depending on the richness of the flora; most lowland squares

SKETCH MAP OF LLANRHAIDR AREA

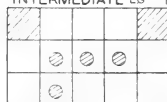


C. UPLAND E.G. THELYPTERIS OREOPTERIS



OTHER EXAMPLES: *Carex ovalis*, *Enophrum angustifolium*, *Erica tetralix*, *Jasione montana*

D. INTERMEDIATE E.G. CONOPIDIUM MAJUS



OTHER EXAMPLES: *Geranium dissectum*, *Erica cinerea*, *Ceterach officinale*, *Alopecurus geniculatus*

F. MONTANE E.G. LYCOPODIUM SELAGO



OTHER EXAMPLES: *Rubus chamaemorus*, *Geum rivale*, *Thelypteris dryopteris*, *Listera cordata*

G. AQUATIC E.G. POTAMOGETON COMPRESSUS



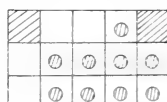
OTHER EXAMPLES: *Lemna insulata*, *Butomus umbellatus*, *Elodea canadensis*, *Ceratophyllum demersum*

A. UBIQUITOUS E.G. POA ANNUA



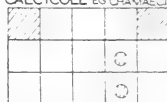
OTHER EXAMPLES: *Hypericum dubium*, *Polygonum lanceolatum*, *Gnossurus cristatus*, *Dactylis glomerata*, *Athyrium filix-femina*, *Calluna vulgaris*

B. LOWLAND E.G. GLECHOMA HEDERACEA



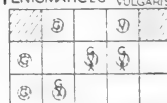
OTHER EXAMPLES: *Anisantha stans*, *Sanicula europaea*, *Geum urbanum*, *Veronica persica*, *Acer campestre*, *Zizania nanzosa*

E. CALCICOLE E.G. HELIANTHEMUM CHAMAECISTUS



OTHER EXAMPLES: *Sorbus anglica*, *Bryonia dioica*, *Carlina vulgaris*, *Clematis vitalba*, *Inula conyzifolia*, *Koeleria gracilis*, *Festuca arundinacea*

H. ENIGMATIC E.G. ALCHEMILLA VULGARIS agg



G = *A. globosa* X = *A. saxatilis*
V = *A. vestita*

Fig. 3. Distribution patterns from Llanrhaiadr data (explanation in text).

will give 250 without much difficulty if all the obvious habitats are sampled. (The richest square so far, incidentally, is 52/03, Ampthill square, with a total of 828; in contrast, 28/61, one of a group of squares in the Monadhliath mountains surveyed this season, could be made to yield only 115). It seems likely that for most of lowland Britain, the first 250 species recorded in any square contain most of the really common plants (for the Highlands and islands this figure should probably be 150 or even 100); and that the failure to record a reputedly common species probably—though by no means certainly—indicates that even if it is really present it is relatively infrequent.

These considerations lead us to suggest that for 1956, recorders should concentrate on covering to the extent of 250 species (or fewer for upland and other floristically relatively poor squares) one or more of the 'blank' or 'category 1 and 2' squares shown on the map, and that the production of a basic list of common species for every square should be the aim for 1956. In addition, of course, we need more complete information from most squares already at the 250 species level, and naturally residents in a particular square will be able to continue to add to lists already submitted. Volunteers who already have records for their squares but have not sent them in are asked to do so, in order that an up to date 'situation map' can be maintained.

At the present rate of returns, the office is able to deal with all the records received without difficulty. This should not be the case, as in the early stages of the scheme the vast bulk of the records should be received, and it is desirable that there should be an accumulation of these records awaiting incorporation in the punched-card system.

The collection of information on individual species (mainly rarities) from herbaria and literature is going ahead. Altogether 71 species (a list of which is appended) are now reasonably complete. Fig. 4 gives the known distribution of *Viola stagnina* Kit., one of these completed species. The base map here used is that designed for the final mapping.

Offers to supply the basic 'common species' data for under-worked squares in 1956, or any other information, will be gratefully received at:—

B.S.B.I. Distribution Maps Scheme,

University Botanic Garden,

1 Brookside,

Cambridge.

Tel. 58144.

SPECIES COMPLETE OR ALMOST COMPLETE
ON AVAILABLE INFORMATION*

<i>Aconitum anglicum</i>	<i>Lotus angustissimus</i>
<i>Actaea spicata</i>	<i>hispidus</i>
<i>Alchemilla acutiloba</i>	<i>Luronium natans</i>
<i>conjuncta</i>	<i>Matthiola incana</i>
<i>filicaulis</i>	<i>sinuata</i>
<i>glomerulans</i>	<i>Mibora minima</i>
<i>minor</i>	<i>Minuartia rubella</i>
<i>monticola</i>	<i>stricta</i>
<i>subcrenata</i>	<i>Myosotis alpestris</i>
<i>vestita</i>	<i>Oxytropis campestris</i>
<i>wichuriae</i>	<i>halleri</i>
<i>Anemone pulsatilla</i>	<i>Phleum commutatum</i>
<i>Arabis stricta</i>	<i>Polystichum lonchitis</i>
<i>Arctous alpinus</i>	<i>Potentilla crantzii</i>
<i>Arenaria balearica</i>	<i>Ranunculus lutarius</i>
<i>Astragalus alpinus</i>	<i>ophioglossifolius</i>
<i>Avena ludoviciana</i>	<i>reptans</i>
<i>Bartsia alpina</i>	<i>tripartitus</i>
<i>Bunias erucago</i>	<i>Salix myrsinites</i>
<i>orientalis</i>	<i>Saxifraga cernua</i>
<i>Cardaminopsis petraea</i>	<i>nivalis</i>
<i>Carex rariflora</i>	<i>rivularis</i>
<i>Cuscuta europaea</i>	<i>Silene nutans</i>
<i>Draba aizoides</i>	<i>Spiranthes aestivalis</i>
<i>Erica ciliaris</i>	<i>spiralis</i>
<i>mackaiana</i>	<i>Thymus drucei</i>
<i>Eriophorum gracile</i>	<i>Trifolium bocconi</i>
<i>Helianthemum canum</i>	<i>molinierii</i>
<i>Hieracium sparsifolium</i>	<i>stellatum</i>
<i>Hierochloa odorata</i>	<i>strictum</i>
<i>Impatiens noli-tangere</i>	<i>suffocatum</i>
<i>parviflora</i>	<i>Veronica filiformis</i>
<i>Juncus capitatus</i>	<i>Vicia bithynica</i>
<i>pygmaeus</i>	<i>hybrida</i>
<i>Lagurus ovatus</i>	<i>lutea</i>
	<i>Viola stagnina</i>

Post-1950 records for any of these species would be welcome.

*This list contains rare species which should on no account be picked.

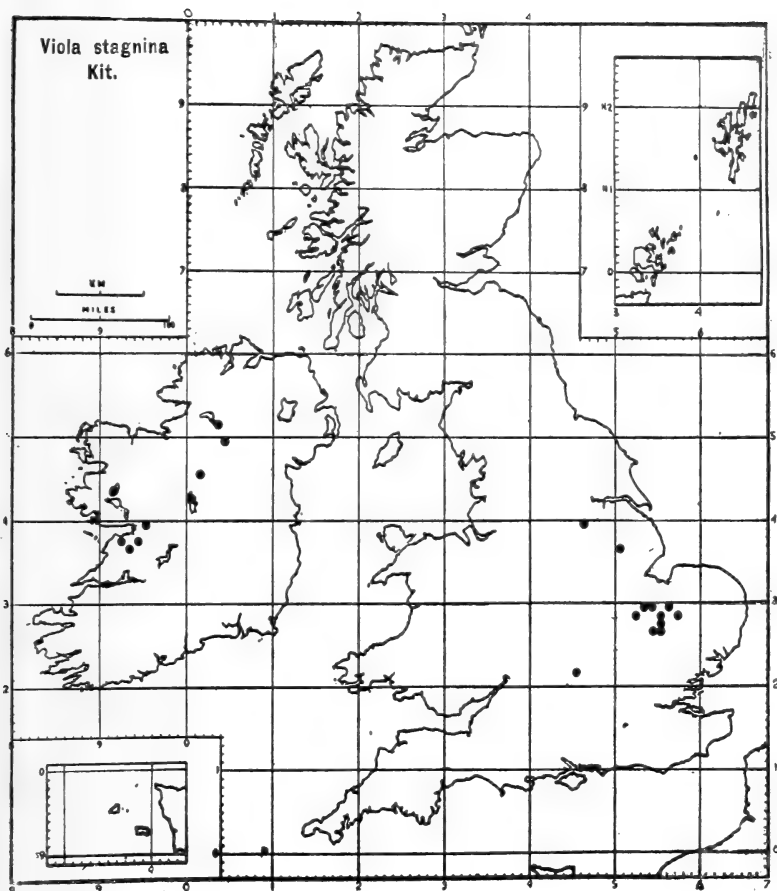


Fig. 4. Known distribution of *Viola stagnina* Kit.
(including extinct records)

IRISH HERBARIA

By D. A. WEBB

The scholarly article on the *Limonium binervosum* complex in Ireland by Dr. Baker which appeared in a recent number of this journal (Vol. I, p. 131) has earned him the gratitude of all Irish botanists, and I hope it will not be thought amiss if I comment on one peculiar feature in it. Dr. Baker searched four British herbaria (and perhaps others which he does not mention); he visited Co. Clare; he inspected plants transplanted from Kerry; but he does not seem to have consulted a single herbarium sheet in Ireland. In this technique he is following in the footsteps of many British botanists; so perhaps I may be forgiven for drawing the attention of members of the B.S.B.I. to the fact that anyone who is investigating an Irish plant will usually find more material in Dublin than in Kew and the British Museum combined. The Irish collection in Trinity College, Dublin, is rather small and scrappy (though it is often as good as Kew for species which do not grow at Killarney or Roundstone); but that in the National Museum of Ireland is for most species extensive and varied. If Dr. Baker, for example, had consulted the latter he would have found specimens of *Limonium binervosum* from the Loop Head, Horn Head and Rossguill localities (for which he had to rely on literary evidence alone) and he would have found earlier gatherings from some of the other stations than any which he saw in England.

Both these herbaria freely send out material on loan to suitable applicants and are, indeed, always glad of an opportunity for a revision of their material by specialists.

PLANT NOTES

127/15. *GERANIUM PURPUREUM* Vill. In a recent account of *Geranium purpureum* (*Watsonia*, 3, 163, 1955) reference is made to an erect plant I collected in 1930 "at Clymping (Middleton) between Littlehampton and Bognor at the station for the prostrate subsp. *forsteri*". Dr. Baker suggests that some of the specimens distributed give the impression of having grown upright in shade, but reference to my field notes made at the time the plant was gathered shows that this suggestion is hardly true.

I had the plants under observation for several years and in my notes described them as "erect, green, leaf segments flat" in contrast to "var." *forsteri* as "quite prostrate, very red, leaf segments curled". The erect plants I found first at Atherington, Clymping, where they grew at a higher level of the beach than *forsteri*. It was from here that I distributed the specimens seen by Dr. Baker and, as my note printed at the time (*Rep. Bot. Soc. & E.C.*, 9, 511, 1931) indicates, the plants were all small. They grew with other shore plants on shingle rich in decaying vegetable matter. Specimens I collected on May 21, 1933, by a small headland near Elmer Farm, some $\frac{3}{4}$ mile to the west, were larger. They also grew near the top of the beach in decaying vegetable detritus. My field observations suggest that the erect plants were a form of *forsteri* but that a better water and food supply round the roots is more likely to be responsible for the habit than slight differences in shelter. The plants were not near any groynes. During the years I had these plants under observation sea defences were under construction which made major changes in the character of this coast. These changes are more likely to be responsible for the decrease in quantity of *forsteri* than the collection of seaweed by tractor. It would be interesting to know whether *forsteri* retains its prostrate habit in cultivation.—J. E. LOUSLEY.

155/14. *TRIFOLIUM STRICTUM* L. 52, Anglesey. 'Gathered on a wild uncultivated heath about 3 miles north of Aberffraw, Anglesea, nearly in the centre of the island, in abundance covering a space of 50 yards square and to all appearance undoubtedly indigenous'. W. F. Dickinson, June 1837. Ex Hb. Leighton, 1858, Hb. C. C. Babington, Hb. Univ. Cantab. See Griffith, J. E., *Flora of Anglesey and Caernarvonshire* (1895) 36, where Dr. Dickinson's find is reported but dismissed by the author who, having searched the area thoroughly in vain, finding *Trifolium arvense*, suggested that *T. strictum* had been reported in error for this species. This find was originally published in *Bot. Gazette*, 1, (1849) 28, by Leighton who says that he has an undetermined specimen in his herbarium which was given to him by Mr. F. Dickinson in June 1837. On comparing the specimen with the plate of *T. strictum* recently

published he is in no doubt that his specimen is *T. strictum*. His final sentence is still valid. 'It may therefore be well to record this, that botanists may next season search the locality and confirm the above or otherwise'.—F. H. PERRING.

217/1(2). *CALLITRICHE PLATYCARPA* Kütz., 1831, *Monogr. Callitriche Germ.*, in Reichenbach, H. G. L. *Iconogr. bot. pl. crit.*, 9, 38. Common in Great Britain.

In his description of *C. platycarpa* Kützing states that it differs from *C. stagnalis* Scop. by having linear young leaves, linear stem leaves, and fruits a little smaller with the carpels less divergent. Schotsman (1954), in the Netherlands, records that *C. platycarpa* and *C. stagnalis* are two quite distinct species than can readily be separated from each other by cytological and morphological characters. Material of these two species collected in Britain, by the author of this note, during 1954 and 1955, supports Schotsman's observations. The two species can readily be separated when they have mature fruit, the mature fruit of *C. platycarpa* being as long as broad, normally 1.2 to 1.4 mm. × 1.2 to 1.4 mm., whereas the fruits of *C. stagnalis* are broader than long, normally 1.4 to 1.65 mm. × 1.3 to 1.55 mm., but there are exceptions which suggest that *C. platycarpa* may consist of two or more distinct entities. Cytological investigation of some 200 gatherings collected in Cheshire and North Wales has shown that *C. stagnalis* has $2n=10$, and *C. platycarpa* $2n=20$.

In Britain, before the publication of Hegelmaier's monograph of the genus in 1864, *C. stagnalis* was usually regarded as a mud form of *C. platycarpa*, but after this publication *C. platycarpa* soon lost species rank in Britain and during the past few decades it has been regarded as a linear-leaved form of *C. stagnalis*. Examination of British herbarium material has shown that the majority of records of *C. polymorpha* Lönnr., *C. palustris* L. (*C. verna* L.), and linear-leaved forms of *C. stagnalis*, can be referred to *C. platycarpa*, which appears to be common throughout Great Britain.

Distribution maps of all the British species of *Callitriche* are being prepared and material, preferably fresh, would be most gratefully received.—J. P. SAVIDGE.

REFERENCES.

- HEGELMAIER, F., 1864, *Monogr. d. Gattung Callitriche*.
SCHOTSMAN, H. D., 1954, A taxonomic spectrum of the section *Eu-Callitriche* in the Netherlands, *Acta Bot. Neerl.*, 3, 313-384.

463/4. *LYSIMACHIA NUMMULARIA* L. T. G. Tutin, in Clapham, Tutin & Warburg, *Flora of the British Isles* (1950), 806, says of *Lysimachia nummularia* 'fruit apparently never produced in Britain'. Ripe capsules were, however, found on this species at Spar Pools, Yate (v.c. 34, W. Glos.), on September 4, 1955. The plants were growing along the sides and bottom of a dry ditch which normally drains away surface water from strontium workings nearby. The flowering parts of the plants

were in full light, in a part of the ditch where there was almost no other vegetation (a few seedlings of *Juncus* and grass species only). The soil is a heavy clay.

In all, fourteen capsules with seeds were obtained. One was ripe already, the rest were ripened off at home, and seemed to be quite normal. In five of them, however, the seeds had shrivelled away in the pits in the placenta and in the others many of the seeds were shrunken or small. On other plants under observation capsules developed until they were about 2 mm. in diameter and then progressed no further. The naturally ripened capsule had ten ripe seeds and the rest from two to six seeds.

The calyx lobes, which exceeded the capsule, closed over the young capsule but later became patent or more or less reflexed, and remained green or pale brown (the calyx of unfertilized material withers and turns rusty red as soon as the flower fades).

The capsules were suborbicular, 2.2-3.5 mm., pale brown when ripe, with linear orange glands. The seeds were 1.0-1.5 mm., dark brown/black, trigonous (sometimes with two sides concave and one convex), densely warted with blunt, transparent warts, visible under lens at the angles.

I am indebted to Mr. N. Y. Sandwith for the description of Continental material by W. Ludi in Hegi, *Ill. Fl. Mittel-Europa*, 3, 1854 (1927). It seems that the Yate capsules are smaller (Ludi gives 4-5 mm.), but the size of the seeds is similar.—G. W. GARLICK.

465/1. *TRIENTALIS EUROPAEA* L. This species was discovered in September 1955, very locally abundant in a boggy birch-alder wood in N.E. Suffolk. Its previously known range did not extend nearer to East Anglia than the north Yorkshire moors west of Scarborough and the north Yorkshire Pennines in Upper Wharfedale. Like *Goodyera repens* in Norfolk pine woods it may be a genuine native which has extended its range into suitable lowland habitats.—F. ROSE.

513(2)/1. *Dichondra repens* J. R. & G. Forst., 1776, *Charact. Gen. Plant.*, 40, 1, W. Cornw.; on sandhills at Hayle, 1955, Mrs. J. RUSSELL, Lt.-Col. J. CODRINGTON and Miss M. McCALLUM WEBSTER (May 19, in flower), Mrs. J. RUSSELL (July 9, in fruit). This plant belongs to *Convolvulaceae*, although some authors have segregated it into a distinct family, *Dichondraceae*.

It is a small, softly pubescent plant with creeping stems, rooting at the nodes; leaves alternate, reniform or roundish-reniform, long-petioled, their blades 4-7 mm. long, 3-7 mm. broad, entire, rounded or retuse at the apex; flowers small, solitary, greenish-white, on bractless peduncles which are shorter than the petioles; calyx silky, 2-3 mm. long, of 5 distinct or nearly distinct, cuneate or cuneate-obovate sepals; corolla rotate or broadly campanulate, 5-lobed, more or less equalling the calyx; stamens 5, shorter than the corolla, with purplish anthers; pistils 2, distinct or nearly so, silky; styles 2; capsules 2 together, utricule-

like, subtended by the persistent calyx, usually indehiscent, with 1 or 2 seeds; seeds about 1 mm., nearly orbicular, brown.

This species is a cosmopolitan weed in the tropics and warm temperate and temperate regions of the world.—J. RUSSELL.

511. CALYSTEGIA. British material of *Calystegia*, as was first pointed out by J. E. Lousley (1948), is referable for the most part to two taxa, which have been treated as distinct species by most Continental authorities—*C. sepium* (L.) R. Br. and the larger-flowered *C. sylvestris* (Willd.) Roem. & Schult., with the characteristically inflated 'calyx' of bracteoles. The latter plant, apparently introduced into British gardens early in the nineteenth century (Loudon (1830) gives 1815 as the date of introduction) is now widespread throughout the British Isles, though often more or less obviously an escape from cultivation. In lowland England, at least, it is generally quite distinct from *C. sepium*; thus, in Cambs. (v.c. 29) it occurs almost exclusively in hedgerows near houses, whilst *C. sepium* occurs both in these localities and in native fen habitats also. Intermediates do, however, not infrequently occur; these may possess varying combinations of the characters of the two species, and might reasonably be presumed to be of hybrid origin.

Typical *C. sepium* and *C. sylvestris* are white-flowered, though pink forms otherwise referable to one or other of these species undoubtedly occur. Investigation of pink-flowered *Calystegias* in Britain has, however, shown that the commonest plant is referable to neither species, but is clearly *Calystegia dahurica* (Herbert) G. Don (*Convolvulus dahuricus* Herbert in Sims (1825, *Bot. Mag.*, 53, t. 2609). This plant differs not only in its characteristic deep pink flower colour, but also in showing a varying degree of hairiness on stem, petiole, pedicel and even leaf under-surface, a varying development of a repand margin to the pedicel-ridges, and a characteristic narrow leaf-shape and rather thick texture. Further, its flowers are typically intermediate in size and bracteole shape between *C. sepium* and *C. sylvestris*. Indeed, the combination of characters shown is such that *C. dahurica* is more clearly distinct from *C. sepium* and *C. sylvestris* than these are from each other.

The origin of *C. dahurica* is apparently to be traced to the St. Petersburg botanic garden, whence the seed was sent by Baron Fischer. The taxonomic relationships of the plant to *C. sepium* and allied taxa are as yet very imperfectly investigated; it seems probable that *C. dahurica* represents a possible hybrid product of the strongly hairy, pink-flowered E. Asiatic *C. pellita* (Ledeb.) G. Don and *C. sepium*, but further investigations are needed on this point.

Another question as yet unsolved is the relationship of '*Convolvulus Sepium* (β) *americanus*' of *Bot. Mag.*, 19-20, t. 732 to the three pink-flowered forms here mentioned. It seems possible that at least one other pink-flowered plant was introduced into British gardens from N. America in the early nineteenth century, and that this may still be detectable.

Hylander (1949) has considered the taxonomy and nomenclature of the pink-flowered *Calystegias* in Scandinavia. It would seem that the plant introduced into Swedish gardens and generally known as 'var. *americanus*' is distinct from a larger-flowered plant which Hylander accepts as the pink form of *C. sylvestris*; it is tempting to suppose that Hylander's 'var. *americanus*' plants are at least in part referable to *C. dahurica*, especially as he comments on the hairiness of some of the material.

The persistence of *C. dahurica* as a cottage garden hedge plant and garden outcast is a tribute to its vigorous powers of vegetative spreading, which may, however, be more limited than those of its relative *C. sylvestris*. Limited field observations suggest that whereas the native *C. sepium* sets good seed quite freely, *C. sylvestris* may be less fertile, and *C. dahurica* rarely ripens its capsules at all. It would be interesting to have further information on this point, which is obviously relevant to the question of hybridisation.—S. M. WALTERS & D. A. WEBB.

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- HYLANDER, N., 1949, *Botaniska Notiser*, **1949**, 148.
LOUDON, J. C., 1830, *Hortus Britannicus*, 64.
LOUSLEY, J. E., 1948, *Rep. Bot. Soc. & E.C.*, **13**, 265.

718/16b. *JUNCUS TENUIS* var. **antheatus** Wieg., 1900, *Bull. Torr. Bot. Club*, **27**, 523. 24, Bucks.; abundant in a gravel pit close to Denham Golf-club railway platform, 1955, LONDON NATURAL HISTORY SOCIETY EXCURSION, det. N. Y. SANDWICH. Plant taller and stiffer (5-9 dm. high); leaves broader; sheaths numerous and loose, often causing the base of the stem to appear stout. Inflorescence large, open and diffuse (5-15 cm. long); flowers scattered and smaller (2.5-3.5 mm.): capsule not over three fourths the length of the perianth, round-ovate, shining. Native of the U.S.A.—D. H. KENT.

747/3. *ERIOPHORUM GRACILE* Roth. *Eriophorum gracile* Roth is undoubtedly one of the rarer British plants, for although there are acceptable records in the literature for seven vice-counties, it has been extinct in one of these (v.c. 65) for many years, and the basis for one other (v.c. 32) rests on a single specimen. Moreover, even where twentieth century records exist (v.cc. 5, 9, 11, 12 and 17) the information suggests that nowhere does the plant occur in any abundance. The discovery of an entirely new locality in an area from which the *Eriophorum* has never been recorded is therefore a matter of some interest and importance. This discovery was made by Mr. G. H. Rocke in the Broads area of East Norfolk (v.c. 27) in July 1955. Mr. Rocke, who does not wish to publish more precisely the locality because the plant is only in small quantity, has provided a voucher specimen (now in Hb. Univ. Cantab.) and some notes on which the following description of the habitat is based.

The *Eriophorum* was growing in a mixed fen community, not in *Sphagnum* as in its other described localities (though *Sphagnum*

occurred nearby about 25 yards away). Nine or ten flowering spikes were noted, growing singly and separated by a yard or two from each other. The associated species included:—*Briza media* L., *Caltha palustris* L., *Carex appropinquata* Schumach., *Epipactis palustris* (L.) Crantz, *Eriophorum angustifolium* Honck., *Galium uliginosum* L., *Hypericum tetrapterum* Fr., *Juncus subnodulosus* Schrank, *Lychnis flos-cuculi* L., *Lythrum salicaria* L., *Phragmites communis* Trin., *Salix cinerea* L. agg., *Thelypteris palustris* Schott, and *Valeriana dioica* L.

Although the *Eriophorum* is not in any sense a critical species it could be quite easily overlooked, especially when growing with its common and variable relative, *E. angustifolium* Honck. Its diagnostic features include:

- (a) roughly-hairy peduncles (*E. angustifolium* has glabrous peduncles)
- (b) short, obtuse-tipped leaves (*E. angustifolium* has longer leaves with long triquetrous points)
- (c) ovate, rather blunt glumes without scarious margin (*E. angustifolium* has lanceolate acuminate glumes with a broad scarious margin)

E. latifolium Hoppe, which also has hairy peduncles, differs in being tufted, not rhizomatous, and in having broader, flat leaves.

Sowerby (1870) has an excellent illustration of *E. gracile*, drawn from material from the now extinct Whitemoor locality in Surrey (cf. Garry (1904)). Townsend (1904) gives a very good description, based on New Forest specimens, and Beeby (1885) describes the habit of growth in *Sphagnum* in a Surrey station.—S. M. WALTERS.

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 GARRY, F. N., 1904, Notes on the drawings for 'English Botany', suppl. *J. Bot.*, **42**.
 SYME, J. T. B. (Ed.), 1870, *Sowerby's English Botany*, vol. **10**, 74. (*English Botany, Supplement*, t. 2886.)
 TOWNSEND, F., 1904, *Flora of Hampshire*, Ed. 2, 645.

767/1. *HIEROCHLOE ODORATA* (L.) Beauv. As one of the members of the Galloway Meeting this summer which recorded *Hierochloe odorata* on the Kirkeudbright shore I was interested to discover whether or not this was a new locality. The evidence is that it is not but it also happens that there are at least two known localities in the Stewartry.

The earliest record is apparently from the shore near Rerrick in 25/74 and was first published, so I am informed by Dr. H. Milne-Redhead, in the *Transactions of the Dumfries and Galloway Antiquarian Society*, **1900-01**. In the botanical notes for 1899 J. McAndrew says "In conclusion I may refer to the excellent discovery last summer of *Hierochloe* on the Rerrick Shore." This would be the same locality to which Druce refers in the *Annals of Scottish Natural History*, **1911**, 74, where he writes 'Still exists in small quantity on the Kirkeudbright Coast', as there is a specimen in the Herbarium at Cam-

bridge so labelled collected in 1910 and another in Oxford University Herbarium dated May 1910 and labelled by Druce 'The Heughs, Rerrick'.

This is not the locality discovered this summer. The second locality is further west and may have been first discovered by C. Waterfall who has a specimen in the Herbarium at Oxford labelled 'between Gatehouse and Creetown, 1927'. Such a description would fit our locality and is probably the same as that found by Dr. G. Taylor a few years ago.

Therefore in 1955 it is true to say that *Hierochloa* 'still exists in small quantity on the Kirkeudbright coast' but this need not refer only to the locality Druce had in mind; whether the plant is still at Rerrick is uncertain.—F. H. PERRING.

788/1. *LAGURUS OVATUS* L. S., Jersey. Ex Hb. W. H. White, Ex Hb. Soc. Bot. Lond., Jan. 1838, Hb. Univ. Cantab. G. C. Druce (*J. Bot.*, 31, 22 (1893)) reports that he discovered a good patch of *Lagurus* growing on the sands at St. Ouen's Bay in 1877 but subsequently ascertained that the seed had been intentionally sown there the previous year. If the label on the Hb. Univ. Cantab. specimen is to be relied upon it suggests either that the species had been introduced to Jersey many years earlier than had been realised or that *Lagurus* was originally a native which may or may not have become extinct before being introduced artificially.—F. H. PERRING.

840/1. *TAXUS BACCATA* L. 15, E. Kent; chalky slope, Gorham Wood, Bicknor, 1953, among normal yews one bush occurred with unusually short foliage 7-11 mm. long. This bush, found by the writer in company with Messrs. E. Milne-Redhead, N. Y. Sandwith, V. S. Summerhayes and P. Taylor, was 3 metres high with patent branches, and gave the impression of being a chance mutant from the normal yews around.

Various yews with shorter foliage than normal are in cultivation but none of these seems to match our plant exactly. The nearest appears to be what Rehder, *Bibl. Cult. Trees and Shrubs*, 3 (1949) calls *T. baccata* f. *adpressa* (Carr.) Beisn., *Syst. Eintheil. Conif.*, 23 (1887) (*T. adpressa* Carr. in *Rev. Hort.*, 1855, 95. This differs from the normal yew not only in its foliage but also apparently in its denser branching.—J. P. M. BRENNAN.

PLANT RECORDS

Compiled by E. C. WALLACE

Records are for the year 1955 when no date is given.

The following signs are used:—

- § before the *B.P.L.* number: to indicate that the paragraph contains information necessitating a correction to an annotated copy of the *Comital Flora*.
- † before the *B.P.L.* number: to indicate that the plant is not a native species in the British Isles.
- † before the record: to indicate a species which, though native in some parts of the British Isles, is not so in the locality recorded.
- * before the record: to indicate a new vice-county record, not published previously to this issue of the *Proceedings*.
- ‡ before the record: to indicate a record additional to an annotated copy of *Comital Flora*, but published elsewhere prior to the issue of the *Proceedings* in which it appears.
- [] enclosing a record: to indicate doubt as to the validity of the record, either of identification or locality.

It will be useful if, in future, National Grid Co-ordinates, made as accurate as is thought advisable, are added to all records.

1/1. *CLEMATIS VITALBA* L. 73, Kirkeudbr.; sheltered wooded ravine, Carlsruith, E. I. BIGGAR, D. E. NORTH, F. H. PERRING and D. E. DE VESIAN.

§2/2. *THALICTRUM MINUS* L. agg. *73, Kirkeudbr.; roadside, edge of Wood of Cree, and by river edge of wood, J. F. and P. C. HALL, conf. A. MELDERIS. 74, Wigtown.; Barnkirk, E. I. BIGGAR, F. H. PERRING and D. E. DE VESIAN. 98, Argyll.; calcareous rocks of Meall nan Gabhar, a small colony at 1,500 ft., 1954, K. N. G. MACLEAY.

6/6. *RANUNCULUS LINGUA* L. †21, Middx.; pond, Potters Bar, S. PHELP, comm. D. H. KENT.

§6/9. *RANUNCULUS ARVENSIS* L. *95, Elgin; shingle at mouth of Spey, Garmouth, Miss G. HAINES, comm. M. McCALLUM WEBSTER.

§6/22. *RANUNCULUS TRICHOPHYLLUS* Chaix. *108, W. Sutherland; ditch near Tongue, M. McCALLUM WEBSTER, det. P. D. SELL.

§6/29. *RANUNCULUS TRIPARTITUS* DC. *9, Dorset; deep pond, Lower Common, near Potterne, Verwood, 1917, J. H. SALTER, comm. NAT. MUS, WALES.

7/1c. *CALTHA PALUSTRIS* var. *GUERANGERII* (Bor.) Lamotte. 36, Hereford.; Eastnor, F. M. DAY.

22/1. *MECONOPSIS CAMBRICA* (L.) Vig. †74, Wigtown.; garden escape, Isle of Whithorn, J. F. and P. C. HALL.

§23/1. *GLAUCIUM FLAVUM* Crantz. *101, Kintyre; shingle on west coast of Kintyre, 8 miles north of Campbeltown, M. H. CUNNINGHAM.

§32/1b. *FUMARIA CAPREOLATA* var. *BABINGTONII* Pugsl. *106, E. Ross; Kilmuir, Black Isle, 1947, U. K. DUNCAN, det. N. Y. SANDWICH.

†35/5. *ROBIPPA AUSTRIACA* (Crantz) Bess. 56, Notts.; bank of river Erewash, 1953, R. C. L. HOWITT, det. R. H. HALL.

§36/1. *BARBAREA STRICTA* Andrz. *56, Notts.; Nottingham Meadows, 1951, R. C. L. HOWITT.

§36/5. *BARBAREA INTERMEDIA* Bor. 56, Notts.; arable field weed, Bathley, 1952, R. C. L. HOWITT. *74, Wigtown.; arable field west of Kirkcowan, F. H. PERRING and D. E. DE VESIAN.

§44/1. *EROPHILA VERNA* (L.) Chevall. *74, Wigtown.; sandy shore, New England Bay, Mull of Galloway, A. M. STIRLING. †77, Lanark.; bare stony ground by Logan House, south west of Lesmahagow, 1953, A. A. SLACK. †86, Stirling; Basalt crag near Fintry, A. M. STIRLING and A. A. SLACK. *91, Kincard.; gravel path in gardens of Glenbervie House, J. C. GARDINER, det. G. TAYLOR. †99, Dunbarton.; wall top, Loch Lomond side, near Balloch, A. M. STIRLING. †100, Clyde Isles; stony road verge south of Whiting Bay, 1954, A. M. STIRLING and A. A. SLACK. 101, Kintyre; Machrihanish Links, 1952, E. C. WALLACE and K. N. G. MACLEAY. For earlier records see J. R. Lee, *Flora of the Clyde Area* (1933).

§44/2. *EROPHILA SPATHULATA* Láng. †44, Carm.; Carreg Common, I. M. Vaughan (1955, *Nature in Wales*, 1, 80).

§45/7. *COCHLEARIA DANICA* L. *74, Wigtown.; locally common around the Mull of Galloway, as at West Tarbert; also south of Port Logan, A. A. SLACK and A. M. STIRLING.

†47/2. *HESPERIS MATRONALIS* L. 74, Wigtown.; waste ground by river Cree near centre of Newton Stewart, J. F. and P. C. HALL.

§†49/4. *SISYMBRIUM ORIENTALE* L. *56, Notts.; Mill Gate Dump, Newark, 1949, R. C. L. HOWITT, det. R. W. BUTCHER. *74, Wigtown.; waste ground on jetty, Garliestown, Mr. and Mrs. R. C. L. HOWITT.

†49/5. *SISYMBRIUM IRIO* L. 3, S. Devon.; Exeter Docks, R. C. L. HOWITT, det. A. MELDERIS.

49/7. *ARABIDOPSIS THALIANA* (L.) Heynh. 91, Kincard.; weed in gardens of Glenbervie House, Drumlithie, 1951-53, J. C. GARDINER.

+54/20. *ERUCASTRUM GALLICUM* (Willd.) O. E. Schulz. 56, Notts.; lime quarry, Barnstone, 1950, R. C. L. HOWITT, det. R. W. BUTCHER. as *Brassica gallica* Willd.

§55/1. *DIPLOTAXIS TENUIFOLIA* (L.) DC. *+56, Notts.; lime quarry, Barnstone, 1950, R. C. L. HOWITT, det. R. W. BUTCHER.

+61/24. *LEPIDIUM NEGLECTUM* Thell. 56, Notts.; Mill Gate Dump, Newark, 1949, R. C. L. HOWITT, det. A. J. WILMOTT.

66/1. *TEESDALIA NUDICAULIS* (L.) R.Br. 49, Caern.; open ground north-east end Mynydd Rhiw, at 750 ft., Lleyn, A. CONOLLY. 74, Wigtown.; Torfs Warren, Luce Dunes, J. F. and P. C. HALL.

67/1. *HORNUNGIA PETRAEA* (L.) Reichb. 49, Caern.; calcareous sand dunes, Abersoch, Lleyn, 1954, A. CONOLLY and P. M. SMITH.

+76/3. *RAPISTRUM RUGOSUM* (L.) All. 56, Notts.; river Trent side, Farndon, 1952, R. C. L. HOWITT.

§89/4. *POLYGALA OXYPTERA* Reichb. *101, Kintyre; Muasdale Glen and Clockheil Links, West Kintyre, M. H. CUNNINGHAM.

89/5. *POLYGALA CALCAREA* F. Schultz. 34, W. Glos.; (5) two small colonies in calcareous pasture north-east of Hawkesbury Upton, G. W. Garlick (1955, *Proc. Bristol Nats. Soc.*, 29, 18).

§92/3. *DIANTHUS ARMERIA* L. *56, Notts.; roadside, Farndon, 1952, R. C. L. HOWITT.

§95/1. *SAPONARIA OFFICINALIS* L. *+95, Elgin; railway line, Elgin, 1951, R. RICHTER. *+96, Easternness; roadside east of Croy; 96b, Nairn; common by river Nairn, Holme Rose, M. McCALLUM WEBSTER.

§96/3. *SILENE CONICA* L. *+56, Notts.; one plant on newly sown lawn, Farndon, 1950, R. C. L. HOWITT.

98(2)/1. *MELANDRIUM ALBUM* (Mill.) Garcke. 73, Kirkcudbr.; rubbish-tip near Blackcraig about 2 miles east of Newton Stewart, E. I. BIGGAR, J. F. and P. C. HALL.

§101/2. *STELLARIA NEMORUM* L. *56, Notts.; Clifton Grove by Nottingham, 1954, R. C. L. HOWITT.

§101/4. *STELLARIA NEGLECTA* Weihe. *101, Kintyre; seashore, burnside, Glenbarr, West Kintyre, M. H. CUNNINGHAM.

§102/10. *MINUARTIA VERNA* (L.) Hiern. *86, Stirling; basalt crags (1,000 ft.) $\frac{1}{2}$ mile north-east of Craigton, Fintry, A. M. STIRLING.

§103/7. *SAGINA CILIATA* Fr. *74, Wigtown.; old walls, Port Logan, Mull of Galloway; old walls by jetty, Garliestown, Mr. and Mrs. R. C. L. HOWITT.

§103/8. *SAGINA APETALA* Ard. *56, Notts.; waste ground, Cropwell Bishop, 1950, R. C. L. HOWITT.

§103/10. *SAGINA MARITIMA* Don ex Sm. *35, Mon.; dried muddy path and stone-work of sea wall, Rumney; St. Brides Wentlog, A. E. WADE.

105/1. *SPERGULARIA RUPICOLA* Lebel ex Le Jolis. 49, Caern.; rocks by sea, Porth Iago, Porth Golman and Traeth Penllech near Llangwnadl, Llyn; on drift cliff Galt-y-Môr near Llanfaelrhys, Llyn, A. CONOLLY and P. M. SMITH.

†108/1. *CLAYTONIA ALSINOIDES* Sims. 52, Anglesey; woods, Bode-
dern, F. C. G. GOUGH, comm. NAT. MUS. WALES.

†108/2. *CLAYTONIA PERFOLIATA* Donn ex Willd. 74, Wigtown.; road-
side wall near Manse, one mile south of Sandhead, A. A. SLACK and
A. M. STIRLING.

112/12. *HYPERICUM MACULATUM* Crantz. 95, Elgin; Moy House.
Forres, M. McCALLUM WEBSTER, det. N. ROBSON (as subsp. *maculatum*):
banks of Findhorn river north of Greshop Woods, Forres; rough ground
near curling pond, Grantown-on-Spey, M. McCALLUM WEBSTER, det. N.
ROBSON (as subsp. *obtusiusculum* (Tourlet) Hayek).

§127/7. *GERANIUM PYRENAICUM* Burm. f. ‡44, Carm.; hedgebank,
Aberglasney, Mrs. ENTHOVEN, comm. NAT. MUS. WALES. Already in
C.F. but the record on which the entry was based was an error.—ED.

128/1. *ERODIUM MARITIMUM* (L.) L'Hérit. 74, Wigtown.; bare
sandy places among rocks, East Tarbet Bay, Mull of Galloway, A. A.
SLACK and A. M. STIRLING.

128/3. *ERODIUM CICUTARIUM* subsp. *DUNENSE* Andreas. 56, Notts.;
Pusto Hill, Everton, R. C. L. HOWITT, det. E. F. WARBURG.

128/3c. *ERODIUM GLUTINOSUM* Dum. *74, Wigtown.; Torrs Warren,
Luce Dunes, J. F. and P. C. HALL, conf. A. MELDERIS.

§†132/2. *OXALIS CORNICULATA* L. 31, Hunts.; roadside, Elton Vil-
lage, 1951, J. L. Gilbert, det. S. M. Walters and D. P. Young (1952,
Ann. Rep. Hunts. Fauna & Flora Soc., 1951, 17). *56, Notts.; garden
weed, Farndon, 1950, R. C. L. HOWITT, 1950, det. D. P. YOUNG (as var.
microphylla A. Cunn.).

‡132/3. *OXALIS EUROPAEA* Jord. *56, Notts.; garden weed, Farndon, 1950, R. C. L. HOWITT, det. D. P. YOUNG.

†132/8. *OXALIS CORYMBOSA* DC. 56, Notts.; garden weed, Farndon, known for about 50 years, R. C. L. HOWITT, det. D. P. YOUNG.

†132/10. *OXALIS INCARNATA* L. 56, Notts.; garden weed, Farndon, 1954, R. C. L. HOWITT, det. D. P. YOUNG.

†133/2. *IMPATIENS CAPENSIS* Meerb. 56, Notts.; Willowholt, Farndon, 1948, R. C. L. HOWITT.

‡133/3. *IMPATIENS PARVIFLORA* DC. ‡36, Hereford.; Kington; Pembridge (1955. *Trans. Woolhope N.F.C.* 34, 302). *56, Notts.; builder's yard, Newark, 1947, R. C. L. HOWITT.

‡133/4. *IMPATIENS GLANDULIFERA* Royle. *11, S. Hants.; waste ground, Southampton, M. COLE. *56, Notts.; river Trent side, Thorpe, 1948, R. C. L. HOWITT. *74, Wigtown.; garden and roadbank on Stranraer road west of Glenluce, J. F. and P. C. HALL: round the Doctor's Pond, Ardwell, Mr. and Mrs. R. C. L. HOWITT.

149/3. *ULEX MINOR* Roth. 56, Notts.; Boughton Breck, 1953, R. C. L. HOWITT, det. A. MELDERIS.

§153/1. *MEDICAGO FALCATA* L. *†56, Notts.; waste ground, Newark, 1951, R. C. L. HOWITT, det. J. E. LOUSLEY.

§153/2. *MEDICAGO* × *VARIA* Martyn. *†56, Notts.; waste ground, Newark, 1953, R. C. L. HOWITT.

‡155/4. *TRIFOLIUM INCARNATUM* L. *56, Notts.; railway bank, Rampton, R. C. L. HOWITT.

§155/14. *TRIFOLIUM STRICTUM* L. *52, Anglesey.—See **Plant Notes**.

§160/8. *LOTUS ANGUSTISSIMUS* L. *49, Caern.; between Tremadoc and Tan-y-bwlch, 1863, S. H. BICKHAM (*Iib. Cantab.*), det. F. H. PERRING, conf. S. M. WALTERS.

†166/6. *ASTRAGALUS ODORATUS* Lam. 56, Notts.; river Trent side, Newark, 1952, R. C. L. HOWITT, det. A. MELDERIS.

‡170/1. *CORONILLA VARIA* L. *56, Notts.; waste ground, Newark, 1951, R. C. L. HOWITT.

§176/7. *VICIA BITHYNICA* (L.) L. *74, Wigtown.; cliffs at Port Castle Bay, B.S.B.I. GALLOWAY MEETING.

176/9. *VICIA LUTEA* L. †11, S. Hants.; waste ground, Southampton, M. COLE. †23, Oxon.; edge of quarry, now filled with water, Sonning Eye, 1954, F. H. PERRING.

178/3. *LATHYRUS TUBEROSUS* L. †9, Dorset.; edge of cornfield, Fleet, Miss P. M. WRIGHT, comm. E. B. BANGERTER. †15, E. Kent; orchard, Hales Place, Canterbury, F. ROSE.

‡†178/7. *LATHYRUS HIRSUTUS* L. *22, Berks.; downs above Aston Tirrold, LADY SEVERN, conf. E. F. WARBURG.

178/8. *LATHYRUS NISSOLIA* L. 31, Hunts.; rough grassland, Spaldwick, 1954, F. H. PERRING.

‡183/2. *PRUNUS PADUS* L. ‡†31, Hunts.; spinney, Huntingdon, probably planted, 1953, Huntingdon Grammar School (1954, *Ann. Rvp. Hunts. Fauna & Flora Soc.*, 1953, 18).

185/38. *RUBUS LACINIATUS* Willd. 6, N. Som.; summit of Blackdown on Mendip, Dr. David Prowse (1955, *Proc. Bristol Nats. Soc.*, 29, 19).

190/4. *ALCHEMILLA VESTITA* (Buser) Raunk. 56, Notts.; Papplewick, 1951, R. C. L. HOWITT, det. S. M. WALTERS.

190(2)/1. *APHANES ARVENSIS* L. H. 15, S.E. Galway; Lough Derg near Woodford, U. K. DUNCAN, conf. S. M. WALTERS.

‡190(2)/2. *APHANES MICROCARPA* (Boiss. & Reut.) Rothm. *31, Hunts.; Holme Lode Covert, Holme Fen, 1954, J. L. GILBERT, conf. S. M. WALTERS. *36, Hereford.; dry gravelly places on the Malvern Hills, Colwall, F. M. DAY, det. S. M. WALTERS. *41, Glam.; Penard and Oxwich Burrows, A. E. WADE. *56, Notts.; Langford Moor, 1951, R. C. L. HOWITT, det. S. M. WALTERS. 73, Kirkcudbr.; woodland, Ravenshall, F. H. PERRING. *74, Wigtown.; Torrs Warren, Luce Dunes, J. F. and P. C. HALL: roadside, Mochrum Loch, Mr. and Mrs. R. C. L. HOWITT: quarry, Linloskin Bridge, E. I. BIGGAR, F. H. PERRING and D. E. DE VESIAN, all det. S. M. WALTERS. *H. 35, W. Donegal; Lackagh Bridge, U. K. DUNCAN, conf. S. M. WALTERS.

191/1. *AGRIMONIA EUPATORIA* L. 97, (Argyll.); bushy places on sea-cliffs near Mingary, Ardnamurchan, A. A. SLACK and A. M. STIRLING.

†192/1. *ACAENA ANSERINIFOLIA* (J. R. & G. Forst.) Druce. 3, S. Devon.; by roadside over a small common, with gorse, etc., Fortescue Road, Salcombe, 1953, J. P. M. BRENNAN.

195/22. *SORBUS DEVONIENSIS* E. F. Warb. 4, N. Devon.; small lane south of Fremington, three bushes, Mrs. C. M. A. CADELL, det. E. F. WARBURG.

196/2. *CRATAEGUS OXYACANTHOIDES* Thuill. 36, Hereford.; one bush in hedge of woodland coppice. Evendine, Colwall, probably planted, F. M. DAY.

203/1. *CHRYSOSPLENIUM ALTERNIFOLIUM* L. 95, Elgin; Greshop Wood, Forres, Miss M. MURRAY, comm. M. McCALLUM WEBSTER.

§207/5. *RIBES ALPINUM* L. *†56, Notts.; Hardwick, R. C. L. HOWITT. But see *Top. Bot.*, 174.

§211/1. *SEDUM TELEPHIUM* L. ‡31, Hunts.; margin of Perry Wood. Great Staughton, in one place only, 1954, R. Fraser (1955, *Ann. Rep. Hunts. Fauna & Flora Soc.*, 1954, 17).

†211/1(2). *SEDUM SPURIUM* Bieb. 73, Kirkcudbr.; roadside, Minnigaff, Newton Stewart, J. F. and P. C. HALL.

†220/7(2). *EPILOBIUM ADENOCAULON* Hausskn. 3, S. Devon.; roadside, Sidmouth, A. E. WADE.

§220/12. *EPILOBIUM ALSINIFOLIUM* Vill. *95, Elgin; Cromdale Hills, 1955, M. McCALLUM WEBSTER, conf. G. M. ASH.

§220/13. *EPILOBIUM ANAGALLIDIFOLIUM* Lam. *95, Elgin; Cromdale Hills, M. McCALLUM WEBSTER.

§†220/17. *EPILOBIUM PEDUNCULARE* Cunn. *14, E. Sussex; path near East Grinstead, D. STREETER. *73, Kirkcudbr.; waste ground by roadside, south end of Clatteringshaws Loch. E. I. BIGGAR and F. H. PERRING. *96, Easternness; quarry near Croy: 96b. Nairn; Dallaschyle, near Cawdor, M. McCALLUM WEBSTER.

†244/2. *SMYRNIUM PERFOLIATUM* L. 33, E. Gos.; Stow-on-the-Wold, Miss TAYLOR, comm. C. W. BANNISTER.

§245/3. *BUPLEURUM ROTUNDFOLIUM* L. *69b, N. Lancs.; near Coniston, 1955, E. V. WATSON.

248/1. *CICUTA VIROSA* L. 88, Mid Perth; near Comrie by the road to Drumintavour, J. D. FORREST, comm. A. M. STIRLING.

§†252/1. *FALCARIA VULGARIS* Bernh. *9, Dorset.; edge of cornfield. Flect, Miss P. M. WRIGHT, comm. E. B. BANGERTER.

§266/1. *AETHUSA CYNAPIUM* L. *107, E. Sutherland; field bordering the Back Road, Golspie, one plant, J. DICKSON.

§269/1. *SILAUM SILAUS* (L.) Schinz & Thell. *74, Wigtown.; grass field by roadside, Mochrum Loch, Mr. and Mrs. R. C. L. HOWITT.

§306/2. *DIPSACUS PILOSUS* L. *4, N. Devon.; The Tors, Ilfracombe, 1947, F. M. GILBERT, comm. J. L. GILBERT.

†320/3. *ERIGERON CANADENSIS* L. 56, Notts.; gravel pits, Farndon, 1948, R. C. L. HOWITT.

328/1. *GNAPHALIUM LUTEALBUM* L. 27, E. Norfolk; waste ground, Buxton Heath, Hevingham, 1954, A. C. JERMY.

§†333/1. *INULA HELENIUM* L. *4, N. Devon.; lane near Saunton Court, Mrs. I. M. GROSE.

333/5. *INULA CRITHMOIDES* L. 74, Wigtown.; in considerable quantity on a rock promontory about $\frac{1}{2}$ mile west of West Tarbet, Mull of Galloway, A. A. SLACK and A. M. STIRLING.

§368/2. *ANTHEMIS NOBILIS* L. *49, Caern.; farm field, Ty'n-y-cae near Llangian, Lley; margin of pond, Mynydd Cilan, Lley, A. CONOLLY, conf. T. G. TUTIN.

†378/21. *ARTEMISIA VERLATORUM* Lamotte. 20, Herts; side of Great North Road near Welwyn, 1953, T. G. COLLETT, comm. D. H. KENT.

§†380/3. *PETASITES FRAGRANS* (Vill.) C. Presl. *27, E. Norfolk; roadside near Horsey, T. G. TUTIN. *56, Notts.; river bank, Newark Castle, 1949, R. C. L. HOWITT. *74, Wigtown.; waste ground behind Newton Stewart gas works, J. F. and P. C. HALL.

§383/8. *SENECIO VISCOSUS* L. *†56, Notts.; old lime pit, Staunton, 1948, R. C. L. HOWITT.

§395/3. *CARDUUS TENUIFLORUS* Curt. ††36, Hereford.; Hereford railway station (1955, *Trans. Woolhope N.F.C.*, **34**, 302). 74, Wigtown.; Monreith Bay, E. I. BIGGAR and D. E. DE VESIAN.

396/1b. *CIRSIUM ERIOPHORUM* subsp. *BRITANNICUM* Petrak. 28, W. Norfolk; calcareous grassland, Scanning, K. DURRANT, comm. Mrs. J. PANKHURST.

396/3. *CIRSIUM HETEROPHYLLUM* (L.) Hill. 73, Kirkcudbr.; road verge near Boreland Ledge, ? garden escape, J. F. and P. C. HALL.

†409/2. *CICHORIUM ENDIVIA* L. 56, Notts.; sandy field, Girton, 1953, R. C. L. HOWITT.

HIERACIUM all det. or conf. by P. D. SELL and C. WEST.

419/54. *HIERACIUM ARGENTEUM* Fr. 48, Mer.; Cynfal river, Festiniog, C. E. A. ANDREWS.

419/55. *HIERACIUM VAGENSE* Ley. 49, Caern.; east end of road tunnel near Penmaenmawr, C. E. A. ANDREWS.

419/149. *HIERACIUM VULGATUM* Fr. *37, Worcs.; Acocks Green, Birmingham; Grimes Hill, near Earlswood: *38, Warw.; Shirley; Earlswood; Bearley, C. E. A. ANDREWS.

419/166. *HIERACIUM ANGLORUM* (Ley) Pugsl. 38, Warw.; Sutton Park; Edgbaston; Amington; Nuneaton; Gorcott Hill; Kenilworth; Earlswood; Chadwick End; Packwood: 48, Mer.; Cynfal Valley, near Festiniog, C. E. A. ANDREWS.

419/169. *HIERACIUM STRUMOSUM* (Ley) Ley. 37, Worcs.; Moseley; Birmingham, 1954: 38, Warw.; Meriden; Coughton; Edgbaston; Earlswood; Coleshill Heath, 1952: *46, Cards.; Craig-y-Fintan, Nant Berwyn, near Tregaron, C. E. A. ANDREWS.

419/191. *HIERACIUM CALCARICOLA* (F. J. Hanb.) Roffey. *43, Radnor.; roadside 2 miles south of Llanbister, C. E. A. ANDREWS.

419/198. *HIERACIUM PSEUDACRIFOLIUM* Pugsl. *43, Radnor.; bank of river Wye, Llanstephan, 1953, C. E. A. ANDREWS.

419/236. *HIERACIUM UMBELLATUM* L. *43, Radnor.; main road one mile east of Cross Gates, C. E. A. ANDREWS.

419/239bis. *HIERACIUM PERPROPINQUUM* (Zahn) Druce. *37, Worcs.; near Martley, 1953: *38, Warw.; Earlswood, 1952, C. E. A. ANDREWS.

†419/257. *HIERACIUM BRUNNEOCROCEUM* Pugsl. *38, Warw.; Brown's Coppice, Solihull, C. E. A. ANDREWS.

§439/1. *OXYCOCCUS PALUSTRIS* Pers. 37, Worcs.; bog on Hartlebury Common, near Stourport, E. C. WALLACE. Remove from brackets in C.F.

§453/1b. *PYROLA ROTUNDIFOLIA* subsp. *MARITIMA* (Kenyon) E. F. Warb. *52, Anglesey; damp spot on fixed dunes, Newborough, R. H. ROBERTS, comm. NAT. MUS. WALES.

453/4. *ORTHILIA SECUNDA* (L.) House. 42, Brecon.; Craig Ceriggleisiad, B. A. MILES, comm. NAT. MUS. WALES.

457/5. *LIMONIUM BINERVOSUM* (G. E. Sm.) C. E. Salmon. 74, Wigtown.; several places west of West Tarbet and also at East Tarbet, Mull of Galloway, A. A. SLACK and A. M. STIRLING.

467/2f. *ANAGALLIS ARVENSIS* var. *AZUREA* Wilmott. 31, Hunts.; arable land, Hill Farm, Chesterton, J. H. HOUGHTON, comm. J. L. GILBERT.

§468/1. *CENTUNCULUS MINIMUS* L. *73, Kirkeudbr.; wet track by side of Minnoch Water near Larg Farm, J. F. and P. C. HALL.

†473/3. *VINCA HERBACEA* Waldst. & Kit. 41, Glam.; naturalised in a wood on the Dunraven Castle Estate, B. A. MILES, comm. NAT. MUS. WALES.

†474/2. *BUDDLEJA DAVIDI* Franch. 8, S. Wilts.; on a chalk face, Pitton, near Salisbury, B. HOPKINS.

477/1. *BLACKSTONIA PERFOLIATA* (L.) Huds. 51, Flint; old limestone quarry near Pant y Wacco, 4 miles west of Holywell, A. M. STIRLING.

478/2×1. *CENTAURIUM LITTORALE* × *MINUS*. 48, Mer.; dune slack, Morfa Dyffryn, P. M. BENOIT.

§480/4. *GENTIANELLA AMARELLA* (L.) H. Sm. *31, Hunts.; on rough land between Grafham and Ellington, 1954, R. FRASER, comm. J. L. GILBERT.

†497/3. *SYMPHYTUM ORIENTALE* L. 56, Notts.; waste ground, Newark, 1953, R. C. L. HOWITT, det. A. E. WADE.

500/1. *PENTAGLOTTIS SEMPERVIRENS* (L.) Tausch. *†56, Notts.; hedgebank, Lowdham, 1950, R. C. L. HOWITT. *†107, E. Sutherland; common on slopes of Dunrobin Castle, Golspie, J. DICKSON.

§507/1. *LITHOSPERMUM OFFICINALE* L. *97, (Argyll); among bushes near cliff-top, Mingary, Ardnamurchan, A. A. SLACK and A. M. STIRLING.

§†511/2. *CALYSTEGIA SYLVESTRIS* (Willd.) Roem. & Schult. *49, Caern.; garden weed, Llangwnadl, Lley, A. CONOLLY. *73, Kirkcudbr.; roadside, Minnigaff, Newton Stewart, J. F. and P. C. HALL.

515/3. *CUSCUTA EPITHYMUM* (L.) L. 32, Northants.; disused limestone quarry, Easton, near Stamford, mainly on *Genista tinctoria*, but also on *Ononis spinosa* and *Galium verum*, G. L. SMITH.

§521/1. *ATROPA BELLA-DONNA* L. *56, Notts.; surrounding Nuthall Temple, 1952, R. C. L. HOWITT.

§527/4. *VERBASCUM VIRGATUM* Stokes. *56, Notts.; field side, Brough, 1951, R. C. L. HOWITT, det. J. E. LOUSLEY.

§†527/5. *VERBASCUM BLATTARIA* L. †20, Herts; chalky fallow near Mile End Bottom, Royston, H. W. PAYTON, det. and comm. D. H. KENT. But see *Fl. Herts.*, 296.

§532/7. *CHAENORHINUM MINUS* (L.) Lange. *†74, Wigtown.; railway line side behind Barlae Toll House, Mr. and Mrs. R. C. L. HOWITT: railway line, Kirkcowan, F. H. PERRING and D. E. DE VESIAN.

§535/3. *SCROPHULARIA UMBROSA* Dum. *95, Elgin; one plant on shingle at mouth of river Spey, Garmouth, W.F.S. FIELD MEETING, comm. M. McCALLUM WEBSTER.

†537/1b. *MIMULUS LUTEUS* L. 42, Brecon.; streamside, Capel-y-ffin, Mrs. K. F. ADAMS, comm. NAT. MUS. WALES.

§†543/41. *VERONICA FILIFORMIS* Sm. *59, S. Lancs.; limestone grassland, Downham, F. SLATER.

§545/2. *EUPHRASIA BOREALIS* Wettst. *74, Wigtown.; marsh $\frac{1}{2}$ mile west of Kirkcowan, F. H. PERRING and D. E. DE VESIAN, det. P. F. YEO.

§545/3. *EUPHRASIA BREVIPIILA* Burnat & Greml. *73, Kirkcudbr.: Ravenshall Cliffs: *74, Wigtown.; cliffs at Port Castle Bay; banks of river Cree, F. H. PERRING, all det. P. F. YEO.

545/5d. *EUPHRASIA NEMOROSA* var. *COLLINA* Pugsl. H.9, Clare; Poulsallagh, U. K. DUNCAN, det. E. F. WARBURG.

§545/10d. *EUPHRASIA OCCIDENTALIS* var. *CALVESCENS* Pugsl. *H.35. W. Donegal; The Rosses, U. K. DUNCAN, det. E. F. WARBURG.

§545/18. *EUPHRASIA CONFUSA* Pugsl. 74, Wigtown.; quarry at Linlooskin Bridge, F. H. PERRING, det. P. F. YEO.; *H.16, W. Galway; Renvyle Lough, U. K. DUNCAN, det. E. F. WARBURG.

§545/19. *EUPHRASIA ROSTKOVIANA* Hayne. *73, Kirkcudbr.; damp meadow by the Palmure Burn, near Bargaly Farm House, E. I. BIGGAR, J. F. and P. C. HALL, det. P. F. YEO. *H.9, Clare; Poulsallagh: *H.15, S.E. Galway; by Lough Derg near Woodford, U. K. DUNCAN, conf. E. F. WARBURG.

§550/12. *OROBANCHE PURPUREA* Jacq. *15, E. Kent; Bishopsbourne, on *Achillea millefolium*, B. J. BROOKE, comm. F. ROSE.

552/3. *UTRICULARIA INTERMEDIA* Hayne. 74, Wigtown.; peaty pools, side of Dernaglor Loch and peaty drain between Mochrum Loch and Water of Malzie, Mr. and Mrs. R. C. L. HOWITT.

553/4. *PINGUICULA LUSITANICA* L. 73, Kirkcudbr.; hillside near the waterfalls, Glen Trool, Mr. and Mrs. R. C. L. HOWITT.

558/2. *MENTHA* × *ALOPECUROIDES* Hull. 3, S. Devon.; riverside, Sidmouth, with *M. longifolia*, A. E. WADE.

§558/10. *MENTHA* × *GENTILIS* L. *56, Notts.; marsh, Adbolton, 1952. R. C. L. HOWITT, det. R. A. GRAHAM.

558/14. *MENTHA PULEGIUM* L. 15, E. Kent; old gravel pit, Bigbury Wood, near Canterbury, 1954, D. Swinscow, D. McClintock and F. Rose—the first Kent record for about 50 years (1954, *S.E. Nat. & Antiq.*, 59, 24).

‡565/1. *MELISSA OFFICINALIS* L. *56, Notts.; hedgebank, Cropwell Bishop, 1951, R. C. L. HOWITT.

577/6. *STACHYS ARVENSIS* (L.) L. †95, Elgin; garden weed, Moy House, Forres, M. McCALLUM WEBSTER.

‡581/4. *LAMIUM HYBRIDUM* Vill. 49, Caern.; arable field, Bardsey, 1954, A. CONOLLY and P. M. SMITH. *101, Kintyre; seashore verge, Glenbarr, West Kintyre, M. H. CUNNINGHAM.

‡600/12. *CHENOPODIUM FICIFOLIUM* Sm. *56, Notts.; Misterton, 1954, R. C. L. HOWITT.

‡600/13. *CHENOPODIUM GLAUCUM* L. †36, Hereford.; hopyards near Bosbury (1955, *Trans. Woolhope N.F.C.*, 34, 302). *90, Forfar; sands of Barry, a well established colony on sea-shore, 1954, U. K. DUNCAN, conf. J. P. M. BRENNAN.

‡615/3. *POLYGONUM BISTORTA* L. †45, Pemb.; hedge, Blaenffos, Miss M. Rees (1955, *Nature in Wales*, 1, 181).

618/2. *RUMEX LONGIFOLIUS* DC. 101, Kintyre; gravelly foreshore, West Loch Tarbert, frequent, 1954, R. MACKECHNIE, B. W. RIBBONS and K. N. G. MACLEAY.

618/10. *RUMEX RUPESTRIS* Le Gall. 4, N. Devon.; Braunton Burrows, two clumps (confirmation of old record by Ley, 1882). 41, Glam.; Merthyr-mawr Warren, 1954, B. A. MILES, conf. J. E. LOUSLEY.

623/1. *DAPHNE LAUREOLA* L. †74, Wigtown.; woods round Monreith House, near Fort William, E. I. BIGGAR and D. E. DE VESIAN.

‡625/1. *HIPPOPHAE RHAMNOIDES* L. *†107, E. Sutherland.; common near shores in Golspie —? planted, J. DICKSON.

‡628/16. *EUPHORBIA LATHYRUS* L. *†56, Notts.; garden weed, Fardon, 1948, R. C. L. HOWITT.

‡632/2. *MERCURIALIS ANNUA* L. 69, Westmorland; record given in *Proceedings B.S.B.I.*, 1, 333 was an error, the plant in question being a form of *M. perennis*. Delete from *C.F.*

‡633/2. *ULMUS CARPINIFOLIA* Gleditsch. *†90, Forfar; Skating Pond, Arbroath, no doubt planted, 1954, U. K. DUNCAN, det. R. MELVILLE.

646/2. *QUERCUS PETRAEA* (Mattuschka) Liebl. 98, Argyll.; Ballie-meanoch; Loch Awe, Culnadalloch, Glen Nant, 1954, K. N. G. MACLEAY. 101, Kintyre; Crinan, Tayvallich, 1954, K. N. G. MACLEAY; Saddell, Crossaig, Cour, 1953, F. DAVID, comm. K. N. G. MACLEAY.

+656/2. *ELODEA CALLITRICHOIDES* (Rich.) Casp. 21, Middx.; abundant in the Thames at the eastern end of Strand-on-the-Green, D. H. KENT.

669/9. *ORCHIS PURPURELLA* T. & T. A. Steph. 74, Wigtown.; Port-yerrock, Whithorn, J. F. and P. C. HALL, conf. A. MELDERIS.

669/11. *ORCHIS FUCHSII* Druce. 98, Argyll.; burnside marsh above Inverary, M. H. CUNNINGHAM.

680/1. *SISYRINCHIUM BERMUDIANA* L. +59, S. Lanes.; rubbish-tip, Farnworth, F. SLATER.

§684/1. *NARCISSUS PSEUDONARCISSUS* L. *+73, Kirkcudbr.; river bank, Water of Fleet, south of Pulcree, Mr and Mrs R. C. L. HOWITT.

694/1. *CONVALLARIA MAJALIS* L. 88, Mid Perth.; crevices of limestone pavement near road north of Schiehallion, Kinlochranoch, A. A. SLACK and A. M. STIRLING.

§702/3. *ALLIUM SCORODOPRASUM* L. *+56, Notts.; waste ground, Barnby Moor, R. C. L. HOWITT.

§702/11. *ALLIUM SCHOENOPRASUM* L. *+26, W. Suffolk; along an old roadway near Blenheim Barracks, 1942. J. L. GILBERT.

+702/19. *ALLIUM PARADOXUM* (Bieb.) G. Don. 83, Edinb.; wood near Roslin, E. I. BIGGAR, det. C. M. ROB. 95, Elgin; four plants by Moy Burn, Kintessack, Miss C. A. MURRAY, comm. M. McCALLUM WEBSTER.

§+708/2. *LILIUM PYRENAICUM* Gouan. *56, Notts.; canal side, Ranby, R. C. L. HOWITT.

+719/9. *LUZULA LUZULOIDES* (Lam.) Dandy & Wilmott. 96b, Nairn; abundant in policies of Holme Rose, M. McCALLUM WEBSTER.

721/1. *TYPHA LATIFOLIA* L. 98, Argyll.; reedswamp in artificial lochan at Ardbrecknish ---? planted, 1954, K. N. G. MACLEAY. 101, Kintyre; reedswamp in Lochan Cill, Aonghais, Knapdale, 1954, R. MACKECHNIE, B. W. RIBBONS and K. N. G. MACLEAY.

§722/4. *SPARGANIUM ANGUSTIFOLIUM* Michx. *42, Brecon.; abundant in Abernant Lake, Llanwrtyd Wells, B. A. MILES, conf. A. E. WADE.

†723/1. *ARUM ITALICUM* Mill. *45, Pemb.; in a wood and as a garden weed, Orierton, R. M. LOCKLEY, det. A. E. WADE, conf. O. BUCKLE. Erroneously recorded as *A. neglectum* (Townsend) Ridl. in *Nature in Wales*, 1, 80 (1955).

727/1. *LEMNA MINOR* L. 74, Wigtown.; rocky pool, Isle of Whithorn, J. F. and P. C. HALL.

§729/2. *ALISMA LANCEOLATUM* With. †16, W. Kent; pond east of East Peckham, 1954, F. ROSE (1954, *S.E. Nat. & Antiq.*, 59, 25).

§731/1. *LURONIUM NATANS* (L.) Raf. *27, E. Norfolk; dyke leading in to Calthorpe Broad, in small quantity, T. G. TUTIN.

737/4. *POTAMOGETON COLORATUS* Hornem. 4, N. Devon.; disused claypit, Fremington Parish, the second locality for N. Devon, Mrs. C. M. A. CADELL, det. J. E. DANDY and G. TAYLOR.

§737/8. *POTAMOGETON* × *SPARGANIFOLIUS* Laest. ex Fr. *56, Notts.; drain on Gringley Carr, R. C. L. HOWITT, det. J. E. DANDY and G. TAYLOR.

§737/11. *POTAMOGETON* × *NITENS* Weber. *56, Notts.; drain, Mison, 1953, R. C. L. HOWITT, det. J. E. DANDY and G. TAYLOR.

§737/14. *POTAMOGETON* × *DECIPIENS* Nolte ex Koch. *56, Notts.; Nottingham Canal, Trowell, 1953, R. C. L. HOWITT.

737/17 × 22. *POTAMOGETON* × *LINTONI* Fryer. 56, Notts.; Chesterfield Canal, Misterton, 1952, R. C. L. HOWITT.

737/27. *POTAMOGETON TRICHOIDES* Cham. & Schlecht. 6, N. Som.; Blagdon Lake, Miss E. Claydon, 1934, not "Near Weston-super Mare . . . per Lady Davy" as in *Rep. Bot. Soc. & E.C.*, 10, 845 (1935) and *J. Bot.*, 76, 168 (1938) (1954, *Proc. Bristol Nats. Soc.*, 29, 21).

§744/1. *CYPERUS LONGUS* L. *†33, E. Glos.; (7b) well established on roadside by barn, Greet, near Winchcombe, Mrs. N. SAUNDERS, comm. D. E. DE VESIAN. †36, Hereford; banks of Wye, R. W. BUTCHER (1955, *Trans. Woolhope N.F.C.*, 34, 302).

§745/2. *ELEOCHARIS UNIGLUMIS* (Link) Schult. *44, Carm.; Towyn Burrows, Mrs. I. M. VAUGHAN, comm. NAT. MUS. WALES.

§745/4. *ELEOCHARIS ACICULARIS* (L.) Roem. & Schult. †16, W. Kent; abundant round a pond east of East Peckham, 1954, F. ROSE (1954, *S.E. Nat. & Antiq.*, 59, 25).

746/4. *SCIRPUS TABERNAEMONTANI* C. C. Gmel. 21, Middx.; side of lake, Syon Park, KEW BRITISH BOTANY CLUB FIELD MEETING.

746/9. *ELEOCHARIS PARVULA* (Roem. & Schult.) Link ex Bluff. Nees & Schau. 11, S. Hants.; near Beaulieu, G. M. HAINES, det. E. NELMES.

746/15. *BLYSMUS RUFUS* (Huds.) Link. 74, Wigtown.; Portyerrock, Whithorn, J. F. and P. C. HALL. 98, Argyll.; salt marsh, Culnadalloch Lorn; Bagh Dun Mhuilig, Craignish, 1954, K. N. G. MACLEAY.

748/1. *RHYNCHOSPORA FUSCA* (L.) Ait. f. 3, S. Devon.; Aylesbeare Common, Mrs. Butcher, det. A. MELDERIS, the second record for S. Devon (1955, *Rep. & Trans. Devon Assocn.*, 86, 282).

§748/2. *RHYNCHOSPORA ALBA* (L.) Vahl. *42, Brecon.; bog by Wolf's Leap, Irfon Valley, near Abergwesyn, B. A. MILES.

753/3. *CAREX ACUTIFORMIS* Ehrh. 49, Caern.; roadside verge and ditch, near Llangwnadl, Lley, A. CONOLLY and P. SMITH, conf. T. G. TUTIN.

§753/6. *CAREX SAXATILIS* L. †89, E. Perth.; west side of Ben a' Chuallaich, Kinlochranoch, at 2,500 ft., in small quantity, A. A. SLACK and A. M. STIRLING.—But see *Top. Bot.*, 459.

§753/12. *CAREX STRIGOSA* Huds. *56, Notts.; Park Wood, Caunton. 1952, R. C. L. HOWITT, det. E. NELMES.

753/13. *CAREX LAEVIGATA* Sm. 49, Caern.; margin of fen by Nant-y-Gledrydd, Buan parish, Lley, A. CONOLLY and P. SMITH. 98, Argyll.; wood on shores of Loch Awe, Inverinan. 1954: 101, Kintyre: wood at Inverneill, 1954, R. MACKECHNIE, B. W. RIBBONS and K. N. G. MACLEAY.

753/18. *CAREX PUNCTATA* Gaudin. 49, Caern.; in crack of wet rock by sea, Gallt-y-Môr, near Llanfaelrhys, Lley, A. CONOLLY.

753/19. *CAREX HOSTIANA* DC. 17, Surrey; Folly Bog, Bagshot, F. ROSE and R. A. BONIFACE.

§753/20(2). *CAREX DEMISSA* Hornem. *8, S. Wilts.; Landford Common, 1947, J. D. GROSE. *27, E. Norfolk; Sutton Broad. 1952, T. G. TUTIN. *49, Caern.; near Criccieth, E. K. HORWOOD. *66, Durham; Widdybank Fell, 1947, T. G. TUTIN. *H. 25, Roscommon; Annaghmore, between Stokestown and Elphin, 1952, T. G. TUTIN. *H. 28, Sligo; Lough Gill, 1953, D. BOATMAN.

753/28. *CAREX CARYOPHYLLEA* Latouff. 97, (Argyll.); Beinn Iadain, Morvern, 1952, E. C. WALLACE and K. N. G. MACLEAY.

§753/38. *CAREX LIMOSA* L. *74, Wigtown.; marshy ground on moor by Bernaglar Loch, Mr and Mrs. R. C. L. HOWITT, det. E. NELMES. 98, Argyll.; reedswamp at south end of Ederline Loch, Ford, in 9 inches of water, local, 1954, R. MACKECHNIE, B. W. RIBBONS and K. N. G. MACLEAY.

§753/58. *CAREX CURTA* Good. †73, Kirkcudbr.; near a pond on Minnigaff Golf Course, Newton Stewart, J. F. and P. C. HALL.—But see *Top. Bot. Supp.*, 1. †86, (Dunbarton); marshy ground near the reservoir, Mugdock, A. M. STIRLING.—But see *Top. Bot. Supp.*, 1.

§753/61. *CAREX PAIRAEI* F. Schultz. *56, Notts.; Sconce Hills, Newark, 1951, R. C. L. HOWITT, det. E. NELMES.

§753/62. *CAREX DIVULSA* Stokes. *56, Notts.; Frog Abbey Wood, Averham, 1951, R. C. L. HOWITT, det. E. NELMES.

§753/65. *CAREX DIANDRA* Schrank. †73, Kirkcudbr.; above Ornockenoch Loch, Mr. and Mrs. R. C. L. HOWITT, det. E. NELMES.—But see *Top. Bot.*, 455.

§753/67. *CAREX ARENARIA* L. *56, Notts.; on blown sand, Besthorpe, 1950, R. C. L. HOWITT, det. E. NELMES.

753/68. *CAREX DIVISA* Huds. 34, W. Glos.; (4) rediscovered in small quantity on marshy ground adjoining the tidal river Wye, Beachley; see *Fl. Glos.*, p. 528, R. B. ABELL and C. W. BANNISTER, comm. D. E. DE VESIAN.

758/3. *SPARTINA TOWNSENDII* H. & J. Groves. 4, N. Devon.; salt marsh south of Instow, J. D. GROSE.

§770/6. *ALOPECURUS AEQUALIS* Sobol. *96, Easternness; bog near Croy, M. McCALLUM WEBSTER, det. C. E. HUBBARD.

783/1. *CALAMAGROSTIS EPIGEJOS* (L.) Roth. 49, Caern.; by coast road near Llangwnadl, Lley, A. CONOLLY and P. M. SMITH.

783/1×787/1. ×*AMMOCALAMAGROSTIS BALTICA* (Schrad.) P. FOURN. 25, E. Suffolk; beach, Hopton, F. ROSE.

783/4. *CALAMAGROSTIS STRICTA* (Timm) Koel. 28, W. Norfolk; fen at Thompson Common, Thompson, Miss E. R. NOBLE, conf. and comm. E. L. SWANN.

793/1. *TRISETUM FLAVESCENS* (L.) Beauv. 73, Kirkcudbr.; grassy bank at bottom of protected gully by sea, Carsluith, E. I. BIGGAR, F. H. PERRING and D. E. DE VESIAN.

794/2. *HELICOTRICHON PUBESCENS* (Huds.) Pilger. 97, (Argyll.); occasional on Lias Limestone and on other basic rocks between Mingary and MacLean's Nose, Ardnamurchan, A. A. SLACK and A. M. STIRLING.

†808/1. *CYNOSURUS ECHINATUS* L. 56, Notts.; railway-line side, Newark, 1954, R. C. L. HOWITT, det. C. E. HUBBARD.

814/1. *CATABROSA AQUATICA* (L.) Beauv. 74, Wigtown.; cattle-trampled stream bed, Port Castle Bay, J. F. and P. C. HALL and F. H. PERRING.

§822/1. *BRIZA MEDIA* L. *107, F. Sutherland.; Dunrobin Castle grounds, one plant, J. DICKSON.

§822/2. *BRIZA MINOR* L. 8, S. Wilts.; grassy track, Lophill, Mrs. E. TIMPERLEY, comm. J. D. GROSE. Remove from brackets in *C.F.*

§824/4. *POA SUBCAERULEA* Sm. *56, Notts.; gravel pit, Besthorpe, 1953, R. C. L. HOWITT, det. C. E. HUBBARD as *P. irrigata* Lindm.

§824/5. *POA PALUSTRIS* L. 21, Middx.; plentiful by the lake, Chiswick House grounds, R. A. BONIFACE, comm. D. H. KENT. *56, Notts.; marsh by railway, South Collingham, 1951, R. C. L. HOWITT, det. C. E. HUBBARD.

824/7. *POA NEMORALIS* L. 73, Kirkcudbr.; woods on Cree side, J. F. and P. C. HALL. 74, Wigtown.; woods at Logan, Mull of Galloway, Mr. and Mrs. R. C. L. HOWITT.

§825/3b. *GLYCERIA DECLINATA* Bréb. *56, Notts.; Hesley, 1954, E. J. GIBBONS, det. C. E. HUBBARD.

§826/1. *CATAPODIUM RIGIDUM* (L.) C. E. Hubbard. *74, Wigtown.; old pier, Port Logan, Mull of Galloway, Mr. and Mrs. R. C. L. HOWITT; Port Castle Bay, Burrow Head, B.S.B.I. GALLOWAY MEETING.

826/4×829/1. ×*FESTULOLIUM LOLIACEUM* (Huds.) P. Fourn. 37, Wores.; near Limley Green, Alfrick, F. M. DAY, det. C. E. HUBBARD.

826/5. *FESTUCA ALTISSIMA* All. 14, E. Sussex; sandstone rocks in oakwood, Mills Rocks, East Grinstead, F. ROSE.

§+826/6. *FESTUCA HETEROPHYLLA* Lam. *29, Cambs.; along a cart-track bordering Madingley Park, J. L. GILBERT, det. W. O. HOWARTH.

§826/8. *FESTUCA JUNCIFOLIA* St.-Amans. *19, N. Essex; sand dunes, Crabknowe Spit, near Ramsey, F. ROSE.

§826/16. *VULPIA AMBIGUA* (Le Gall) More. ‡3, S. Devon.; Dawlish Warren, abundant, H. Gilbert-Carter (1955, *Rep. & Trans. Devon Asscn.*, 86, 282).

+826(2)/1. *NARDURUS MARITIMUS* (L.) Fiori. 12, N. Hants.; on chalk spoil heaps near Micheldever railway station, W. E. WARREN and E. C. WALLACE.

†827/1(2). *BROMUS DIANDRUS* Roth. 17, Surrey; sandy bank, Walton-on-Thames, plentiful, N. Y. SANDWICH and R. A. BONIFACE, conf. C. E. HUBBARD.

§827/3. *BROMUS STERILIS* L. *107, E. Sutherland.; common along the back road, Golspie, J. DICKSON.

§827/20. *BROMUS FERRONII* Mabilie. *49, Caern.; grassy bank of drift and blown sand, by the sea, Porth Iago, Lley, A. CONOLLY, det. T. G. TUTIN.

§830/2. *AGROPYRON PUNGENS* (Pers.) Roem. & Schult. *56, Notts.; meadow land, Nottingham, 1951, R. C. L. HOWITT, det. T. G. TUTIN.

§833/3. *PARAPHOLIS INCURVA* (L.) C. E. Hubbard. 41, Glam.; sandy ground above the salt-marsh, the Leys, near Aberthaw, A. E. WADE, comm. NAT. MUS. WALES. Previously recorded from v.c. 41 only as an adventive; at the Leys it was found in several places, A. E. WADE. *53, S. Lincs.; Gibraltar Point Nature Reserve, M. SMITH, conf. and comm. C. E. HUBBARD.

§836/1. *ELYMUS ARENARIUS* L. †44, Carm.; a few plants among *Agropyron junceiforme* on mobile dunes, Towyn Burrows, Mrs. I. M. Vaughan (1955, *Nature in Wales*, 1, 135).

836/3. *HORDELYMUS EUROPAEUS* (L.) Harz. 16, W. Kent; beechwood, east side of Riverhill, Sevenoaks, F. ROSE.

§844/2×6. *EQUISETUM* × *LITORALE* Kühlew. *14, E. Sussex; by pond in Ashdown Forest, near Coleman's Hatch, N. Y. SANDWICH, conf. P. TAYLOR. *H.35, W. Donegal; by Lough Kinny, U. K. DUNCAN, det. A. H. G. ALSTON.

§856/1(2). *DRYOPTERIS BORRERI* Newm. 49, Caern.; wood, Nanhoran Estate, Lley, P. M. SMITH and A. CONOLLY. *56, Notts.; Margaret Springs Wood, Oxtun, 1954, R. C. L. HOWITT, det. A. H. G. ALSTON. *74, Wigtown.; plentiful in Barrhill Wood, J. F. and P. C. HALL, det. A. H. G. ALSTON. 97, (Argyll.); Finnary, Morvern; Strontian, Sunart, 1952, E. C. WALLACE and K. N. G. MACLEAY. 98, Argyll.; Loch Awe side, frequent, 1954: 101, Kintyre; Stonefield; Ormsary; Clachan, etc., 1954, K. N. G. MACLEAY.

856/7. *THELYPTERIS OREOPTERIS* (Ehrh.) Slosson. 25, E. Suffolk; Ashby Warren, F. ROSE. 56, Notts.; Margaret Springs Wood, Oxtun, 1954, R. C. L. HOWITT, det. A. H. G. ALSTON.

863/2. *HYMENOPHYLLUM WILSONI* Hook. 49, Caern.; north-facing rock of summit, Carn Fadryn, at 1200 ft., Lley, 1954, A. CONOLLY.

§869/1. *ISOETES LACUSTRIS* L. *95, Elgin; Lochindorb, M. McCALUM WEBSTER.

870/1. *LYCOPODIUM ALPINUM* L. 49, Caern.; plateau below summit, Carn Fadryn, at 1200 ft., Lley, 1953-54, P. M. SMITH, comm. A. CONOLLY.

870/5. *LYCOPODIUM CLAVATUM* L. 24, Bucks.; Monkton Wood, W. M. BARON and R. KEMP.

870/7. *LYCOPODIUM SELAGO* L. 49, Caern.; rocks of summit, Carn Fadryn, at 1200 ft., Lley, 1954; rocks of eastern summit, Carn Bâch, Lley, A. CONOLLY and P. M. SMITH.

CHAROPHYTA determined by G. O. ALLEN.

872/2. *NITELLA OPACA* Ag. 101, Kintyre; Gigha, a fine capitate form resembling f. *conglomerata* Nig., G. TAYLOR.

§872/2c. *NITELLA OPACA* var. *BRACHYCLEMA* Groves & Bull.-Webst. *102, S. Ebudes; Islay Loch, Ballygrant, dredged from deep water. 1952, J. K. MORTON.

§872/5. *NITELLA TRANSLUCENS* Ag. *102, S. Ebudes; Islay Loch nan Diol, 1952, J. K. MORTON.

873/1. *TOLYPELLA INTRICATA* Leonh. 63, S.W. Yorks.; Fishlake, near Thorne, small cattle pond, W. BUNTING.

876/7×5. *CHARA CONTRARIA* × *HISPIDA*. 27, E. Norfolk; Hickling Broad, G. H. ROCKE.

876/10c. *CHARA BALTICA* var. *RIGIDA* Groves & Bull.-Webst. 27, E. Norfolk; Hickling Broad, G. H. ROCKE.

§876/16a. *CHARA GLOBULARIS* var. *CAPILLACEA* (Thuill.) Zanev. *102, S. Ebudes; Islay, peaty ditch, J. K. MORTON. *108, W. Sutherland.; Loch Borrallaidh in Durness area, dredged from 10-15 ft., L. C. MORGAN, comm. A. J. BROOK.

§876/17. *CHARA DELICATULA* Ag. 55, Leics.; gravel pit, Hemington; *74, Wigtown.; Newton Stewart, R. C. L. HOWITT.

§876/17c. *CHARA DELICATULA* var. *ANNULATA* (Wallm.) Groves & Bull.-Webst. *102, S. Ebudes; Islay, Loch Ballygrant, J. K. MORTON.

ABSTRACTS FROM LITERATURE*

Compiled by D. H. KENT

Thanks are due to E. B. Bangerter, J. E. Lousley and A. E. Wade for their help.

SYSTEMATIC, ETC.

3/1. *PULSATILLA VULGARIS* Mill. Böcher, T. W., 1954, Natural populations of Pulsatilla in Zealand, *Bot. Tidssk.*, **51**, 33-47.

3/1. *PULSATILLA VULGARIS* Mill. Grigson, G., 1955, In search of the pasque flower, *Country Life*, **117**, 1230-1231. The author describes a search for *Pulsatilla vulgaris* on the Berkshire downs.—[D.H.K.]

6/4. *RANUNCULUS AURICOMUS* L. Rousi, A., 1955, Cytological observations on the *Ranunculus auricomus* group, *Hereditas*, **41**, 516-518.

6/5. *RANUNCULUS BULBOSUS* L. Barling, D. M., 1955, Some population studies in *Ranunculus bulbosus*, *J. Ecol.*, **43**, 207-218. *Ranunculus bulbosus* has a distribution of the British type and is abundant in permanent pastures, but poorly developed in temporary swards and arable land. It is most densely distributed in swards with well-drained soils such as those overlying the Oolitic Limestone and chalk formations.

Populations in suitable areas are large, sometimes several millions. The species is thus a natural evil of permanent pastures with good drainage and subjected to intensive management. It is replaced by *R. acris* and *R. repens* in the wetter areas.—[D.H.K.]

6/28×6/24b. *RANUNCULUS BAUDOTII* Godr. × *AQUATILIS* subsp. *RADIANS* (Revel) Clapham. Sørensen, T., 1955, Hybriden *Ranunculus baudotii* × *Ranunculus radians*, *Bot. Tidssk.*, **52**, 113-124. The hybrid *Ranunculus baudotii* × *aquatilis* subsp. *radians* and its parent taxa are described. The chromosome number of *R. baudotii*, $2n=32$, is confirmed and that of *R. aquatilis* subsp. *radians* is given as $2n=48$. The hybrid plant has $2n=40$, and is in all respects larger than the parent taxa. In most of its vegetative characters, especially those of growth-habit and leaf-shape, it resembles *R. aquatilis* subsp. *radians*. The hybrid appears to be rather frequent in brackish waters in Denmark.—[D.H.K.]

19. *NUPHAR*. Harrison, Y. Heslop, 1955, Nuphar (Biological Flora), *J. Ecol.*, **43**, 342-364. Gives accounts of *Nuphar lutea* (L.) Sm., *N. pumila* (Timm) DC. and *N. × intermedia* Ledeb.—[D.H.K.]

20/1. *NYMPHAEA ALBA* L. Harrison, Y. Heslop, 1955, *Nymphaea alba* L. (Biological Flora), *J. Ecol.*, **43**, 719-734.

31. *CORYDALIS*. Ryberg, M., 1955. A taxonomical survey of the genus *Corydalis* Ventenat with reference to cultivated species, *Acta Hort. Berg.*, **17**, 115-175.

*Ecological and miscellaneous abstracts are held over until the next part of the *Proceedings*.—Ed.

33.→ CRUCIFERAE. Bateman, A. J., 1955, Self-incompatibility systems in angiosperms. 3, Cruciferae, *Heredity*, **9**, 53-68.

35. RORIPPA. Green, P. S., 1955, Pollen grain size in *Nasturtium* and *Cakile*, *Trans. & Proc. Bot. Soc. Edinb.*, **26**, 289-303. The possibility of using pollen grain size for differentiating between *Rorippa nasturtium-aquaticum* and *R. microphylla*, and between *Cakile maritima* and *C. edentula* was investigated. Pollen grains from individual specimens of *Rorippa* were found to vary greatly in size, but by using a standard sample of ten grains from each specimen it was found possible to distinguish between *R. nasturtium-aquaticum* and *R. microphylla* by both length and breadth of pollen grains. Hybrids between the two species possessed pollen which was mostly abortive. Material examined by the author from the herbarium of the Royal Botanic Garden, Edinburgh, provided additional vice-county records as follows:—*R. nasturtium-aquaticum* v.cc. 98, 100 and 108. *R. microphyllum* v.c. 66. *R. microphylla* × *nasturtium-aquaticum* v.cc. 20, 72, 93 and 111.

It proved impossible to differentiate between the species of *Cakile* by using pollen grain size.—[D.H.K.]

39/1. CARDAMINE PRATENSIS L. Southon, M. J., 1955, An investigation of the distribution of double-flowered and single-flowered forms of Lady's Smock (*Cardamine pratensis*), *Mag. Blundell's School Sci. Soc.*, **9**, 37-46.

45. COCHLEARIA. Saunte, L. H., 1955, Cyto-genetical studies in the *Cochlearia officinalis* complex, *Hereditas*, **41**, 499-515. Counts have been made on 59 specimens of the *Cochlearia officinalis* complex from Scandinavia, Great Britain and Greenland. All plants referred to *C. danica* had $2n=42$, *C. officinalis* $2n=24$, *C. anglica* $2n=48$. All plants from Greenland and Iceland had the mitotic number of 14. Details of crossing experiments are given—*C. officinalis* × *anglica*, *C. anglica* × *officinalis*, *C. danica* × *officinalis*, *C. danica* × *anglica* crosses all succeeded and the seeds germinated. Hybrid swarms with $2n=36$ have been found in nature between plants with $2n=24$ and $2n=48$.

The taxonomic implications are discussed and the author suggests that 1. All the 14-chromosome type should be included in one species under the name *C. groenlandica* L. 2. *C. danica* L. should be maintained as a distinct species. 3. That the *officinalis* and *anglica* types should rank as *C. officinalis* subsp. *eu-officinalis* and subsp. *anglica* following Ascherson and Graebner. 4. *C. micacea*, a true-breeding 36-chromosome species, occurs as an endemic in Britain.—[D.H.K.]

49/5. SISYMBRIUM IRIO L. Khoshoo, T.N., 1955, Biosystematics of the *Sisymbrium irio* complex, *Nature*, **176**, 608. *Sisymbrium irio* is a polytypic winter annual which grows throughout the Punjab plains. It occurs in diploid, triploid, tetraploid, hexaploid and octoploid races. The diploid is morphologically uniform and shows seven bivalents. Its artificial autotetraploid shows quadrivalents and does not resemble the natural tetraploid. The latter possesses two ecological races which are markedly different from the diploid. The triploid is morphologically somewhat akin to the diploid but differs in details of leaf shape, flower

size and above all in being completely sterile. It is a natural hybrid between diploid and tetraploid forms. The hexaploid is morphologically like the triploid except that it has bigger flowers and long fertile siliquae. The octoploid is somewhat akin to the tetraploid but differs in possessing shorter and thicker stems and fruits and bigger and thicker leaves, flowers and seeds. Crosses were attempted in all directions, but so far no hybrids except the triploid have either been obtained or seen in nature.

Only the hexaploid race compares very well with the Linnean holotype collected from Spain. These resemble each other in fruit characters, but differ in the number of lobes of leaves.—[D.H.K.]

49/7 ARABIDOPSIS THALIANA (L.) Heynh. Langridge, T., 1955, Biochemical mutations in the crucifer *Arabidopsis thaliana* (L.) Heynh., *Nature*, **176**, 260-261.

54. BRASSICA. Fussell, G. F., 1955, History of the cole (*Brassica* sp.), *Nature*, **176**, 48-51.

59/1. CAPSELLA BURSA-PASTORIS (L.) Medic. Sørensen, T., 1954, Adaptation of small plants to deficient nutrition and a short growing season illustrated by cultivation experiments with *Capsella bursa-pastoris* (L.) Med., *Bot. Tidssk.*, **51**, 339-361.

77. CAKILE.—See 35. RORIPPA.

98(2). MELANDRIUM. Kunze, G., 1955, Ein Fall von geschlechtsgebundener Vererbung beim Melandrium (Garcke), *Ber Deutsch. Bot. Ges.*, **68**, 249-256.

98(2). MELANDRIUM. Nygren, A., 1955, Polyploids in *Melandrium* produced by nitrous oxide, *Hereditas*, **41**, 287-290.

100. CERASTIUM. Brett, O. E., 1955, Cyto-taxonomy of the genus *Cerastium*, 1. Cytology, *New Phyt.*, **54**, 138-148. Chromosome numbers of all the British species of *Cerastium* from twenty localities have been counted, and also nine species from localities outside Britain. Multivalents have been observed in three species, namely *C. holosteoides* Fr., *C. arcticum* Lange and *C. pumilum* Curt. *C. holosteoides* has been found to have a variable chromosome number ranging from $2n=136$ to 152.

The appearance of the chromosomes at mitosis and meiosis has been described. It has been found that chromosome numbers of British material are the same as those reported for the same species on the continent of Europe, with the exception of *C. tetrandrum* Curt. which has a higher chromosome number than has been found as yet from localities outside Britain.—[Author's summary].

100. CERASTIUM. Wiinstedt, K., 1953, *Cerastium holosteoides* i Danmark, *Bot. Tidsskr.*, **50**, 107-109. The author points out that *C. holosteoides* Fr. should still be separated from *C. vulgare* Hartm. (*C. caespitosum* Gilib.) and be treated as a distinct species. A map of its distribution in Denmark shows that although evenly distributed around the coast it is a marked shore plant associated with littoral meadows.—[D.H.K.]

100/2. *CERASTIUM ARVENSE* L. Raymond, M., 1955, Une variété nouvelle du *Cerastium arvense* L. *Bull. Soc. Bot. France*, **102**, 125-127. A new variety, var. *ophiticola* Raymond, of *Cerastium arvense* is described from the province of Quebec. It is entirely glabrous, an adaptation to the unusual habitat on serpentine.—[E.B.B.]

102/3. *ARENARIA NORVEGICA* Gunn. Nordhagen, R., 1954, Some new observations concerning the geographic distribution and ecology of *Arenaria humifusa* Wg. in Norway as compared with *Arenaria norvegica* Gunn., *Bot. Tidssk.*, **51**, 248-262.

102/6. *ARENARIA LEPTOCLADOS* (Reichb.) Guss. Wiinstedt, A. K., 1955, *Arenaria leptoclados*, *Bot. Tidssk.*, **52**, 60.

109. *MONTIA*. Clason, E. W., 1955, *Montia fontana* in Nederland, *Acta Bot. Neerl.*, **4**, 242-272. The literature of *Montia fontana* L. in the Netherlands is reviewed and the nomenclature of the group is discussed. The correct names of the taxa occurring in the Netherlands are given as *M. fontana* subsp. *fontana*, var. *fontana*, var. *chondrosperma* Fenzl, subsp. *rivularis*, f. *rivularis* (Gmel.) Schueb. & Mart., f. *terrestris* f. nov. (= *M. rivularis* var. *lamprosperma* Beck.). The ecology and variation of the various taxa are described in detail and results of some transplant experiments are given.—[D.H.K.]

112. *HYPERICUM*. Bouchard, J., 1954, Un *Hypericum* nouveau pour la flore de France, *Bull. Soc. Bot. France*, **101**, 351-354. *Hypericum canadense* L., discovered on the borders of several ponds in the wooded areas of Servance (Hte.-Saone), is described. Discussion of the possible means of introduction and the possibility of its being a glacial relict leaves its status undecided.—[E.B.B.]

128/3. *ERODIUM CICUTARIUM* (L.) L'Hérit. Linser, H., Frohner, W. & Kirschner, R., 1955, Veränderungen von Blattmorphologie und Blattfolge bei *Erodium cicutarium* unter den Einfluss von Phenoxxyessigsäurederivaten, *Ber. Deutsch. Bot. Ges.*, **68**, 46-51.

132. *OXALIS*. Eiten, G., 1955, The typification of the names "*Oxalis corniculata* L." and "*Oxalis stricta* L.", *Taxon*, **4**, 99-105.

133/4. *IMPATIENS GLANDULIFERA* Royle. Le Saint-Quervel, A.-M., 1955, Etude anatomique de quelques plantules anormales d'*Impatiens roylei*, *Rev. Gen. Bot.*, **62**, 373-391. Studies of normal and abnormal seedlings of *Impatiens roylei*.—[E.B.B.]

141/1. *AESCULUS HIPPOCASTANUM* L. Hardin, J. W., 1955, Studies in the Hippocastanaceae. 1. Variation within the mature fruit of *Aesculus*, *Rhodora*, **57**, 38-42.

141/1. *AESCULUS HIPPOCASTANUM* L. Michel, E., 1952, Le Marronnier (*Aesculus hippocastanum* L.), *Nat. Belgc*, **33**, 89-92 and 105-113.

149. *ULEX*. Milliner, L. H., 1955, Experimental studies on the growth forms of the British species of *Ulex* L., *Abstr. Diss. Camb.*, **1952-53**, 23-25. The three British species of *Ulex* and their chief varieties are discussed taxonomically and the extent of hybridism among the species is examined. It is concluded that *U. europaeus* and *U. gallii* can, and do, cross in nature, and that widespread hybridisa-

tion has lain behind the evolution of *U. gallii* at least. *U. minor* does not hybridise.—[D.H.K.]

150/1. SAROTHAMNUS SCOPARIUS (L.) Wimm. ex Koch. Morton, J. K., 1955, Chromosome studies on *Sarothamnus scoparius* (L.) Wimmer and its subspecies *prostratus* (Bailey) Tutin, *New Phyt.*, **54**, 68-69. *Sarothamnus scoparius* is a common plant widely distributed throughout Britain, while its subspecies *prostratus* appears to be confined to the coasts of Cornwall, Pembroke, Co. Cork and the Channel Isles. The species is a diploid with $2n=48$, the subspecies is also a diploid, but has $2n=24$. It is suggested that the species may have arisen as an autotetraploid from the subsp. *prostratus*.—[D.H.K.]

153/3. MEDICAGO SATIVA L.—See 155. TRIFOLIUM.

155. TRIFOLIUM. Evans, A. M., 1955, The production and identification of polyploids in red clover, white clover and lucerne, *New Phyt.*, **54**, 149-162.

155. TRIFOLIUM. Evans, A. M. & Denward, T., 1955, Grafting and hybridization experiments in the genus *Trifolium*, *Nature*, **175**, 687-688.

155/16. TRIFOLIUM REPENS L. Bradshaw, A. D. & Pritchard, T., 1955, Wild white clover in natural mountain grassland, *Nature*, **176**, 596. An ecological race of *Trifolium repens* characterized by small size but extreme persistence, adapted to upland conditions of grazing and climate, has been found at Cwm Llefrith in south Caernarvonshire at 1600-1800 feet in a rainfall area of 100".—[D.H.K.]

155/16. TRIFOLIUM REPENS L. Brewbaker, J. L., 1955, Incompatibility in autotetraploid white clover. 2. Dominance and double reduction, *Genetics*, **40**, 137-152.

160. LOTUS. Larsen, K., 1954, Cytotaxonomical studies in *Lotus*. 1. *Lotus corniculatus* L. sens. lat., *Bot. Tidssk.*, **51**, 205-211. In *Lotus corniculatus* sens. lat. three diploid types, *L. corniculatus* var. *alpinus*, *L. tenuis* and *L. uliginosus*, and one tetraploid type, *L. corniculatus* L. sens. strict., are recognised. *L. corniculatus* L. has the largest distribution, but that of *L. uliginosus* is very similar. *L. corniculatus* var. *alpinus* is found at high altitudes in the Alps.

The three species *L. corniculatus*, *L. tenuis* and *L. uliginosus* are not difficult to distinguish in northern Europe, but in south and especially south east Europe they vary so greatly that it is extremely difficult to separate them. It is suggested that this may be due to the formation of hybrid swarms between *Lotus uliginosus*, *L. tenuis*, and, perhaps, diploid *L. corniculatus* races.

The phylogenetic origins and relationships of the species are also discussed.—[D.H.K.]

160. LOTUS. Larsen, K., 1955, Cytotaxonomical studies in *Lotus*. 2. Somatic chromosomes and chromosome numbers, *Bot. Tidssk.*, **52**, 8-17. Chromosome numbers of thirteen species of the genus *Lotus* from Europe and N. Africa are given.—[D.H.K.]

176. VICIA. Baksay, L., 1954, Chromosomenstudien an den ungarischen *Vicia*-Arten, *Ann. Hist.-Nat. Mus. Nat. Hung.*, **5**, 139-148.

Studies on *Vicia* section *Cracca* in Hungary. *V. cracca* was found to have $2n=14$ and $2n=24$; morphological differences between the two chromosome races are also given.—[D.H.K.]

185. RUBUS. Boivin, B., 1955, Etudes batologiques. 1. Sous-genre *Cyclactis* (Raf.) Focke, *Bull. Soc. Bot. France*, **102**, 234-236. The sub-specific forms of two aggregate species of *Rubus*—*R. arcticus* L. sens. amplo and *R. pubescens* Raf. sens. lat., are differentiated and their general distribution given.—[E.B.B.]

185/1. RUBUS IDAEUS L. Boivin, B., 1955, Etudes batologiques. 2. Sous-genre *Idaeobatus* Focke, *Bull. Soc. Bot. France*, **102**, 237-238. Some varieties of *Rubus idaeus* are discussed. Main differences between the American plant and the European are: the former essentially glandular with acicular armature, the latter rarely glandular with stouter prickles.—[E.B.B.]

185/1. RUBUS IDAEUS L. Haskell, G., 1955, Genic and environmental relations of flowering-time in Raspberry, *Genetica*, **27**, 377-390.

189. POTENTILLA. Wiinstedt, A. K., 1955, *Potentilla arenaria* × *Potentilla tabernaemontani*, *Bot. Tidssk.*, **52**, 58-59.

194. ROSA. Wylie, A., 1955, The history of garden roses, *Endeavour*, **14**, 181-189.

195(2). SORBUS. Liljefors, A., 1955, Cytological studies in Sorbus. *Acta Hort. Berg.*, **17**, 47-113.

196. CRATAEGUS. Kruschke, E. P., 1955. The hawthorns of Wisconsin. part 1. status, objectives and methods of collecting and preparing specimens. *Milwaukee Public Museum, Publications in Botany*. No. 2. This exhaustive account of the author's collecting and herbarium technique used in his researches runs to 120 pages and contains much of considerable value to workers on other groups.—[A.E.W.]

196. CRATAEGUS. Lundman, B., 1955. Några ord om *Crataegus*-formerna vid ekoln söder om Uppsala. *Svensk Bot. Tidsk.*, **1955**, 247-251. Studies on local populations of *Crataegus* species near Uppsala with particular reference to leaf-shape.—[D.H.K.]

199-> SAXIFRAGACEAE. Hamel, J.-L., 1953, Contribution à l'étude cyto-taxonomique de Saxifragacées, *Rev. Cytol.*, Paris, **14**, 113-308.

213/1. DROSERA ANGLICA Huds. Wood, C. E., Junr., 1955. Evidence for the hybrid origin of *Drosera anglica*, *Rhodora*, **57**, 105-130.

216/1. MYRIOPHYLLUM SPICATUM L. Patten, B. C., Junr., 1955. Germination of the seed of *Myriophyllum spicatum* L., *Bull. Torr. Bot. Club*, **82**, 50-56.

217. CALLITRICHE. Jones, H., 1955. Heterophylly in some species of *Callitriche* with especial reference to *Callitriche intermedia*. *Ann. Bot.*, **19**, 225-245. *Callitriche stagnalis*, *C. obtusangula* and *C. intermedia* in that order, were found to show a progressively greater variation in leaf form. Axes of *C. intermedia* bearing crowns of ovate leaves were submerged under various light and temperature conditions and the growth rates studied in relation to the form of the leaves produced. Leaf movements were also studied in connexion with the growth of such submerged

shoots and with the general question of heterophylly.—[Author's summary.]

217/5. *CALLITRICHE INTERMEDIA* G. F. Hoffm. Jones, H., 1955, Further studies on heterophylly in *Callitriche intermedia*: leaf development and experimental induction of ovate leaves, *Ann. Bot.*, **19**, 369-388.

223. *OENOTHERA*. Deschartres, R., 1954, Une espèce adventice nouvelle des vallées de l'Allier et de la Loire: *Oenothera strigosa* (Rydb.) Mackenzie et Bush., *Bull. Soc. Bot. France*, **101**, 348-350. *Oenothera strigosa*, a native of N. America, was discovered in France in 1950, a first record for Europe. Possibly previously overlooked owing to its resemblance to one of the many forms of *O. biennis*, its salient characters are: lightly canescent owing to numerous adpressed hairs; rosette leaves flat, somewhat narrow, with many adpressed hairs on both surfaces, stem becoming pinkish with age; petiole and main nerve of cauline leaves white; floriferous axis lax, elongating, very leafy, leaves passing into bracts; upper leaves persistent; flowers medium; ovaries covered with sharp, close hairs, whitish. Details of distribution and biology are also given.—[E.B.B.]

237/1. *HYDROCOTYLE VULGARIS* L. Lindsay-Smith, W. A., & Ranwell, D., 1955, The Marsh pennywort, *Hydrocotyle vulgaris*, as a weed in Newborough Nursery, *J. For Comm.*, **23**, 108-111.

244/2. *SMYRNIUM PERFOLIATUM* L. Floto, E., 1954, Iagttageiser over *Smyrniium perfoliatum* L., *Bot. Tidssk.*, **51**, 66-70.

282. *DAUCUS*. Shove, R. F., 1954, The carrot (*Daucus carota*) wild and cultivated, *School Nature Study*, **49**, 22-25.

284/1. *HEDERA HELIX* L. Boullard, P., 1955, Nouvelles observations relatives à l'infection mycorhizienne expérimentale des plantules d'*Hedera helix* L. (Araliacées), *Bull. Soc. Bot. France*, **101**, 361-363.

296/1. *GALIUM BOREALE* L. Grøntved, J., 1954, *Galium boreale* L. new to Greenland, *Bot. Tidssk.*, **51**, 98-102.

301. *VALERIANA*. Prát, S., 1955, Vegetare v Silně kyselých vodách a regenerace železitých slatin, *Prestia*, **27**, 225-242. Studies on polyploid forms of *Valeriana officinalis* from twenty different localities in Bohemia. The results are compared ecologically and taxonomically with similar studies carried out in Poland and in England. Taxonomic conditions agree more closely between England and Bohemia than between Bohemia and Poland—[D.H.K.]

301. *VALERIANA*. Stomps, J. J., 1955, Eine verticillate *Valeriana officinalis*, *Österr. Bot. Zeitschr.*, **102**, 393-394. A monstrous form of *Valeriana officinalis* is described and figured.—[D.H.K.]

308/4. *SUCCISA PRATENSIS* Moench. Adams, A. W., 1955, *Succisa pratensis* Moench (Biological Flora), *J. Ecol.*, **43**, 709-718.

309→ *COMPOSITAE*. Cronquist, A., 1955, Phylogeny and taxonomy of the Compositae, *Amer. Midl. Nat.*, **53**, 478-511.

339. *AMBROSIA*. Lawalrée, A., 1955, Note complémentaire sur les *Ambrosia* adventices en Europe occidentale, *Bull. Soc. Roy. Bot. Belg.*, **87**, 207-208. Further records from western Europe for *Ambrosia trifida*, *A. coronopifolia* and *A. elatior*.—[E.B.B.]

378/2. *ARTEMISIA CAMPESTRIS* L. Gram, K., 1954, The life form and growth of *Artemisia campestris*, *Bot. Tidssk.*, **51**, 93-97. *Artemisia campestris* subsp. *eu-campestris* is a perennial with a many-headed root and is in Denmark a hemicryptophyte. The influence of drifting sand, moss vegetation and shade on the stretching of the rosette-shoots is demonstrated. Attempts to produce vegetative propagation by stolons have been seen. This case was only found in two plants of 187 more thoroughly investigated in 1950 and never found since.—[Author's summary.]

379/1. *TUSSILAGO FARFARA* L. Bakker, D., 1955, Klein hoefblad, *De Levende Natuur*, **58**, 41-48.

383/5. *SENECIO JACOBAEA* L. Böcher, T. W. & Larsen, K., 1955. Chromosome studies on some European flowering plants, *Bot. Tidssk.*, **52**, 125-132. *Senecio jacobaea* in Denmark appears to be represented by a fairly uniform population, but in the British Isles its range of variation increases, and it is frequently found on coastal dunes, a habitat unknown in Denmark. The chromosome number is $2n=40$, but two plants from Ireland were found to have $2n=32$ these resembled the plants of the other strains from that country but differed in size.—[D.H.K.]

393. *ARCTIUM*. Baillaud, L., 1954, L'anatomie du pétiole dans le genre *Arctium*, Intérêt systématique et signification phylogénétique, *Ann. Sci. Univ. Besan.*, Ser. 2, *Bot.*, **1**, 31-35.

396/8. *CIRSIUM ARVENSE* (L.) Scop. Willis, S. J., 1954. An experiment on the control of creeping thistle (*Cirsium arvense*) in pasture. *Proc. Brit. Weed Control Conf.*, **1954**, 95-97.

405. *CENTAUREA*. Wagenitz, G., 1955, Pollen Morphologie und Systematik in der Gattung *Centaurea* L. s.l., *Flora*, **142**, 213-279.

423. *TARAXACUM*. Van Soest, J. L., 1955, *Taraxacum* section *Vulgaria* Dt. in Nederland, 1., *Acta Bot. Neerl.*, **4**, 82-107. Descriptions of many of the segregates of *Taraxacum officinale* in the Netherlands are given together with details of distribution and ecological preference. Extra-European, including British, localities are also given.—[D.H.K.]

428. *TRAGOPOGON*. Regel, C. von. 1955, Die Verbreitung einiger europäisch-asiatischer *Tragopogon*-Arten, *Ber. Schweiz. Bot. Ges.*, **65**, 251-262.

428/1. *TRAGOPOGON PORRIFOLIUS* L. Duiven, J. M., 1955. De blauwe morgenster, *De Levende Natuur*, **58**, 30-34.

438. *VACCINIUM*. Ritchie, J. C., 1955. A natural hybrid in *Vaccinium*. 1. The structure, performance and chorology of the cross *Vaccinium intermedium* Ruthe, *New Phyt.*, **54**, 49-67. A brief account of early investigations on *Vaccinium* × *intermedium* is given and the morphology and anatomy of the putative hybrid are summarized. The hybrid shows conspicuous intermediacy between *V. myrtillus* and *V. vitis-idaea*.

Evidence of hybrid vigour and partial sterility is presented, and the ecology of the plant is described. Maps of the distribution in north-west Europe of the hybrid and its putative parents are given.

The data of distribution evoke the hypothesis that the parent species are isolated by certain locally operative factors. There is considerable evidence of ecological isolation, particularly in northern and upland communities; the significance of habitat disturbance is demonstrated and attention is drawn to the apparent correlation between the occurrence of the hybrid and the incidence and intensity of factors of disturbance.—[Author's summary p.p.]

438. VACCINIUM. Ritchie, J. C., 1955, A natural hybrid in *Vaccinium*. 2. Genetic Studies in *Vaccinium intermedium* Ruthe, *New Phyt.*, **54**, 320-335. The results of breeding experiments verify the putative parentage of *V. × intermedium*. Progeny from the backcross *V. × intermedium* ♀ × *V. vitis-idaea* ♂ have been obtained and they evince introgression to the recurrent parent.

Detailed exploratory analyses of certain vegetative characters of *V. × intermedium* demonstrate a significant correlation between morphological and anatomical variation and environmental differences. Using both floral and vegetative characters, extensive field and herbarium observations suggest that apart from this distinct vegetative flexibility, the populations of *V. × intermedium* (and the parent species) are remarkably homogeneous; detailed quantitative analysis of sample populations of all three species confirm this hypothesis; graphical and statistical assessments of the validity of the hypothesis are presented.

The apparently restricted gene-flow between *V. myrtillus* and *V. vitis-idaea* is ascribed to an interaction of partial sterility of the first generation hybrid, effective (but not complete) asexual reproduction due to the vegetative morphology and longevity of individuals, the apparently high frequency in nature of in-breeding due to the over-dispersing of individual clones, and the operation of factors of ecological, phenological and mechanical isolation.—[Author's summary p.p.]

438/3. VACCINIUM VITIS-IDAEA L. Ritchie, J. C., 1955, *Vaccinium vitis-idaea* L. (Biological Flora), *J. Ecol.*, **43**, 701-708.

439. OXYCOCCUS. Seymour, F. C., 1955, *Oxycoccus* as a genus, *Amer. Midl. Nat.*, **49**, 935-936.

445/1. CALLUNA VULGARIS (L.) Hull.—See 847/1. PTERIDIUM AQUILINUM (L.) Kuhn.

446/3. ERICA MACKAIANA Bab. Webb, D. A., 1955, *Erica Mackaiana* Bab. (E. Mackayi Hook., ined.), (Biological Flora), *J. Ecol.*, **43**, 319-330.

460. PRIMULA. Valentine, D. H., 1955, Studies in British Primulas. 4. Hybridization between *Primula vulgaris* Huds. and *P. veris* L., *New Phyt.*, **54**, 70-80. Experimental studies on the crossing of *Primula vulgaris* and *P. veris*. When *P. veris* was the female plant of the cross, the germination rate was fairly good and the minute seedlings obtained grew into vigorous diploid hybrid plants. When *P. vulgaris* was the female plant the germination of seed was nil.—[D.H.K.]

460/5. PRIMULA SCOTICA Hook. Dovaston, H. F., 1955, *Primula scotica* Hook f.; a relict species in Scotland, *Notes Roy. Bot. Gard. Edinb.*, **21**, 289-291. Published somatic chromosome numbers are con-

firmed for *Primula farinosa* L., *P. scotica* Hook. and *P. scandinavica* H. G. Bruun. Repeated attempts to cross these species failed. Re-examination of a seed (K3713) from a Quaternary deposit in Cambridgeshire confirmed that it belonged to *P. scotica* sensu stricto, and not to *P. scandinavica* which was separated from *P. scotica* subsequent to the identification of K3713. *P. scotica* is therefore a relict species in northern Scotland. Another fossil seed in the same deposit (K3714) was identified as belonging to a *Primula* of the *Eu-Farinosae* group now extinct in Britain.—[D.H.K.]

460/5. PRIMULA SCOTICA Hook. Ritchie, J. C., 1955, A note on the distribution of *Primula scotica* Hook., *J. Ecol.*, **43**, 39-45. The distribution of *Primula scotica* in Scotland is discussed, and it is concluded that two natural barriers prevent an extension of range of the species; these are the prevalence of moorland and peat-bog vegetation over much of the land which is contiguous with the present area of the plant, and the insularity of the localities in Orkney. It is suggested that the dispersal of seeds by wind is inadequate to overcome these barriers.

In Full- and Late-Glacial times *P. scotica* occupied a greater area than it does at present. The relationship of the plant with *P. farinosa* and other allied species is discussed.—[D.H.K.]

467/2. ANAGALLIS ARVENSIS L. Buzzard, C. N., 1954. The inconsistent Scarlet Pimpernel, *Country Life*, **116**, 714-715. An account of the reactions of *Anagallis arvensis* to light and weather.—[D.H.K.]

467/2. ANAGALLIS ARVENSIS L. Rodi, D., 1955. Die blaublütige Varietät azurea des Ackergauchneils in Württemberg, *Th. Ver. Naturk., Württemb.*, **110**, 216-220.

522/1. DATURA STRAMONIUM L. Michel, E., 1954. *Datura stramonium* L. (la pomme épineuse), *Nat. Belge*, **35**, 120-122.

532/1. LINARIA VULGARIS Mill. Rohlf, L., 1955. Les peloria de *Linaria vulgaris* Mill. en 1954. *Ann. Sci. Nat., Bot.*, **15**, 163-176.

540/1. SIBTHORPIA EUROPAEA L. Hedberg, O., 1955. A taxonomic revision of the genus *Sibthorpia*. *Bot. Not.*, **108**, 161-183.

543/41. VERONICA FILIFORMIS Sm. Hansen, A., 1955. *Veronica filiformis* Sm. og dens optraeden; Danmark. *Bot. Tidssk.*, **52**, 61-64. The early records, spread and present distribution of *Veronica filiformis* in Scandinavia are discussed.—[D.H.K.]

561. THYMUS. Pigott, C. D., 1955. *Thymus* (Biological Flora). *J. Ecol.*, **43**, 365-387. Accounts of *Thymus drucei* Ronn. em. Jalas, *T. serpyllum* L. em. Mill. and *T. pulegioides* L. are given.—[D.H.K.]

581. LAMIAM. Bernström, P., 1955. Cytogenetic studies on relationships between annual species of *Lamium*. *Hereditas*, **41**, 1-122.

588/3. PLANTAGO CORONOPUS L. Böcher, T. W., Larsen, K. & Rhan, K., 1955. Experimental and cytological studies on plant species. 3. *Plantago coronopus* and allied species. *Hereditas*, **41**, 423-453.

588/5. PLANTAGO MARITIMA L. Rodrigues, J. E. de M., 1954. Notas sobre a cariologia de *Cistus pallinaii* Ingram, *C. crispus* L., *Plantago maritima* L., e *Campanula vidalii* Watson, *Bol. Soc. Brot.*, **28**, 118-129.

588/9. *PLANTAGO MEDIA* L. Rahn, K., 1954, Experimental and cytological studies in *Plantago media*, *Bot. Tidssk.*, **51**, 300-307. Comparative data are given for plants of *Plantago media* cultivated from seed from Spain, S. France, Denmark, Germany, Switzerland, Yugoslavia and the Netherlands. Two races have been detected, a diploid ($2n=12$) found so far only in northern Spain and the Pyrenees and a tetraploid ($2n=24$) which is widespread in northern and western Europe.—[D.H.K.]

595. *SCLERANTHUS*. Rössler, W., 1955, Die *Scleranthus*-Arten Österreichs und seiner Nachbarländer, *Österr. Bot. Zeitschr.*, **102**, 30-72. The distribution of *Scleranthus* species in Europe is discussed. *S. perennis*, *S. annuus* and *S. polycarpus* are given as occurring in Britain.—[D.H.K.]

600. *CHENOPODIUM*. Aellen, P., 1951, Addition à la flore des Chenopodiaceae de Belgique, *Bull. Soc. Roy. Bot. Belg.*, **87**, 195-202. Thirteen species of *Chenopodiaceae*, additional to those in Flore Générale de Belgique (1953) are noted, eight being new to Belgium. A new hybrid *C. × pilgrimsianum* (*C. album* × *bushianum*) is described, and particular reference is given to the forms and varieties of *C. album*. A useful key is provided to separate *C. carinatum*, *C. cristatum* and *C. pumilio*.—[D.H.K.]

611. *SALICORNIA*. Nannfeldt, J. A., 1955, Något om Släktet *Salicornia*: Sverige, *Svensk Bot. Tidsk.*, **1955**, 97-109. Preliminary notes on studies of *Salicornia* species in Sweden.—[D.H.K.]

615. *POLYGONUM*. Bangerter, E. B. & Welch, B., 1955, The alien *Polygonum*s of the London area, *Lond. Nat.*, **34**, 60-65. The authors describe and key *Polygonum pulchellum*, *P. cognatum*, *P. amplexicaule*, *P. pennsylvanicum* var. *laevigatum*, *P. baldschuanicum*, *P. cuspidatum*, *P. sachalinense*, *P. polystachyum* and *P. campanulatum*.—[D.H.K.]

641/1. *MYRICA GALE* L. Fletcher, W. W., 1955, The development and structure of the root-nodules of *Myrica gale* L. with special reference to the nature of the endophyte, *Ann. Bot.*, **19**, 501-513.

643/1. *ALNUS GLUTINOSA* (L.) Gaertn. McVean, D. N., 1955, Ecology of *Alnus glutinosa* (L.) Gaertn. 1. Fruit formation, *J. Ecol.*, **43**, 46-71.

643/1. *ALNUS GLUTINOSA* (L.) Gaertn. McVean, D. N., 1955, The ecology of *Alnus glutinosa* (L.) Gaertn., *Abstr. Diss. Camb.*, **1952-53**, 22-23.

646. *QUERCUS*. Fenton, E. W., 1955, Notes on the germination and early growth of the oak, *Scot. For.*, **9**, 65-67.

646. *QUERCUS*. Ward, J. D. U., 1955, American red oak in Britain, *Country Life*, **118**, 628. *Quercus borealis* Michx. f. (*Q. rubra* Duroi), indigenous to the northeastern United States of America and Canada, was introduced into Britain in the 18th century and by the 19th century had become a popular park tree. It has long been used in German and Dutch forests and is now being used extensively in British forestry, largely because it is much less exacting in its soil requirement than the native *Q. robur* and *Q. petraea*. It will grow, and sometimes grow

fast, on poor soils, and may even be used in heathland and other places where some foresters would hesitate to plant *Castanea sativa*. The acorns take two years to mature and ripen well in Britain.

The species is often confused with *Q. coccinea*, but the latter's leaves have a bright and more vivid autumn colour.—[D.H.K.]

649/1. *FAGUS SYLVATICA* L. Matthews, J. D., 1955, The influence of weather on the frequency of beech mast years in England, *Forestry*, **28**, 107-116.

650. *SALIX*. Håkansson, A., 1955, Chromosome numbers and meiosis in certain Salices, *Hereditas*, **41**, 454-482. Chromosome numbers are given for a number of species of *Salix* not previously investigated and counts by earlier authors are confirmed. A number of artificially induced hybrids have also been investigated cytologically.—[D.H.K.]

656/1. *ELODEA CANADENSIS* Michx. Olsen, C., 1954, Hvilke betingelser må vaere opfyldte, for at *Helodea canadensis* kan opnå den optimale udvikling, der er årsag til dens massevisse optraeden: naturen?, *Bot. Tidssk.*, **51**, 263-273. The conditions of optimum development enabling *Elodea canadensis* to grow profusely in nature are examined and discussed.—[D.H.K.]

668/2. *EPIPACTIS HELLEBORINE* (L.) Crantz. Vermeulen, P., 1955. *Epipactis helleborine*, a problem of nomenclature, *Acta Bot. Neerl.*, **4**, 226-251. The nomenclature of *Epipactis helleborine* is discussed at length.—[D.H.K.]

668/3(6). *EPIPACTIS PHYLLANTHES* G. E. Sm. Young, D. P., 1955. *Epipactis phyllanthes* in Yorkshire, *The Nat.*, **1955**, 65.

669. *ORCHIS*. Hultén, E., 1955. En Gåttfull Svensk orkidé. *Svensk Bot. Tidssk.*, **1955**, 127-130. A solitary specimen of an *Orchis* (illustrated by a coloured plate), showing no close resemblance to any of the known Scandinavian species, was discovered in the Province of Uppland, Sweden. In general appearance it somewhat resembled *O. maculata* and is thought to be a mutation of that species.—[D.H.K.]

669. *ORCHIS*. Harrison, J. Heslop, 1955. Orchid hybrids in North Down, *Irish Nats. J.*, **11**, 342-346. An account of *Orchis* populations found near Strangford Lough, North Down, in 1955. The following hybrids are described and discussed:—*Gymnadenia conopsea* × *Orchis purpurella*, *G. conopsea* × *O. ericetorum*, *O. ericetorum* × *fuchsii*, *O. fuchsii* × *purpurella*, *O. ericetorum* × *purpurella*.—[D.H.K.]

669/7. *ORCHIS INCARNATA* L. Harrison, J. Heslop, 1955. The early marsh orchid, *Dactyloorchis incarnata* L., in Northumberland and Durham, *Vasc. (Subst.)*, **40**, 6. Discusses the variation (particularly of flower colour) in colonies of *Orchis incarnata* in Northumberland and Durham.—[D.H.K.]

684/1. *NARCISSUS PSEUDONARCISSUS* L. Caldwell, J. & Wallace, T. J., 1955. *Narcissus pseudonarcissus* L. (Biological Flora), *J. Ecol.*, **43**, 331-334.

684/1(2). *NARCISSUS ORVALLARIS* Salisb. Vaughan, I. M., 1955. Botanical field notes, *Nature in Wales*, **1**, 80-81. The distribution of *Narcissus orvallaris* in Wales is discussed.—[D.H.K.]

718/4. *JUNCUS EFFUSUS* L. Lazenby, A., 1955, Germination and establishment of *Juncus effusus* L. The effect of different companion species and of variation in soil and fertility conditions, *J. Ecol.*, **43**, 103-119. 2. The interaction of moisture and competition. *op. cit.*, **43**, 595-605.

718/10. *JUNCUS ARTICULATUS* L. Davies, T. H. & Doney, R. P., 1954, "The effect of 2, 4-D (Amine) on *Juncus articulatus*", *Proc. Brit. Weed Control Conf.*, **1954**, 85-87.

719. *LUZULA*. Battaglia, E., 1955, A consideration of a new type of meiosis (mis-meiosis) in Juncaceae (*Luzula*) and Hemiptera, *Bull. Torr. Bot. Club*, **82**, 383-396.

732. *SAGITTARIA*. Bogin, C., 1955. Revision of the genus *Sagittaria* (Alismataceae), *Mem. New York Bot. Gard.*, **9**, 179-233.

736/1. *SCHEUCHZERIA PALUSTRIS* L. Moore, J. J., 1955, The distribution and ecology of *Scheuchzeria palustris* on a raised bog in Offaly. *Irish Nats. J.*, **11**, 321-329.

753. *CAREX*. Prudhomme, J., 1955, Le *Carex vulpina* L. et le *Carex subvulpina* Senay en Berry, *Bull. Soc. Bot. France*, **102**, 41-42. In 1945 Senay drew attention to the necessity of dividing *Carex vulpina* into two elements; *C. subvulpina* Senay (= *C. nemorosa* Reberntsch; *C. nemorosa* Willd.), commonly met with in all herbaria misidentified as *C. vulpina* L., and true *C. vulpina* L., much rarer, known so far only from the east, centre, north and north west of Europe reaching in France a line roughly following the course of the Loire in the Bas-Rhin. No diagnostic characters are given but some further records for the latter species are noted.—[E.B.B.]

754→ GRAMINEAE. Beetle, A., 1955, The four subfamilies of the Gramineae, *Bull. Torr. Bot. Club*, **82**, 196-197.

754→ GRAMINEAE. Jeater, R. S. L., 1954, Preliminary observations on the effect of 2, 4-D. on morphological development in grasses, *Proc. Brit. Weed Control Conf.*, **1954**, 111-123.

758/3. *SPARTINA TOWNSENDII* H. & J. Groves. Chubb, J. C., 1954, Further spread of *Spartina townsendii* H. & J. Groves, *N.-W. Nat. (N.S.)*, **2**, 651. *Spartina townsendii* appears to be spreading and establishing itself in the northern part of the Dee estuary.—[D.H.K.]

777/1. *PHLEUM PRATENSE* L. Langer, R. H. M., 1954, A study of the leaf growth in Timothy (*Phleum pratense*). *J. Brit. Grassland Soc.*, **9**, 275-284.

780/2. *AGROSTIS STOLONIFERA* L.—See 830/4. *AGROPYRON REPENS*.

794. *AVENA*. Stanton, T. R., 1955, Oat identification and classification, *U.S. Dept. of Agriculture Technical Bull.*, No. **1100**, 1-206. An account of the genus *Avena* including keys to species, varieties and cultivars. Many illustrations and photographs are included.—[D.H.K.]

824. *POA*. Grun, P., 1955, Cytogenetic studies of *Poa*. 2. The pairing of chromosomes in species and interspecific hybrids, *Amer. J. Bot.*, **42**, 11-17.

824/11. *POA ALPINA* L. Müntzing, A. & Nygren, A., 1955, A new diploid variety of *Poa alpina* with two accessory chromosomes at Meiosis, *Hereditas*, **41**, 405-422.

824/14. *POA ANNUA* L. Secretain, G. & Schmidt, P., 1955, Nécessité de la symbiose pour maintenir *Poa annua* à l'état vivace, *Rev. Gen. Bot.*, **62**, 124-126.

824/14. *POA ANNUA* L. Skottsberg, C., 1954, Antarctic flowering plants, *Bot. Tidssk.*, **51**, 330-332. A single plant of *Poa annua* was found at Whaler's Bay in 1953. This is the first record of a weed in the Antarctic.—[D.H.K.]

826. *FESTUCA*. Horánszky, A., 1954, Die Kenntnis der Festucaarten auf Grund der Blattepidermis, *Acta Bot. Hung.*, **1**, 61-87. Studies on the structure of the epidermal cells of various species of *Festuca* illustrated by many photographs.—[D.H.K.]

826. *FESTUCA*. Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 9. *Festuca arundinacea* with some other *Festuca* species. *J. Genetics*, **53**, 81-93. *Festuca arundinacea* ($2n=42$) and *F. pratensis* ($2n=14$) were intercrossed in both directions without serious difficulty. The F_1 hybrids obtained were very highly, but not completely, sterile. *F. arundinacea* was also intercrossed with *F. gigantea* ($2n=42$), but the F_1 hybrids obtained were even more highly sterile than those of F_1 *arundinacea* \times *pratensis*. Established F_1 hybrid plants were also obtained by crossing *F. rubra* ($2n=42$) with *F. arundinacea*; these were, however, very incompetent and failed to produce inflorescences, although, with difficulty, they could be perpetuated vegetatively.—[D.H.K.]

826. *FESTUCA*. Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 10. Some of the breeding interactions of *Festuca gigantea*. *J. Genetics*, **53**, 94-99. Further information is given of results of experimental crosses between *Festuca gigantea* and *F. pratensis*. An attempt to cross *Brachypodium sylvaticum* and *Festuca gigantea* gave a negative result.—[D.H.K.]

826. *FESTUCA*. Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 11. Some of the breeding interactions of *Festuca pratensis*. *J. Genetics*, **53**, 100-104. The present results show no breeding affinity between *Festuca pratensis* and *Glyceria fluitans*, *Bromus asper* or *B. erectus*; slight breeding affinities with the three fine-leaved fescue species:—*Festuca capillata*, *F. heterophylla* and *F. rubra*, and relatively strong breeding affinities with the broad-leaved fescues:—*Festuca arundinacea* and *F. gigantea*.—[Author's summary.]

826. *FESTUCA*. Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 12. *Festuca capillata* in crosses. *J. Genetics*, **53**, 105-111. An account of experimental crosses between *Festuca capillata* and the following species:—*F. ovina*, *F. heterophylla*, *F. rubra*, *F. pratensis* and *Lolium perenne*.—[D.H.K.]

826. *FESTUCA*. Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 13. The breeding affinities of *Festuca heterophylla*. *J. Genetics*, **53**, 112-117. *Festuca heterophylla* ($2n=28$)

has given fully established F_1 hybrid progeny from crosses with *F. capillata* ($2n=14$), *F. rubra* ($2n=42?$) and *Lolium perenne* ($2n=14$).—[D.H.K.]

826. **FESTUCA.** Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 14. The breeding affinities of *Festuca ovina*. *J. Genetics*, **53**, 118-124. Studies in the experimental crossing of *Festuca ovina* with *F. capillata*, *F. rubra*, *Lolium loliaceum* and *L. perenne*.—[D.H.K.]

826. **FESTUCA.** Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 15. The breeding affinities of *Festuca rubra*. *J. Genetics*, **53**, 125-130. The original results described in the present paper or in previous papers of this series concerning the breeding affinities of *Festuca rubra* can be summarised in tabular form as below.

♀	♂	Result*
<i>Festuca rubra</i>	× <i>arundinacea</i>	++
<i>F. arundinacea</i>	× <i>rubra</i>	±
<i>F. rubra</i>	× <i>pratensis</i>	±
<i>F. pratensis</i>	× <i>rubra</i>	±
<i>F. rubra</i>	× <i>capillata</i>	- ?
<i>F. rubra</i>	× <i>heterophylla</i>	++
<i>F. heterophylla</i>	× <i>rubra</i>	+
<i>F. rubra</i>	× <i>ovina</i>	±
<i>F. ovina</i>	× <i>rubra</i>	++
(<i>F. ovina</i> × <i>rubra</i>)	× <i>rubra</i>	++
(<i>F. ovina</i> × <i>rubra</i>)	× <i>ovina</i>	++
<i>F. loliacea</i>	× <i>rubra</i>	±
<i>Lolium temulentum</i>	× <i>F. rubra</i>	±
<i>Festuca rubra</i>	× (<i>Lolium rigidum</i> × <i>perenne</i>)	-
<i>F. rubra</i>	× <i>L. perenne</i>	±
<i>Lolium perenne</i>	× <i>F. rubra</i>	++
(<i>L. perenne</i> × <i>F. rubra</i>)	× <i>rubra</i>	-
(<i>L. perenne</i> × <i>F. rubra</i>)	× <i>L. perenne</i>	-

* ++ established F_1 hybrids; + seedlings failed to survive; ± caryopses produced but seeds failed to germinate; - no caryopses produced.—[Author's summary.]

826/3. **FESTUCA ARUNDINACEA** Schreb.—See 829. **LOLIUM.**

826/4. **FESTUCA PRATENSIS** Huds. Lindquist, A., 1955, Genetics of self-incompatibility in *Festuca pratensis* Huds., *Hereditas*, **41**, 518-520.

826/4. **FESTUCA PRATENSIS** Huds.—See 829/1. **LOLIUM PERENNE** L.

829. **LOLIUM.** Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 18. Various crosses including *Lolium rigidum* sens. ampl. with *L. temulentum* and *L. loliaceum* with *Festuca pratensis* and *Festuca arundinacea*, *J. Genetics*, **53**, 467-486.

829/1. **LOLIUM PERENNE** L. Fejer, S. O., 1955, Genotype environment interactions in *Lolium perenne*, *Nature*, **175**, 944-945.

829/1. **LOLIUM PERENNE** L. Jenkin, T. J., 1955, Interspecific and intergeneric hybrids in herbage grasses. 16. *Lolium perenne* and *Festuca pratensis* with references to *Festuca loliacea*, *J. Genetics*, **53**, 379-441. 17. Further crosses involving *Lolium perenne*, *op. cit.*, **53**, 442-466.

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844. *EQUISETUM*. Pohl, R. W., 1955, Toxicity of ferns and *Equisetum*, *Amer. Fern J.*, **45**, 95-97.

844. *EQUISETUM*. Rapp, W. F., Jr., 1954, The toxicity of *Equisetum*, *Amer. Fern J.*, **44**, 148-154.

844. *EQUISETUM*. See 845→ *PTERIDOPHYTA*.

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845→ *PTERIDOPHYTA*. Wagner, W. H., Jr., 1955, Cytotaxonomic observations on North American ferns, *Rhodora*, **57**, 219-240. Many species also found in Britain are included in these studies of North American ferns.—[D.H.K.]

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manes, only one of which, apparently, hybridises with *A. septentrionale*.—[A.E.W.]

856/1×7. DRYOPTERIS FILIX-MAS×THELYPTERIS OREOPTERIS. Taylor, T. M. C., 1953, Further observations on the putative hybrid *Dryopteris filix-mas* × *oreopteris*, *Amer. Fern J.*, **43**, 69-70.

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856/9. THELYPTERIS PHEGOPTERIS (L.) Slosson. Morton, C. V. & Neidorf, C., 1955, The northern beech-fern, *Amer. Fern J.*, **45**, 17-19.

861/2. WOODSIA ALPINA (Bolton) S. F. Gray. Pichi-Sermolli, R. E. G., 1955, "Woodsia" R. Br. nell' Appennino, *Webbia*, **10**, 447-460. *Woodsia alpina* has been discovered in the Apennines; this represents the southern limit of the species (and genus) in western Europe. The nomenclature of the genus *Woodsia* is also discussed.—[D.H.K.]

876/10. CHARA BALTICA Bruz. Corillion, R., 1954, *Chara baltica* Fries, Charophycée nouvelle pour le Nord-Ouest de la France, *Bull. Soc. Sci. Bretagne*, **28**, 42-44. A specimen collected from Vauville is referred to *Chara baltica*, new to the north-west of France. A distribution map shows it from only four other French localities, three in the west and one in the south-east; it is recorded from Guernsey, is rare in the British Isles and is known from the south-west of the Baltic, north Atlantic islands, Greenland and North Africa.—[E.B.B.]

876/15. CHARA FRAGIFERA Durieu. Corillion, R., 1954, *Chara fragifera* Durieu. Notes phytogéographiques, écologiques, phytosociologiques, *Bull. Soc. Sci. Bretagne*, **28**, 45-54. *Chara fragifera* is known from western France, north-west Spain, Portugal, N. Africa, with its northern limit in the extreme west of Cornwall. Its ecological requirements are discussed and its aquatic associates listed from two pools.—[E.B.B.]

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10, WIGHT. Young, D. P., 1953, The Isle of Wight Helleborines. *Proc. Isle of Wight N.H. & Arch. Soc.*, **4**, 252-256.

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appears to be the only record for the Liverpool district since 1891.—[A.E.W.]

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69, WESTM. Holdgate, M. W., 1955, The vegetation of some British upland fens, *J. Ecol.*, **43**, 389-403. The author describes some of the rich fen vegetation to be found in the neighbourhood of Sunbiggin Tarn in central Westmorland. Much ecological data are given.—[D.H.K.]

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88, MID PERTH. The National Trust for Scotland, 1955, *Ben Lawers and its Alpine Flowers*. Edinburgh. Pp. 56. Price 4/-. An excellent account of the plant ecology of the hill by D. Poore (31 pages) deals with the factors which determine the vegetation and the various communities to be seen. The reasons for the richness of the flora, and relationship of the rarities to the Ben Lawers schist, are discussed. In addition, this booklet includes short accounts of the mountain in history and legend by Miss M. S. Campbell, of the geology by G. R. Elles, and animals by J. Grant Roger. It is illustrated by maps, fine photographs of the scenery, and 12 colour photographs of rare plants.—[J.E.L.]

IRELAND. Bocher, T. W., 1954, Studies on European calcareous fixed dune communities, *Vegetatio*, **5-6**, 562-570. The account includes descriptions of such dune communities in Ireland and Jersey.—[D.H.K.]

IRELAND. Mould, D. D. C. P., 1956, *The mountains of Ireland*. Batsford. London. Price 21/-. Gives brief details of the Flora of the various Irish mountains, mainly based on information given in Praeger's *The Botanist in Ireland* (1934).—[D.H.K.]

H.4, MID CORK. O'Reilly, H., 1955, Survey of the Geragh, an area of wet woodland on the river Lee, near Macroom, Co. Cork, *Irish Nats. J.*, **11**, 279-286.

H.9, CLARE. Webb, D. A., 1955, Woodland relics in the Burren, *Irish Nats., J.*, **11**, 251-252.

H.20, WICKLOW. Brunner, J. P., 1955, Flora of Co. Wicklow, new records, *Irish Nats. J.*, **11**, 250-251.

H.38, DOWN, H.39, ANTRIM & H.40, DERRY. Carrothers, E. N. & Moon, J. McK., 1956, Notes on the Flora of the north east of Ireland, *Irish Nats. J.*, **12**, 11-14. The authors give new stations for a number of plants in Down, Antrim and Derry.—[D.H.K.]

S., JERSEY. See IRELAND.

NORTHERN REGIONAL MEETING, 1955

The meeting was held in the Botany Dept., Leeds University, on Saturday, October 22. At the morning session lectures were given by Professor I. Manton and Professor R. Good, followed after lunch by two more short lectures by Dr. C. D. Pigott and Mr. A. D. Greenwood. The remainder of the afternoon was devoted to an inspection of the exhibits in one of the botanical laboratories, with a break for tea in the University Refectory. About 50 members and guests attended the meeting.

Lectures

THE PRESENT STATE OF CYTOLOGY IN RELATION TO
SYSTEMATICS IN THE PTERIDOPHYTA

I. MANTON

Professor Manton reviewed the progress of cyto-taxonomic research on ferns since the publication of her *Problems of cytology and evolution in the Pteridophyta*. She described how the cytological information derived from the limited number of British and west European ferns has recently been supplemented by chromosome counts on numerous Ceylon and Malayan genera, pointing out the relation of this new body of data to that obtained from European species and its bearing on fern classification.

THE EAST RIDING OF YORKSHIRE AND ITS FLORA

R. GOOD

Professor Good outlined the principal features of the vegetation and flora of East Yorkshire, relating these to topographical and geological factors and the highly cultivated conditions which prevail over most of the Riding. Species conspicuous by their rarity or absence from the chalk wolds but characteristic of similar ground in southern Britain, and notably abundant species, were enumerated.

THE TENDENCY TO OVERSIMPLIFY THE FACTORS
CONTROLLING A PLANT'S DISTRIBUTION

C. D. PIGOTT

Dr. Pigott discussed the inadequacy of single factors which have sometimes been evoked to account for observed phenomena of distribution, illustrating his remarks by particular reference to *Isoetes hystrix*, *Polemonium caeruleum* and *Cirsium acaule*.

LYCOPODIUM IN A WELSH VALLEY

A. D. GREENWOOD

Mr. Greenwood described the occurrence of *Lycopodium alpinum* in a Caernarvonshire valley where its unusual abundance is such as to make it a significant element in the turf of the valley slopes. Observations, photographs and measurements of individual colonies made over a period of seven years showed that the patches are at present increasing by nearly a foot a year. The possible causes leading to its rapid increase were discussed.

Exhibits

1. A preliminary investigation into the taxa *Arenaria serpyllifolia* and *A. leptoclados*. F. W. ADAMS.
2. Distribution maps of *Alchemilla* spp. in the Teesdale area. Miss M. E. BRADSHAW.
3. *Calamagrostis canescens* × *neglecta* from South-East Yorks and Swedish species and hybrids of *Calamagrostis*. Miss F. E. CRACKLES.
4. Distribution and ecology of *Primula farinosa*. Dr. E. M. EVANS.
5. *Alisma gramineum* and Lincolnshire alien plants. Miss E. J. GIBBONS.
6. Colonisation by *Lycopodium alpinum* and *L. clavatum*, illustrated by photographs and specimens. A. D. GREENWOOD.
7. (a) Gametophytes of *Ophioglossum* and *Lycopodium* spp. (b) Prints and paintings illustrating early Chinese botany. Prof. I. MANTON.
8. *Crocus nudiflorus*, *Potamogeton epihydrus* and other Halifax plants. F. MURGATROYD.
9. Investigations on *Euphorbia cyparissias*, *E. esula* and *E. virgata*. T. O. PRITCHARD.
10. Peculiar features in the distribution of *Polemonium caeruleum*. C. D. PIGOTT.
11. Variation in *Ranunculus acris* and *R. bulbosus*. J. ROSSITER.
12. Living plants of the cytological races of British *Polypodium vulgare* and of *P. virginianum* and *P. californicum*. Miss M. SHIVAS.
13. *Cirsium* hybrids. W. A. SLEDGE.
14. *Epipogium aphyllum* from Switzerland: specimens and colour photographs. Miss C. SHADDICK and W. A. SLEDGE.

WESTERN REGIONAL MEETING, 1955

A Western Regional Meeting was held at Cardiff on Saturday, 18th March 1955, in the Department of Botany, University College, by kind permission of the Principal and Professor R. C. McLean. Approximately 25 members and guests attended all, or part, of the day's proceedings.

The meeting opened at 10.30 a.m., when Professor McLean gave a short address of welcome. The chair was then taken by Mr. H. A. Hyde and Professor McLean delivered a paper entitled "Spore variation in *Equisetum*". He pointed out that although the spores of *Equisetum arvense* were apparently all alike, careful measurement had shown that two size groups existed which had more or less independent ranges of distribution. Similar variations had been detected in the homosporous *Calamites*, a fossil group in which true heterospory was also developed. He suggested that variation in spore size of the type described might represent a stage in the evolution of heterospory.

During the interval which followed, coffee was served in the laboratory and many of those present took the opportunity of inspecting the Time-lapse Ciné Unit, the operation of which was explained and demonstrated by Miss K. Benson Evans.

The chair at the second lecture session was taken by Professor McLean. Mr. A. E. Wade read a paper on "The British and introduced species of *Symphytum*", in which he discussed their differential characters and referred to the various views which had been expressed regarding the origin of *Symphytum "peregrinum"*. Mr. F. Perring then gave a stimulating account of the Maps Scheme which he introduced with a historical survey of the study of plant distribution in Britain.

The meeting then adjourned for lunch, reassembling in the afternoon at 2.30 in the National Museum of Wales, where the Keeper of Botany, Mr. Hyde, gave a short introductory talk. Under the guidance of Mr. Hyde and Mr. Wade, members and guests toured the botanical galleries and inspected the special exhibits which had been arranged for the meeting in the reserve. These included plants of special local interest from the herbarium, illustrated books on plants from the library and an exhibit relating to work on air-borne pollen by Mr. Hyde. To those who had not previously visited the Museum, the occasion was doubtless a memorable one; to those who were revisiting it, a pleasure renewed.

At 4.30, the Society was entertained to tea by the University College of South Wales and Monmouthshire in the New College buildings adjacent to the Museum, and thereafter the exhibits staged by members and guests were open for inspection in the Plant Physiology laboratory.

Exhibits

PLANTS LOCAL TO BRISTOL AND INTERESTING ALIENS

A series of 24 herbarium specimens, including *Paeonia mascula*, *Arabis stricta*, *Koeleria vallesiana*, *Allium sphaerocephalon*, *Vicia orobus*, *Sisymbrium irio*.—I. EVANS.

THE VEGETATION OF EWENNY DOWN, GLAMORGAN

Herbarium specimens and photographs illustrating the principal communities: Grass heath dominated by *Agrostis setacea*, limestone grassland with many calcicoles including *Carex montana* but no dominant, and limestone heath which is a mosaic of the other two.—R. B. IVIMEY COOK.

THE BRITISH WATERCRESSES

Living specimens in flower and fruit (*Rorippa nasturtium-aquaticum* and *R. microphylla*) which had been grown under conditions of extended daylight.—A. G. LYON.

LINNAEA BOREALIS IN N.E. SCOTLAND

Colour transparencies and a note drawing attention to factors which may result in the disappearance of the plant from former localities.—A. G. LYON.

THE SOCIETY'S PUBLICATIONS

A historical series illustrating the evolution of the Society's publications from its beginning.—PROF. R. C. McLEAN.

HIERACIUM CALCARICOLA (F. J. HANB.) ROFFEY IN GLAMORGAN

Herbarium specimens and maps relating to the British distribution of this new record for Wales. (See *Proc. B.S.B.I.*, 1, 498: 1955.—B. MILES.

THE DISTRIBUTION MAPS SCHEME

An exhibit illustrating the morning lecture.—F. PERRING.

ARUM ITALICUM MILL.

A specimen from Oriulton, Pembrokeshire.—MRS. I. M. VAUGHAN.

THE BRITISH AND INTRODUCED SPECIES OF SYMPHYTUM

A series of herbarium sheets illustrating the paper given during the morning lecture session.—A. E. WADE.

At approximately 5.30 p.m. the meeting ended.

In replying to Dr. Dony's concluding remarks, I had a welcome opportunity of expressing my own thanks to all those who had con-

tributed to the day's activities. I should like to reaffirm my grateful appreciation of the help and co-operation I received in making the local arrangements for the meeting and to include this time Dr. Dony himself, whose assistance, I fear, I failed to acknowledge verbally. Not only was the idea of holding a Regional Meeting in Cardiff his, but in the course of correspondence in the months preceding it, I received from him much valuable help and encouragement.

In conclusion, may I thank those speakers and exhibitors who provided me with notes relating to their contributions, which I have freely used in compiling this account.

A. G. LYON.

FIELD MEETING

On Sunday, 19th March 1955, a visit was paid by a party of about 12 members and guests to Cwm George, Dinas Powis, under the leadership of Mr. A. E. Wade. Cwm George is the first Welsh locality for *Arum neglectum* (Townson) Ridl. and several plants were seen. Unfortunately, careful search failed to disclose the presence of *Polypodium vulgare* var. *cambricum* (L.) Lightf. which seems to have disappeared from its classical locality—at least from the accessible parts of it!

In spite of the early date of the visit, a number of additional plant records were obtained for the Distribution Maps Scheme.

Thanks are due to Mr. Wade for his able leadership and to the Conservator, South Wales Conservancy of the Forestry Commission, for granting access to the Cwm.

A. G. LYON.

EXHIBITION MEETING, 1955

An Exhibition Meeting was held in the Lecture Hall of the British Museum (Natural History), London, S.W.7, by kind permission of the Trustees, on Saturday, November 26, 1955, from 2.30 to 5.30 p.m. Over 300 members and guests attended, and exhibits were arranged by 33 individuals and institutions. An account of these is given below, based on notes supplied by the exhibitors. For further details see *Nature*, **177**, 18-20 (1956).

THE MILITARY ORCHID IN SUFFOLK*

Black and white and colour photographs were exhibited of the newly-discovered Suffolk population of the military orchid (*Orchis militaris* L.).—ANON.

NARDURUS MARITIMUS IN BRITAIN

Specimens were exhibited of this grass which has been recorded in Britain only eight times (three times since 1954), and similar species of the genus *Vulpia* with which it might be confused were also shown. Two maps were included in the exhibit, the first of the distribution of *Nardurus maritimus* in western Europe; indicating that the plant is rather rare north of Paris, and in England and Belgium is at the northern limit of its range. The second map showed the eight British localities in relation to the chalk and limestone areas where it is principally found.

A third section included a preliminary investigation of the ecology of *Nardurus* and showed that the species is fully able to compete with many stronger taxa on the more disturbed areas of chalk grassland.

It is to be hoped that a careful search of old rabbit warrens, craters and rough scarps in the chalk and limestone areas will disclose new localities for the plant and indicate that it may in fact be a much overlooked native of the British Isles.—W. M. BARON & R. KEMP.

A CURIOUS SPARTINA FROM MERIONETH

Herbarium sheets were exhibited of "typical" *Spartina townsendii* and of an unusual form of the plant from Merioneth.—P. M. BENOIT.

A SET OF HYBRID DOCKS

The exhibit consisted of herbarium sheets of the four common docks, *Rumex conglomeratus*, *R. crispus*, *R. obtusifolius* and *R. sanguineus*, and six hybrids—*R. conglomeratus* × *crispus*, *R. conglomeratus* × *obtusifolius*, *R. ? crispus* × *hydrolapathum*, *R. crispus* × *obtusifolius*, *R. crispus* × *sanguineus* and *R. obtusifolius* × *sanguineus*.—P. M. BENOIT.

*See also separate paper on p. 4.

CENTAURIUM LITTORALE × *MINUS* IN WALES

Herbarium specimens were shown of *Centaurium littorale* × *minus* from Merioneth.—P. M. BENOIT.

STOMATA AS A TAXONOMIC CHARACTER IN *SESLERIA*—B. N. BOWDEN.DISTRIBUTION MAPS OF SOME *ALCHEMILLA* MICROSPECIES

The distribution of *Alchemilla monticola*, *A. acutiloba*, *A. glomerulans* and *A. wichurae* in the north Pennine area was shown on two base maps. These were plotted on a grid of 0.2 km. and showed interesting correlations between roadsides and meadows used by sheep and cattle.—MISS M. E. BRADSHAW.

PLANT LIFE ON ROCKALL

A party of Royal Marine Commandos landed on Rockall on Sept. 18, 1955, and with them was Mr. James Fisher, the naturalist. Mr. Fisher brought back a few rock specimens, the seaweeds on the surface of which were identified by Mr. H. T. Powel of the Marine Station, Millport, and myself. Photographs of the rock were shown in the exhibit together with a list of the species found both in 1955 and in 1922 by the French. The main components of the flora were the brown seaweed *Alaria esculenta* (L.) Grév. round the base of the rock, and a tuft of the small green seaweed *Prasiola stipitata* Suhr. on the upper parts. One lichen—*Verrucaria microspora* Nyl. was present but there are no flowering plants among the 22 species so far recorded.—MISS Y. M. CHAMBERLAIN.

SOME INTERESTING PLANTS FROM THE EUROPEAN HERBARIUM

This exhibit was prepared to enable examples of interesting and newly-recorded plants described in "Plant Notes" to be seen. The following herbarium specimens were shown:—*Cotoneaster horizontalis* Decne., *Salpichroa origanifolia* (Lam.) Baill., *Cyperus rotundus* L., *Genistella sagittalis* (L.) Gams, *Elodea callitrichoides* (Rich.) Casp., *Egeria densa* Planch., *Lagarosiphon major* (Ridl.) C. E. Moss and *Campanula lactiflora* Bieb.—BRITISH MUSEUM (NATURAL HISTORY).

TWO ALIEN FLOWERING PLANTS FROM THE LONDON AREA

Specimens were exhibited of *Centaurea solstitialis* var. *intermedia* Gugl. from a rubbish-tip at Downe, W. Kent and a *Juncus* sp.* from Denham, Bucks.—BRITISH MUSEUM (NATURAL HISTORY).

SOME DRAWINGS FOR SOWERBY'S ENGLISH BOTANY

Original drawings for James Sowerby's English Botany (1790-1814) were displayed.—BOTANICAL LIBRARY, BRITISH MUSEUM (NATURAL HISTORY).

*Since determined by Mr. N. Y. Sandwith as *J. tenuis* var. *antheletus* Wieg.—ED.

THE MANUSCRIPTS OF SOME BRITISH FLORAS

The following MSS. were exhibited:—Flora of Uxbridge and Middlesex, John Benbow (1821-1908): Flora of Sussex, A. H. Wolley-Dod (1861-1948), Annotated copy of Brewer's *Flora of Surrey*, H. Trimen (1843-96), Appendix to the Botany of Worcestershire, Carleton Rea (d. 1946).—BOTANICAL LIBRARY, BRITISH MUSEUM (NATURAL HISTORY).

NEW LIGHT ON DILLENIIUS AND JOHN SIBTHORP.—MRS. H. N. CLOKIE.

VARIATION IN SEED COAT MARKINGS IN *CHENOPODIUM ALBUM* AND *C. RETICULATUM*.—M. COLE.

SOME RECORDS FROM THE LLEYN PENINSULA

Herbarium specimens and distribution maps were shown of the rarer species from the south-western part of the Lleyn Peninsula, Caernarvon.—DR. A. M. CONOLLY.

THE DISTRIBUTION AND ECOLOGY OF *PRIMULA FARINOSA*

Maps showing the distribution of *Primula farinosa* throughout the world (according to Hegi), and in Europe and Western Asia were exhibited. It was pointed out that recent taxonomic work has rendered Hegi's map incorrect and that both the North and South American plants are separated as distinct species.

In its ecology, *Primula farinosa* is an arctic-alpine plant of base-rich soils. It appears to thrive in three types of community, a short-turf grassland of dry soils, a parvocaricetum of flushed soils, and fen. In Teesdale, Malham, Öland and the Pyrenees it has been observed in a short dry Seslerietum turf, while in Austria it may form dense carpets in alpine meadows with *Carex firma*. On the other hand, it grows luxuriantly in permanently wet soils with much taller fen plants, as at Cunswick Tarn, Westmorland, Murnauer Moos, Bavaria, and Le Vallon d'Estibère in the Pyrenees.

To explain this wide tolerance in its water relations the following hypothesis is advanced. It is suggested that *P. farinosa* requires a habitat with a high water table for maximum development. Those habitats which appear to be dry in summer may in fact be extremely moist in spring owing to melting snow or heavy rainfall, and it is at this time when germination of the seed and subsequent establishment take place. The difference in height of the inflorescence stalk produced by plants from these different habitats is worth noting: it varies from nil in the completely stemless form of exposed dry habitats to a stalk of 30 cms. from a fen community. Plants from a wide variety of habitats are in cultivation to see whether these differences are maintained under uniform conditions.

The exhibitor would be very pleased to receive recently confirmed records of *Primula farinosa* in the British Isles.—DR. ELIZABETH M. EVANS.

ALISMA GRAMINEUM IN LINCOLNSHIRE

The completely submerged form of *Alisma gramineum* Lejeune was discovered in the river Glen, Surfleet, on September 3, 1955, by Miss E. J. Gibbons. Specimens and photographs were shown of the plant in this locality, and maps to show the distribution in four rivers and drains between Spalding and Surfleet. Specimens and photographs were also exhibited of the shallow-water form previously known at Westwood Park, Worcestershire, and a map to illustrate the distribution abroad. An account of the species in Britain is in preparation.—MISS E. J. GIBBONS & J. E. LOUSLEY.

AN INLAND ARMERIA FROM LINCOLNSHIRE

An *Armeria* was recorded by Vincent Bacon from near Grantham in 1726 and there are numerous records showing that thrift grew over a wide area of the old Lincoln Heath in Leicestershire as well as in Lincolnshire. It still occurs at Ancaster and Wilsford and material collected at Ancaster appears to be *Armeria maritima* var. *elongata* (Hoffm.) Mansf. Specimens, a photograph and maps were shown, and an account is in preparation.—MISS E. J. GIBBONS & J. E. LOUSLEY.

ALIEN GRASSES FROM WORCESTERSHIRE

Herbarium sheets were shown of twelve adventive grasses introduced into the market garden areas of the Vale of Evesham with "wool manure" ("shoddy") from the woollen mills of Yorkshire and the blanket mills of Witney. A large proportion of the imported wool used in the mills is of Australian and New Zealand origin and contains the seeds and fruits of many Australasian and cosmopolitan plants. These survive the process of cleaning in the mills and give rise to alien plant communities in the arable fields where the wool manure is spread and at sidings where it is unloaded.

The exhibit also included photographs taken in the Vale of Evesham and a sample of wool manure from a Witney blanket mill containing many seeds and fruits.—MISS C. M. GOODMAN.

AN INTERESTING SPARGANIUM FROM THE RIVER THAMES—M. D. GWYNNE

ARENARIA BALEARICA IN BRITAIN

This plant was first found in Britain by the Rev. T. Gisborne in 1839 at Clapham, Yorks., and although it was incorporated in Babington's herbarium it was labelled "*A. ciliata*". It was not until 1859 that J. Sim brought his Perthshire discovery to the notice of the botanical world in the pages of *The Phytologist*. This provoked a violent controversy regarding the plant's status in Britain.

The horticultural literature is more reserved. It records the plant as being introduced in 1787, and there is little reason to doubt that it had been previously absent from this country. It spread rapidly and is now known from Cornwall to Raasay, growing usually on wall

tops and old buildings, though it is most plentiful in the south-west.
—G. HALLIDAY.

MINUARTIA FASCICULATA (L.) Reichb. AN UNCONFIRMED RECORD
FOR SCOTLAND

A specimen of this plant collected by G. Don in Clova was shown.
—G. HALLIDAY.

MINUARTIA VERNA (L.) HIERN.

A map was exhibited showing the British distribution of this species in relation to lead workings, carboniferous limestone, basalt and serpentine.—G. HALLIDAY.

THE STOLON SYSTEM OF *GLAUX MARITIMA*

This simple exhibit showed a plant of *Glaux maritima* with its extensive system of subterranean stems ramifying about 3 ft. and in several directions. The particular plant on view came from the shore near Spurn Head where a thin layer of sand overlies boulder clay, and each stolon (or thin rhizome) was interlocked with others from neighbouring plants. It does not appear to be generally realised that *G. maritima* possesses such a system.—F. N. HEPFER.

THE DISTRIBUTION OF *LURONIUM NATANS*

The exhibit consisted of maps showing the distribution of *Luronium natans* in the British Isles and Europe. Herbarium sheets of *Luronium natans* identified by Glück as f. *typicum* and f. *sparganifolium* were exhibited with a comparative sheet of *Baldellia ranunculoides* var. *repens* Davies.—A. C. JERMY.

Is *SIEGLINGIA* A GENUS?

The object of this exhibit was to indicate that the relationship between *Sieglingia decumbens* (L.) Bernh. and *Danthonia calycina* (Vill.) Rehb. is one of species and not genus. The two species hybridise with great facility where they occur together (in southern Europe); the hybrid is known as \times *Danthosieglingia breviaristata* (Beck.) Domin. The characters used in separating the two genera were reviewed and additional evidence that seems to indicate a closer relationship was put forward.—J. G. PACKER.

DISTRIBUTION MAPS SCHEME: LOCAL DISTRIBUTION PATTERNS REVEALED
BY MAP RECORDING.—F. PERRING & DR. S. M. WALTERS*

FEATURES IN THE DISTRIBUTION OF *POLEMONIUM CAERULEUM*

Although a common garden plant and often naturalised, the native race of *Polemonium caeruleum* may be distinguished from the usual garden form by its slightly drooping, campanulate flowers of a more intense, purplish-blue.

*See separate paper on p. 11.

The native habitats in Yorkshire and Derbyshire are strikingly uniform in character. *Polemonium* is only abundant in black humus-rich soil on the ledges of limestone cliffs or soil-covered limestone scree-slopes with a northerly or westerly aspect where competition is low. The following species are almost always associated: *Arrhenatherum elatius*, *Festuca rubra*, *Dryopteris filix-mas*, *Melandrium dioicum*, *Mercurialis perennis*, *Urtica dioica*, *Valeriana officinalis*, *Lophocolea bidentata*.

Transplants and the exposure of well-established plants to the conditions on southern aspects suggest that the soil moisture content is a critical factor. Investigation of the soil moisture in the natural habitats shows that even in a drought year the content does not fall below the critical level until after flowering and fruiting; whereas southern slopes become too dry as early as June.

Although *Polemonium* is present in Scandinavia and the mountains of Central Europe it is strangely absent from Scotland and restricted to the Pennines and Cheviots. A possible explanation of the discontinuity in England lies in the distribution of suitable habitats during the Post-glacial forest maximum. Derbyshire, Craven and Teesdale are well known for the peculiarity of their flora. The presence of *Polemonium* in more widespread localities during the Late-glacial has many times been confirmed during the investigation of Quaternary deposits. Its persistence through the Post-glacial, however, has been ascertained during an investigation of Malham Tarn Moss. Here grains of *Polemonium* pollen have been found with abundant tree pollen in peat of late Boreal or early Atlantic age.—
DR. C. D. & M. E. PIGOTT.

SOME BRITISH FORMS OF *GENTIANELLA CAMPESTRIS*

The principal differences (according to Murbeck) between *Gentianella campestris* and *G. baltica*, and between two subspecies of *G. campestris*, subsp. *germanica* and subsp. *suecica*, were described. Scandinavian specimens (identified by Murbeck) were shown of the extreme forms. In addition, a range of British specimens were exhibited, showing extreme and more obscure forms. Biometric analysis and cultural experiments are being undertaken to ascertain if *G. baltica* is distinct from *G. campestris*, and if so, whether the latter forms a uniform group.—N. M. PRITCHARD.

100 YEARS OF CHANGE IN THE FLORA OF GODALMING

The 702 species recorded by J. D. Salmon in the Godalming district in 1849 was compared with the 1,016 species known in 1955. During this period there have been great increases in the human population and considerable changes in land usage in the area. An estimation of the changes in the environment has been made from old maps and records. Of the increment of over 300 species in 100 years alien plants form 60% and native or well naturalised species 40%.—O. V. POLUNIN.

TRIENTALIS EUROPAEA IN EAST ANGLIA*

A herbarium specimen of *Trientalis europaea* was exhibited from a recently discovered station in East Anglia, together with a map showing its previous known range and distribution in Britain.—DR. F. ROSE.

RECENT WORK ON KENTISH PLANT DISTRIBUTION

A series of maps were exhibited showing the distribution of *Vaccinium myrtillus*, *Chrysosplenium oppositifolium*, *C. alternifolium*, *Ulmus glabra*, *Sagittaria sagittifolia*, *Agropyron caninum* and *Adara moschatellina* in Kent. The maps, of dot-distribution type, were shown as examples of the types of maps which are to appear in the new "Flora of Kent".—DR. F. ROSE.

SOME INTERESTING PLANT RECORDS FOR SOUTHERN ENGLAND FOR 1955

Herbarium specimens were shown of interesting plants from southern, south-eastern and eastern England.—DR. F. ROSE.

VARIATION IN *RANUNCULUS ACRIS* AND *R. BULBOSUS*

The exhibit illustrated ecotypic differentiation between the two species.

In *Ranunculus acris* typical lowland meadow plants were compared with a dwarf form growing in flushes on the Pennine moors. Cultivation experiments showed them to be genotypically different. A dwarf form from the bank of the river Tees was also shown. Cultivation showed this to be merely an ecological modification and not different from the lowland plants.

In *R. bulbosus* plants from the lowland meadows were compared with plants growing on stable sand dunes. Cultivation showed these to be genetically distinct, the latter remaining dwarf.—J. ROSSITER.

DICHONDRA REPENS IN BRITAIN*

A herbarium specimen and drawings were exhibited of *Dichondra repens* found as an adventive in W. Cornwall. The plant is widespread in the Tropics and warm regions of the world.—MRS. B. H. S. RUSSELL.

MICROMORPHOLOGICAL CRITERIA IN THE *DRYOPTERIS SPINULOSA* COMPLEX

Epidermal and spore characters offer an aid to identification and confirm relationships in the *Dryopteris spinulosa* complex.

The epidermal cells of the various species of the complex differ in size and lobing. *Dryopteris cristata* (L.) A. Gray, *D. spinulosa* (O. F. Muell.) Watt and *D. dilatata* (Hoffm.) A. Gray are readily separable by epidermal characters. The epidermis is also useful in distinguishing between the European diploid and tetraploid *D. dilatata*.

Spore characters provide the only reliable criteria for discriminating the European-type diploid from the tetraploid *D. dilatata* without cytological evidence. The diagnostic characters in such spore studies

*See also **Plant Notes.**—Ed.

are the size, thickness, shape, and ornamentation of the perispore. The spores of tetraploid *D. dilatata* have a thick dark-tan perispore which is furnished with large spinules connected by prominent ridges; in the diploid the perispore is much thinner with smaller spinules and connecting ridges, when present, are inconspicuous (cf. Crane, F. W., 1955, *Watsonia*, 3, 168-169). The Madeiran diploid *D. dilatata* has much smaller spores than the European diploid, and the perispore characters of the two diploids are also dissimilar.

The exhibit consisted of epidermal and spore drawings of the species of the *D. spinulosa* complex together with herbarium sheets.—J. A. RATER.

CALLITRICHE PLATYCARPA—A DISTINCT BRITISH SPECIES*

Callitriche platycarpa and *C. stagnalis* are two distinct species and can be readily separated by morphological and cytological characters.

The exhibit was illustrated by photographs showing mitosis in *C. platycarpa* ($2n=20$), *C. stagnalis* ($2n=10$), and *C. obtusangula* ($2n=10$). Herbarium sheets of several forms of *C. platycarpa*, together with sheets of *C. stagnalis* and *C. obtusangula* for comparison, were also displayed.—J. P. SAVIDGE.

A SHETLAND "ENDEMIC" HIERACIUM

An examination of a good series of specimens of *Hieracium pseudo-protractum* Pugsl. (from the Shetlands), *H. faeroense* Dahlst. (from the Faeroes), *H. epileucoides* Dahlst. (from the Faeroes), *H. stictophyllum* Dahlst. ex W. R. Linton (from various localities in Britain, Iceland and Norway), and *H. sparsifolium* Lindeb. (from Norway) has shown that they are one and the same species. *H. sparsifolium* is the oldest name and must therefore be used.

The distribution of *H. sparsifolium* was shown on an outline map.—P. D. SELL & C. WEST.

COLOUR PHOTOGRAPHS OF SOME BRITISH PLANTS

The exhibit consisted of an illuminated display of colour slides showing certain interesting plants seen at some of the field meetings held in 1955 and monochrome photographs of Bookham Common and Hackhurst Downs, showing the abnormal growth of grasses resulting from the extermination of the rabbit population. Photographs of some British orchids were also shown.—K. LE SUEUR.

OPHRYS FUCIFLORA IN THE COTSWOLDS

A photograph of a plant of *Ophrys fuciflora* believed to have been found in the Cotswolds was displayed with a detailed account of the circumstances and the history of the Gloucestershire record.—C THOMAS.

*See also **Plant Notes**.—Ed.

HIERACIUM SPRAGUEI: AN ENDEMIC ALIEN REDISCOVERED

Hieracium spraguei was discovered by Dr. T. A. Sprague in a road cutting near Chorleywood in Bucks. in 1923; it was again collected by him in 1925. Recent attempts to locate the species had failed, and it was thought that the plant had been destroyed by building or road reconstruction. In 1951, however, the plant was rediscovered by Mrs. A. T. Peppercorn, and is now known to occur in six stations in the neighbourhood of the type locality, one of them being in Herts. The species is a member of the section *Praealtina* of the subgenus *Pilosella* and is an introduction, the native home of which is not known.

Herbarium specimens of the plant were exhibited including one from Dr. Sprague's original gathering in 1923, kindly loaned by the Kew Herbarium.—R. F. TURNEY & OTHERS.

CALYSTEGIA IN BRITAIN*

Typical *Calystegia sepium* and *C. sylvestris* are white-flowered, though pink forms otherwise referable to one or other of these species undoubtedly occur. Investigation of pink-flowered *Calystegia* forms in Britain has, however, shown that the commonest plant is referable to neither of these species, but is clearly *C. dahurica*.

Herbarium sheets were set out to exhibit the range to be found in British material.—DR. S. M. WALTERS & PROF. D. A. WEBB.

SOME FORMS OF *SEDUM FORSTERIANUM* AND ITS ALLIES.—DR. E. F. WARBURG.THE *EUPHRASIAS* OF SOUTHERN ENGLAND

It is proposed to hold a Field Meeting in August 1956 to study *Euphrasia* in Surrey and Sussex. This exhibit showed the species that will be seen, and others of more western distribution.

Owing to the nature of the differences between the species it is difficult to describe them in such a way as to ensure against mistakes in identification. It is thus desirable to see authentic specimens in the herbarium and in the field if one wishes to study the group.

Specific distinctions are based on numerous characters which are often qualitative but of a kind that is often difficult to define. Variation from one population to another within the species is often evident. Hybrids occur quite frequently but in most cases it is found in the field that both parents, identical with their respective species elsewhere, are present. However, the recognized species have distinct habitats and distributions, and hybrids are usually found where habitats meet or where their distinctions are broken down.

When looking at *Euphrasias* it is necessary to make allowance for the effects of age and luxuriance. The exhibit included sheets illustrating these effects.

*See also **Plant Notes**.—Ed.

The characters used for distinguishing species are habit (length of internodes, number, position, and form of branches), leaf shape, corolla size, calyx and capsule size and shape.

The species exhibited were: *E. micrantha* Reichb., *E. occidentalis* Wettst., *E. confusa* Pugsl. (states showing more and less luxuriance), *E. nemorosa* (Pers.) H. Mart. (young and old), a form intermediate between *E. confusa* and *E. nemorosa*, *E. pseudokeneri* Pugsl., *E. anglica* Pugsl. and a plant of hybrid origin, *E. × vigursii* Davey. Information on distinguishing characters, habitat, distribution, chromosome number, and hybrids was supplied for each species.—P. F. YEO.

REPORT OF THE COUNCIL FOR 1955

The report and the audited accounts printed below cover the period January 1st to December 31st, 1955. Comparative figures for 1954 are given in brackets.

MEMBERSHIP. During the year 136 (142) new members joined the Society, and we lost 60 (25) by reason of death, resignation and the operation of Rule 6 (e). It is with very great regret that we report the death of four Honorary Members, Lady Davy, Mr. W. R. Sherrin, Dr. G. Kükenthal and Dr. P. Jansen who all rendered valuable services to the Society. Our congratulations and good wishes were sent to Mr. H. N. Ridley, an Honorary Member, on the occasion of his hundredth birthday on December 10th. The net increase in membership was 76 (117) and the total membership at the end of the year 1032 (956).

FINANCE. Receipts from subscriptions amounted to £1,014 (£910), which is exceeded by the cost of printing and postages expended on our two periodical publications—£1,070 (£938). Sales of periodicals totalled £220 and of other publications £232—giving a total of £452 (£209). We paid £350 towards the cost of printing the 1954 Conference Report. Our total assets at the end of the year were £1,535, which shows a decrease (£216) on the previous figure.

During the year the effect of the rising costs referred to in the last report has been reflected in the accounts. The final balance of the General Fund was £30 less, and the combined balances of the Journal and Publications Funds £101 less, than those with which we started the year. For 1955, this deficit can be justified by the cost of bringing up-to-date several regular features of the *Proceedings* which were previously published in arrears but it is clear that in future we must either reduce the size of our periodicals or find additional income. The prospect is rendered more serious by the announcement of the very heavy increase in postal charges to come into force in January 1956.

The balance on the Publications Fund includes £677 12s 5d in respect of sales of the *British Plant List* and *Comital Flora* published in 1928 and 1932 respectively. This money has been carefully accumulated with the object of publishing fresh editions of the works mentioned and represents approximately £150 for the *British Plant List* and £527 for *Comital Flora*. The balance also includes £125 each set aside from the General Fund towards the cost of the *Index of British Herbaria* and *Flora of Scilly*. The remaining £73 is less than has been received from sales of county floras. Owing to the current high printing costs the publication of books involves locking up substantial amounts of capital and the risk of loss, and it is evident that, although the balance on the Publications Fund may appear large, it is inadequate for all the purposes the Council have in mind. This is emphasised by recent

experience in issuing the 1954 Conference Report for which a substantial loss is unlikely to be avoided.

DEVELOPMENT AND RULES COMMITTEE. Secretary: Mr. D. E. Allen.

This Committee has only met once during the year. In addition to its usual duties in revision of the lists of Local Secretaries, etc., a report to the Council was prepared on the proposals which led to the setting up of the (joint) Committee for the Study of the Scottish Flora in collaboration with the Botanical Society of Edinburgh (see below). Several suggestions for new developments have been referred to the Committee by the Council and are awaiting consideration.

MEETINGS COMMITTEE. Secretary: Dr. J. G. Dony.

Arrangements were made for lectures by Miss C. M. Rob, Dr. R. W. Butcher and Mr. F. Perring to be delivered on April 2nd prior to the Annual General Meeting. The published programme of field meetings was carried through as advertised with a total attendance of 151 (224) made up as follows:—Dover 35, Dunfanaghy 24, Galloway 11, Durham 16, Chester 15, Kew 12, Bury St. Edmunds 10, and Hayling Island 18.

The special meeting for younger members at Flatford Mill, which lasted a week, was attended by 10 (25). The attendance at field meetings show a considerable decrease on those of recent years but this is partially explained by concentration on serious mapping work at some of the meetings, which produced valuable results but is not calculated to encourage large parties.

Three very successful Regional Meetings were held during the year. We are grateful to Mr. D. H. N. Spence for arranging the Scottish Regional Meeting at Glasgow on March 12th, at which the attendance was about 80; to Dr. A. G. Lyon for the Western Regional Meeting at Cardiff on March 19th with an attendance of 25; and to Dr. W. A. Sledge for the Northern Regional Meeting at Leeds on October 22nd with 50 members and guests present. The Annual Exhibition Meeting was held on November 26th in the Lecture Hall of the British Museum (Natural History) by kind permission of the Trustees, and was attended by 300 (280) members and guests. There were 41 exhibits. The meeting was followed in the evening by a *Conversazione* at Crosby Hall, Chelsea Embankment, at which the attendance was 62 (54).

Much of the time of the Committee during the year has been taken up with preliminary arrangements for the Conference under the title of "Progress in the Study of the British Flora" to be held at Bedford College, London, on April 13th and 14th, 1956. This will be followed by a field meeting on the next day. Seven field meetings and one Regional Meeting have been arranged for 1956.

PUBLICATIONS COMMITTEE. Secretary: Mr. P. J. Wanstall.

During the year two parts of *Watsonia*, totalling 108 pages, and two of the *Proceedings*, totalling 298 pages, have been issued. Plant Records

for 1954 as well as 1953, and Abstracts from Literature covering several years have been published, and other regular features have been brought up to date. In future these should appear regularly during the year following the one to which they refer.

Species Studies in the British Flora, being the report of the 1954 Conference edited by J. E. Lousley, was published in December at £1. Members and guests who attended the meetings were given the opportunity of purchasing a copy at 12s 6d, and 161 of them took advantage of this. In addition 83 members applied for copies of the *Flora of Buckinghamshire* by G. C. Druce which we were able to offer at half the published price.

The revised and shortened *British Plant List* is now virtually ready for the printers, who have been asked to set up specimen pages. We hope to publish this in several formats to allow for special requirements for annotation in the field or herbarium. Work is proceeding on the *Index of British Herbaria*, which should be ready for the printers next year, and *A Flora of the Isles of Scilly*, but considerations of finance make it necessary to give precedence to other works.

Orders for our publications reached a record total this year and we are very grateful to Mr. E. B. Bangertter and Mrs. B. Welch for dealing with them so very efficiently, and to the Trustees of the British Museum (Natural History) for facilities of storage.

CONSERVATION COMMITTEE. Secretary: Mr. J. E. Lousley.

During the year members have reported "threats" covering such diverse matters as the transplanting of orchids by a school-boy, interference with the native vegetation of Dovedale, spraying of natural vegetation with weedkillers, and the continued existence of colonies of rare species like *Hierochloe odorata* and *Euphorbia pepilis*. In all cases appropriate enquiries have been made and advice given. No cases have been reported of damage to interesting plants on roadside verges through the use of selective weedkillers, which is a welcome contrast to our experience in recent years. If, in future, spraying of roadside verges is restricted to trunk and class I roads, and certain dangerous corners on class II roads, with the other safeguards covered in Circular 718 of the Ministry of Transport and Civil Aviation to all appropriate local authorities on 31st August 1955, there is no reason to expect serious damage to native plants from this cause. It may turn out that a greater danger arises from spray carried by the wind when selective weedkillers are applied to agricultural crops under unsuitable weather conditions, and members have been asked to report any examples of this they may observe.

The spread of myxomatosis throughout the country is likely to affect grassland species of interest very adversely, though the immediate changes following reduction of rabbit-grazing may, in cases, be beneficial. Members have been asked to help by reporting any changes they notice.

During 1955 we continued to collaborate closely with the Nature Conservancy and the regular liaison meetings with their representatives have proved most valuable in keeping us informed of developments and providing an opportunity to express our views. The scheme for collecting reports on areas in which they are specially interested has been continued and during 1955 Mrs. Welch received 54 reports from 19 members. Reports on 150 areas have been supplied since the beginning of the scheme and as the list of the Conservancy's requirements is now covered with the exception of a small number of localities which are mostly difficult to reach, this work is unlikely to be continued next year.

MAPS COMMITTEE. Secretary: Prof. A. R. Clapham.

The progress made by the Distribution Maps Scheme during its second year is the subject of a separate report prepared by the Director, and of accounts which are kept entirely separate from the Society's own funds. We are grateful to the Nuffield Foundation for the second annual instalment of £2,000 from their grant, and to the Nature Conservancy for £1,959 1s 10d as a second instalment of the sum they have undertaken to contribute. With this financial support the collection of data is proceeding satisfactorily and we are very gratified with the enthusiastic support which is being provided by members and others.

JUNIOR MEMBERSHIP COMMITTEE. Secretary: Mr. A. W. Westrup.

During the year, six meetings were arranged for young people of 5th and 6th form grammar school standard, and attendances were as follows:—Department of Botany, British Museum (Natural History), 250; Whippendell Wood, Watford, 52; Flanders Moss, near Glasgow, 60; Hampton Court, 70; Freshfield Dunes, Lancashire, 140. The meeting arranged for September 1st to Chipstead Valley, Surrey, was not supported, owing, it is thought, to the date, so long after schools break up for the main holiday of the year, being unsuitable. Arrangements for 1956 include a visit to the South London Botanical Institute, field meetings in Sussex, Glamorgan, Perthshire and Derbyshire and three in the London area. Plans are in hand for extending these meetings to cover other parts of the country as suitable leaders can be found. It is hoped to arrange a visit to Austria during the summer holiday.

Botanical assistance has been given to the Youth Hostels Association. The Committee is making arrangements for setting up a Panel of Lecturers prepared to give suitable talks, and is also exploring the possibility of making a cine film in colour with commentary for the purpose of interesting young people in field botany.

COMMITTEE FOR THE STUDY OF THE SCOTTISH FLORA.

This Committee has been set up under the joint aegis of the B.S.B.I. and the Botanical Society of Edinburgh (B.S.E.) "to further the study of the plants of Scotland both by encouraging individual effort by organizing meetings and excursions, and to co-ordinate work on the

Scottish flora on behalf of the two sponsoring Societies." A constitution was agreed by the Councils of the sponsoring Societies, and in April, we appointed Dr. George Taylor, Mr. B. W. Ribbons and Mr. J. Grant Roger as our representatives to the Committee. The B.S.E. appointed Professor J. R. Matthews, Miss U. K. Duncan and Mr. B. L. Burt. At the first meeting on May 9th, Mr. Burt was appointed Chairman, Mr. Ribbons, Secretary, and Miss M. S. Campbell and Mr. R. Mac-kechnie were added to the Committee under their powers of co-option.

A field meeting at Elliot Links in July was attended by 15, and an exhibition meeting in Edinburgh in November was supported by 150 members of the sponsoring societies and visitors. Exhibition meetings at Inverness and Glasgow and four field meetings are being arranged for 1956. All meetings will be open to all members of both the sponsoring societies and details are given in our Calendar and Field Meeting Programme.

AUTECOLOGICAL STUDIES.

The meeting referred to in the last report took place on January 6th when the Linnean Society, British Ecological Society, and B.S.B.I. were each represented by two members and Mr. J. S. L. Gilmour was in the Chair. A resolution was passed that it was considered desirable that an organisation should be established charged with the collection and classification of available published and unpublished biological and autecological information about British vascular plants, with a view to assisting the work of conservation and of research workers, and especially those who are contributing to the Biological Flora, and certain proposals were made with a view to implementing this. The resolution was reported by the representatives to their respective Councils, and approved by the Linnean Society in January and by the B.S.B.I. on February 4th. The views of the British Ecological Society are still not clear.

GEORGE TAYLOR, President.

J. E. LOUSLEY, Honorary General Secretary.

By Order of the Council.
February 3rd, 1956.

GENERAL FUND.

4	To Balance from 1954 ...	£64 3 10	1954	By Transfers to Journal Fund	£50 0
10	„ Subscriptions received during the year ...	1014 7 5	£300	„ Transfers to Proceedings Fund ...	750 0
8	„ Receipts from Advertisements ...	8 19 3	250	„ Transfers to Meetings' Committee's Fund ...	40 0
46	„ Income Tax Recovered ...	44 9 4	25	„ Notional Interest to Publications Fund ...	28 6
35	„ Interest for 1954 on Post Office Savings Bank Deposit ...	33 7 6	25	„ Hire of Rooms for Council and Committee Meetings ...	11 3
26	„ Sales of Reports and Reprints ...	40 8 7	6	„ Cheque-book ...	0 10
			1	„ Duplicating Minutes of Meetings ...	16 2
			14	„ Officers' Expenses ...	23 16
			6	„ Fire Insurance ...	1 2
			1	„ Advertising Expenses ...	4 8
			2	„ Telephones ...	3 8
			4	„ Affiliation Fee to Biological Council ...	2 2
			—	„ Committee Secretaries' Expenses ...	17 7
			5	„ General Printing and Stationery ...	158 11
			148	„ Postages and Petty Expenses :—	
				Hon. General Secretary ...	£15 11 8
				Hon. Treasurer ...	16 15 0
				Hon. Assistant Secretaries ...	22 9 0
				Hon. Distributor ...	1 8 11
				Parcelling publications at Nat. History Museum ...	8 3 0
			63		64 7 0
			111	„ Sundry Items, 1954 ...	—
			64	„ Balance ...	34 10
25		<u>£1205 15 11</u>	<u>£1025</u>		<u>£1205 15 11</u>

JOURNAL FUND.

74	To Balance from 1954 ...	£359 10 6	By Printing <i>Watsonia</i> and postages thereon :—		
00	„ Transfers from General Fund ...	50 0 0	Vol. III, part 3 (to complete payment) ...	£121 10 3	
06	„ Sales of <i>Watsonia</i> ...	158 16 7	Vol. III, part 4 ...	252 18 1	
			£520	£374 8 4	
			360	„ Balance ...	193 18 9
80		<u>£568 7 1</u>	<u>£880</u>		<u>£568 7 1</u>

REPORT OF THE COUNCIL

PROCEEDINGS FUND.

1954			1954	
£200	To Balance from 1954	... £46 0 4		By Printing <i>Proceedings</i> and postages thereon:—
250	„ Transfers from General Fund	... .. 750 0 0		Vol. I, part 2 (to complete payment) ...
13	„ Sales of <i>Proceedings</i> and <i>Year-Book</i>	... .. 21 1 6		Vol. I, part 3 354 3 0
				Vol. I, part 4 239 4 1
			£417	
			46	„ Balance
£463		£817 1 10	£463	
				£695 6
				121 15
				£817 1

PUBLICATIONS FUND.

£1016	To Balance from 1954	... £1132 9 1		By Binding 200 copies of the 1952 <i>Conference Report</i>	... £31 5
25	„ Interest for year on initial balance at 2½% (per General Fund)	... .. 28 6 0		„ Expenses of editing 1954 <i>Conference Report</i>	... 0 10
4	„ Sales of 1948 <i>Conference Report</i>	... .. 2 19 7		„ Purchase of remaining copies of <i>Flora of Buckinghamshire</i>	... .. 10 0
8	„ Sales of 1950 <i>Conference Report</i>	... .. 9 5 6		„ Part cost of 1954 <i>Conference Report</i>	... .. 350 0
67	„ Sales of 1952 <i>Conference Report</i>	... .. 20 13 3	£1132	„ Balance	... .. 1000 7
—	„ Sales of 1954 <i>Conference Report</i>	... .. 112 8 8			
—	„ Sales of <i>Flora of Buckinghamshire</i>	... .. 68 1 7			
8	„ Sales of <i>Comital Flora</i>	... .. 14 6 7			
4	„ Sales of <i>Flora of Northamptonshire</i>	... .. 3 13 2			
£1132		£1392 3 5	£1132		£1392 3

MEETINGS COMMITTEE'S FUND.

£25	To Transfer from General Fund	... .. £40 0 0	£28	By Balance from 1954	... £36 6
—	„ Field Meeting Fees	... .. 17 10 9	—	„ Expenses of Scottish Regional Meeting	... .. 2 8
86	„ <i>Sundry Items, 1954</i>	... .. —	—	„ Expenses of Leeds Meeting	... .. 0 18
36	„ Balance	... .. 0 11 3	11	„ Postages and Petty Expenses	... .. 6 11
			7	„ Expenses of Annual Exhibition	... .. 9 6
			—	„ Loss on <i>Conversazione</i>	... .. 2 11
			101	„ <i>Sundry Items, 1954</i> —
£147		£58 2 0	£147		£58 2

the Balances on Life Members' and Benevolent Funds remain unchanged for the year £145 13s 0d and £39 11s 0d respectively.

BALANCE-SHEET as at 31st December 1955.

1954		1954	
£64 General Fund	£34 10 6	500 National Savings Certificates at cost	£400
350 Journal Fund	193 18 9	Meetings Committee's Fund	
46 Proceedings Fund	121 15 4	Debit Balance	0
1132 Publications Fund	1000 7 11	Deposit at Post Office Savings Bank	1068
146 Life Members' Fund	145 12 0	16 Cash at Bank	66
40 Benevolent Fund	39 11 0		
	<hr/>		
	£1535 15 6		£1535
	<hr/>		<hr/>
1787		£1787	

Examined and found correct,
12th January 1956.

(Signed) J. H. G. PETERKEN, Hon. Auditor
E. L. SWANN, Hon. Treasurer.

DISTRIBUTION MAPS SCHEME

SECOND ANNUAL REPORT TO 31st DECEMBER 1955.

In September 1955 the Maps Office was moved from the temporary accommodation in the University Botany School to rooms in the University Botanic Garden, Cambridge, and the heavy machinery and card-index cabinets have been installed in a specially converted basement room there. The main problem of accommodation for the remaining years of the Scheme has therefore been satisfactorily solved. The staff has remained constant during the year.

By the end of the year, nearly 200,000 records had been put into the system (either from composite lists on regional record cards or as individual record cards), and a further large quantity of data had accumulated at the regional record card stage. In addition 70 rare species have been more or less completed from herbarium and literature data. The system of checking lists and other records by submitting to vice-county referees has been working reasonably well, as has also a system whereby tabulated lists of individual species are submitted to people who may have special information to contribute.

The response from field recorders in 1955 has been quite gratifying, and with a total of over 1,700 names on our books, offers of help are still being received. With a view to indicating those squares for which information is most needed, an up-to-date map showing the number of species per square (in three categories 1 = >50, 2 = >150, 3 = >250) actually already recorded was prepared for the November Exhibition Meeting and will be published in the Society's *Proceedings*, together with suggestions for future recording.

Valuable contributions were received from the Society's Field Meeting in 1955, and the experience gained in the specially-designed recording meetings (in Galloway and Suffolk) has been used in the planning of the 1956 programme.

The Scottish and the Irish (Dublin and Belfast) Regional Offices have done very good work. In Scotland the newly-formed Committee for the study of the Scottish Flora has planned a programme of field meetings for 1956 with an emphasis upon recording for the Scheme. The co-operation of the National Museum of Wales has been excellent. Approaches to the National Agricultural Advisory Service (England and Wales) have borne fruit in an arrangement whereby a circular inviting the help of N.A.A.S. Offices particularly in the provision of information on arable and grassland weeds was sent by Provincial Directors to all members of their staffs. A good many offers have already been received from N.A.A.S. Officers as a result.

The sub-committee preparing the base map has finished its work, and the completed map is in the hands of the printers, who have submitted proofs of the map printed on continuous stationery for tabulation. A provisional list of species and hybrids which it is proposed to map,

has been prepared by the appropriate sub-committee, and is available for reference.

In 1956 it is hoped that a major effort can be made to bring up, at least in England and Wales, the majority of squares to a level of 250 species recorded. At such a level most common plants, it seems, are likely to be recorded, if not in every square, at least in a sufficiently large number for a 'true' distribution pattern to emerge. In many parts of Scotland and Ireland this minimum figure, it seems, may well be placed at 150.

Progress in 1955 has been on the whole satisfactory. The main unexpected delay has been in the production of the final base-map for tabulation, but this has not been serious because the building up of the card-index goes on independently.

Thanks are due to the many Society members and others who continue to give freely of their time and knowledge to help the Scheme as specialist referees and recorders, and without whose help no progress would be possible. The interest and enthusiasm engendered by the Scheme is one of its most satisfying features.

S. M. WALTERS.

DISTRIBUTION ATLAS ACCOUNT.

				1954				
54	—	To Balance from 1954	... £119 3 11	1954	By Furniture and Office			
00	..	Grant from Nuffield	...		Equipment:—			
		Foundation	... 2000 0 0		Cambridge	... £157 2 8		
47	..	Grant from Nature Con-	...		Dublin	... 25 0 0		
		servancy	... 1959 1 10	257			£182 2	
	..	Interest on £500 3½%	...	163	..	Mechanisation Equipment*	771 6	
—	..	Defence Bonds	... 16 9 4	45	..	Postages and Telephones	50 2	
—	..	Interest on Deposit Ac-	...	248	..	Printing and Stationery	228 4	
50	..	count	... 8 9 2	41	..	Rent and Rates	54 11	
	..	Grant from B.S.B.I.	...	861	..	Salaries	2092 3	
			—		..	Travelling Expenses:—		
						Staff	... £123 13 9	
						Others	... 17 9 6	
				62			141 3	
	1	..	Insurance	...	...	...	7 6	
	—	..	Clerical Assistance	...	...	...	11 18	
	—	..	Other Expenses	...	...	...	8 3	
	500	..	Investment in 3½% De-	...	...	...	—
		..	fence Bonds	...	...	...
		..	Balance:—	...	...	...
		..	Current Account	£46 3 6	...	...
		..	Deposit Account	510 0 0	...	...
				119			556 3	
			£4103 4 3	£2297			£4103 4	

Expenditure on this item is covered by the Nature Conservancy Grant and the balance £1187 15s 7d is applied to Salaries.

Examined and found correct,

12th January 1956.

(Signed) J. H. G. PETERKEN, Hon. Auditor.

„ E. L. SWANN, Hon. Treasurer.

ANNUAL GENERAL MEETING, 12th APRIL 1956

The Annual General Meeting was held in the rooms of the Linnean Society, Burlington House, Piccadilly, London, on Thursday, April 12th, 1956, at 6.15 p.m.

Dr. George Taylor (President) was in the chair and 54 members were present.

The Minutes of the last Annual General Meeting as printed in *Proceedings B.S.B.I.*, Vol. I, Pt. 3, page 408, were adopted.

COUNCIL'S REPORT.—The Report of the Council for the year 1955 had been printed and circulated. The Hon. General Secretary stated that since the 1st January 60 new members had joined the Society and that total membership is now 1084. Dr. Dony drew attention to the decrease in attendance at Field Meetings in 1955. On a proposal from the Chair the Report was adopted, with thanks to Mr. Lousley for compiling it.

ELECTION OF TWO VICE-PRESIDENTS.—Council had nominated Mr. J. E. Lousley and Mr. N. Y. Sandwith, who were elected unanimously. The President paid tribute to Mr. Lousley, who had held office for 14 very critical years, during which time he had been present at every meeting of Council and all Committees excepting two, a wonderful record and a measure of his devotion to the Society. Mr. Lousley had, at the same time, been an arduous recruiting agent and a great help and support to a new President. By electing him a Vice-President, the Society will continue to have his assistance and counsel. The Resolution, proposed from the Chair, that the warmest thanks of the President, Council and members of the Society be extended to Mr. Lousley, was carried with acclamation.

ELECTION OF HONORARY GENERAL SECRETARY.—Council had nominated Dr. J. G. Dony, who was assured of the support of the retiring Hon. General Secretary and of all members of Council. He was elected unanimously.

ELECTION OF HONORARY TREASURER AND HONORARY EDITOR.—Council had nominated Mr. E. L. Swann and Dr. E. F. Warburg respectively, and they were unanimously re-elected, the President expressing the Society's thanks for their great services.

ELECTION OF HONORARY MEETINGS SECRETARY.—Council had nominated Dr. H. J. M. Bowen, who was unanimously elected.

ELECTION OF MEMBERS OF COUNCIL.—There were four vacancies occasioned by the retirement, under Rule 3(e), of Dr. D. P. Young, Mr. V. S. Summerhayes, Mr. E. B. Bangerter and Dr. S. M. Walters. Four members, Mr. J. E. Dandy, Mr. P. C. Hall, Mr. J. Grant Roger and Miss C. M. Rob, had been nominated under Rule 3(f) and were elected. The order of seniority for retirement, as decided by lots drawn by the Chairman, is in the sequence given.

ELECTION OF HONORARY MEMBERS.—Council had nominated Mr. J. E. Lousley and Dr. W. B. Turrill, who were elected with acclamation.

There being no other business, the President thanked members for their attendance and declared the Meeting closed at 6.34 p.m.

J.G.D.

B.W.

ASSISTANT SECRETARY'S REPORT FOR 1955

During 1955, 136 new members joined the Society, this being 6 less than in 1954, and 44 more than in 1953. Of the new members 91 were Ordinary members, 16 Subscriber members, 25 Junior members and 4 Family members. Losses were 60, this being 35 more than in 1954, and 29 more than in 1953. Of these, 43 members resigned, 9 ceased to be members under Rule 6 (e), and we regret having to record the deaths of the following 8 members:—Miss E. A. Bruce, Major J. W. Cardew, Lady Davy (Honorary member), Dr. P. Jansen (Honorary member), Dr. G. Kükenthal (Honorary member), C. E. Raison, W. R. Sherrin (Honorary member), and Sir A. G. Tansley.

New Ordinary members are:—D. J. Anderson, Dr. Ch. H. Andreas (Honorary member), Miss M. Andrews, P. W. Ball, J. O. Ballard, W. M. M. Baron, L. V. G. Barrow, Miss E. P. Beattie, Mrs. D. L. Bennett, R. C. Bullock, E. A. Burrows, E. P. Bury, A. O. Chater, G. Clements, Dr. J. Colhoun, W. S. Craster, A. A. Cridland, Miss U. E. Davies, M. W. Dick, A. W. Exell, J. A. Field, Dr. M. Fishenden, L. G. Frost, A. Gaunt, J. B. Gillett, J. B. Gillies, Mrs. E. Glaister, C. S. Grant, Miss M. A. Grierson, E. W. Groves, Miss M. Hadlow, Mrs J. Haldane, Miss M. N. Hamilton, W. E. W. Harding, Miss E. J. Harris, Sir G. Harrison, D. M. Henderson, E. K. Horwood, Miss M. A. Hudson, Mrs. L. T. Hyde, Dr. N. Hylander (Honorary member), Miss F. G. Johnston, Dr. P. Jovet (Honorary member), Mrs. E. L. King, Dr. A. Lawalrée (Honorary member), Mrs. F. Le Sueur, J. Lid (Honorary member), Dr. V. E. Lloyd, Miss A. M. McCosh, Miss M. M. MacDonald, J. McNeill, W. R. Masefield, Miss B. N. Matson, H. T. Mayo, Dr. J. Milne, J. N. Milsum, Miss P. Morgan, M. Morris, Dr. D. Munro-Smith, F. Murgatroyd, J. G. Packer, C. Parker, Miss J. V. Pearce, Mrs. A. T. Peppercorn, A. Pettet, Miss E. V. Pilcher, J. W. Price, J. A. Ratter, Dame E. Russell-Smith, T. B. Ryves, M. M. Sayer, Miss C. Schelwald, G. A. M. Scott, W. A. Scott, R. Seeley, Dr. C. Shaw, Mrs. J. E. Smith, Miss E. W. Southwick, L. F. Stearn, Miss A. B. P. Stevens, Miss A. Sumner, R. I. Sworder, R. F. Turney, Miss E. M. Uren, R. de Vilmorin (Honorary member), Miss P. J. Warwick, Miss P. C. Webb, P. H. F. White, C. E. Wicking, W. D. Williams, and R. E. Wood.

New Junior members are:—Miss M. C. Allott, Miss B. M. Archer, Miss B. A. Bunting, D. Burdon, Miss S. A. Clark, B. Clay, K. E. Cockshull, P. J. Cross, J. H. Dickson, A. C. Foottit, Miss G. A. Garnett, P. J. Grubb, D. W. Hendra, R. H. Herniman (re-joined), Miss R. A. Hill, G. Hind, M. J. Horrell, D. Schofield, W. Scott, G. L. Smith, J. D. Stephen, P. W. Strachan, D. Streeter, B. T. Styles and R. S. Wright.

New Subscriber members are:—Bergianska Trädgården, Stockholm, California, University of, Chicago Natural History Museum, County Grammar School for Girls, Chislehurst, East Ham Grammar School for Boys Natural History Society, Koninklijke Nederlandse Akademie van Wetenschappen, Lady Eleanor Holles School, Lund University Library, Manchester Grammar School, Masaryk University, Meerut College, Mitcham County School for Girls, Societatis pro Fauna et Flora Fennica, Tiffin Girls' School, Universitets Biblioteket, Uppsala and Zoologisch-Botanisch Gesellschaft in Wien.

New Family members are:—Mrs. G. E. Buckle, Miss G. W. Dalby, Mrs. H. T. Mayo and K. C. Side.

D. H. KENT.

January 1956.

COMMITTEE FOR THE STUDY OF THE SCOTTISH FLORA**FIRST ANNUAL REPORT TO 31st DECEMBER 1955**

The Committee was formed in April after discussions, during the previous twelve months, among numerous botanists in Scotland and the Botanical Society of the British Isles and the Botanical Society of Edinburgh. Two Committee meetings have been held in Edinburgh, on 9th May and 17th September, and announcements of the Committee's existence and activities have appeared in the monthly billets of the Edinburgh Society and in the *Proceedings* of the British Society. The Committee has arranged a programme of indoor and field meetings for 1956 and details are already published.

It was possible to arrange only a limited programme in 1955, consisting of two meetings. An excursion to Elliot Links, Angus, attended by 15 people and devoted to recording for the Maps Scheme, took place on 2nd July. An Exhibition meeting held by kind permission of the Regius Keeper at the Royal Botanic Garden, Edinburgh, on 5th November attracted some 150 visitors. The exhibits were chiefly illustrative of recent and current work on the Scottish Flora, and Mr. J. Grant Roger gave a short popular illustrated lecture on some interesting Scottish plants. We are indebted to Miss Duncan and Mr. Burt respectively for making the local arrangements for these two meetings.

The Committee is particularly anxious to enlist the support of persons interested in the plants of Scotland but who so far are not members of either Society.

The Honorary Secretary wishes to express grateful thanks to the various officers of the two sponsoring Societies for much assistance.

B. W. RIBBONS.

BOOKS RECEIVED

CAREY, M. C. & FITCHEW, D. *Wild Flowers at a Glance*. 2nd Edition. J. M. Dent & Sons, London, 1955. Price 15/-. This little book, especially produced for the beginner, contains 264 water-colour drawings of British wild flowers grouped under flower colours as an aid to identification. The nomenclature has been revised by J. E. Dandy and W. T. Stearn.

DICKSON, V. *The Wild Flowers of Kuwait and Bahrain*. George Allen & Unwin Ltd., London, 1955. Price 25/-. An account of the plants of Kuwait State in Arabia. The plants are listed alphabetically under their Latin names and a short description of each plant and the localities in which it has been found are given. There are numerous illustrations in black and white and two colour plates.

LANFRANCO, G. G. *Guide to the Flora of Malta*. Progress Press Co. Ltd., Valetta, 1955. Price 6/6. A popular guide to the wild flowers of Malta arranged under flower colours. 300 black and white drawings illustrate the text.

WALSH, G. B., B.Sc. & RIMINGTON, F. C., M.P.S., Editors. *The Natural History of the Scarborough District*. Vol. 1. *Geology and Botany*. The Scarborough Field Naturalists' Society, 1953. Price 21/-. An account of the vascular plants of the Scarborough district is given by Harold Rowntree. Following an introduction by W. A. Sledge the plants are arranged in Bentham & Hooker order. Full localities of occurrence are given for each plant.

WILD, H., 1955, *Common Rhodesian Weeds*, Government Publications Office, Salisbury, S. Rhodesia, 15s bound, 10s with manilla covers. This useful book contains 102 full page figures of common Rhodesian weeds, with brief descriptions, notes on the distributions and control measures. At least 40 of the species have occurred in Britain in recent years. Seedlings of 24 species are also illustrated, and there is a glossary.

OBITUARIES

PIET JANSEN (1882-1955) was born in Rotterdam on 25th January 1882, and was trained to be a teacher. He passed his last examination when he was 18, and had to wait a year before he was old enough to teach. With his great capacity for work he studied every evening and qualified to teach English, German and French, as well as mathematics and book-keeping.

In 1912 he was appointed mathematics tutor at the teacher's training college in Amsterdam, and he moved with his family to the capital. In 1935 he became the principal of this college until 1947, when he retired. For his services in connection with the training of teachers he received the order of knighthood of Oranje Nassau.

At the age of fifteen he had already begun to collect plants, for he was very much interested in botany, and soon he and his friend W. H. Wachter started their "Herbarium van Jansen en Wachter", one of the largest collections of the Dutch flora. Wachter stayed in Rotterdam, and as Jansen lived in Amsterdam the friends wrote to each other every week on botanical problems. Both were self-taught in this respect, but they were observant and critical. In the years 1905-1942 they wrote 34 "floristische aantekeningen", articles on critical species.

Whereas Wachter first studied Phanerogams and later on mosses, Jansen concentrated mainly on grasses ("hay" as he himself mockingly called them). He devoted special attention to the genus *Puccinellia*. In 1902 Jansen joined the Dutch Botanical Society, and he was soon one of the prominent members. Whenever scientists threatened to dominate the Botanical Society, Jansen fearlessly and successfully spoke up for the florists. He was several times elected a member of the executive of the Society and in 1937 he was made an honorary member of the Botanical Society of the British Isles. Jansen and his friends Wachter and Kloos were the inspiration of the group for floristic research in the Netherlands, and they led the annual excursions.

After the war, on 28th October 1945, the three friends were appointed honorary members of the Royal Dutch Botanical Society, and on the occasion of the centenary of the Society they were granted honorary doctorates by Leiden University.

Jansen was also a member of the editorial board of the periodicals of the Society, and he became an honorary collaborator of the State herbarium at Leiden.

Jansen was a great friend of Braun Blanquet, and together with Dr. W. C. de Leeuw he introduced Braun Blanquet's methods in the Netherlands, and encouraged with Dr. J. Heimans the founding of the committee for ecology and palynology of the Botanical Society. Jansen

accompanied Braun Blanquet on several long excursions, e.g. to Switzerland, Corsica and Spain. During the Botanical Congress in 1935 Braun Blanquet was Jansen's guest.

Dr. Jansen's most important work was the family of the grasses in the *Flora Neerlandica* (1951). On the morning of the day he died, 2nd April, 1955, he finished the manuscript dealing with the grasses of the Malayan area, which he had been contributing to the *Flora Malesiana*.

Jansen was a friendly man, always generous with his help and advice. His knowledge of grasses was phenomenal. He was like a father to his pupils, and was the young florists' guide and friend. In spite of his many commitments he still found time for other pursuits, such as music. With Jansen's death the last of the three friends who rendered such great service to the cause of the Dutch botany was gone.

A further obituary notice may be found in *Acta Botanica Neerlandica*, 4, 485-486 (1955).

P. VERMEULEN.

ARTHUR GEORGE TANSLEY (1871-1955).—The death of Sir Arthur Tansley on 25th November 1955 marks the end of a great epoch in field botany. It was he, more than anyone else in this country, who directed attention to the importance of studying plant communities and consequently to the interest of common plants. His pioneer ecological work *Types of British Vegetation* was published as a guide for the first International Phyto-geographical Excursion in 1911; about the same time the interest of members of this Society in rare plants, simply because they are rare, began to decline. The two events were not unconnected, for Tansley, by his work, had placed the whole study of plants in the field on a broader, saner, and more scientific basis.

In the intervening years he and his disciples have accomplished the major part of the basic description of the chief types of British vegetation and have accumulated a vast mass of information which was lucidly summarized in *The British Isles and their Vegetation* (1939), for which he received the Gold Medal of the Linnean Society.

So great was the influence of Tansley and his work that for many years young botanists with an interest in plants in the field almost automatically became ecologists, and it is probably true to say that for a time systematic botany in University teaching was largely replaced by ecology. This was very far from being the wish or intention of Tansley himself, for he fully realised that the lack of ability to identify plants accurately largely destroys the value of ecological work. As the years went by he became more and more convinced of the necessity of a new British flora, and it was over tea at Grantchester one winter evening in 1944 that he initiated the *Flora of the British Isles*. In spite of his many other duties he continued to take a great interest in its progress, reading and commenting on large parts of the MS.

Probably the greatest single factor in stimulating the study of British vegetation was the founding in April 1913 of the British

Ecological Society, largely at the instigation of Tansley. He was its first President and, soon after its inception, became editor of the *Journal of Ecology*, a post which he filled with distinction for 21 years. He served a second term as President from 1938 to 1940. He had earlier founded the *New Phytologist* as a private venture, acting to begin with as editor and publisher. He continued to edit it for 30 years, during which time it became established as one of the leading botanical journals.

Tansley was educated at Highgate School, University College, London, and Trinity College, Cambridge. In 1893 he obtained a First in botany in Part II of the Natural Sciences Tripos and returned to teach at University College, where he remained till 1906, becoming Assistant Professor. He then went back to Cambridge as a lecturer and took a house at Grantchester, which became his permanent home.

About the end of the 1914-18 war he became greatly interested in psychology and temporarily gave up botany. He studied under Freud in Vienna and in 1920 published *The New Psychology*, which was the first work to make Freud's theories widely known in this country.

After this interlude he continued his ecological work privately from 1923 until, in 1927, he was elected to the Sherardian Professorship of Botany at Oxford. Ten years later he retired with the title of Professor Emeritus.

The Conference on the place of nature conservation in post-war reconstruction which was held in 1942 gave him an opportunity of furthering an aim which he had pursued for many years. He was appointed Vice-Chairman of the Wild Life Conservation Committee (England and Wales) set up by the Minister of Town and Country Planning in 1945, and before long succeeded Dr. Julian Huxley as Chairman. In the course of his work on this Committee he visited many of the areas proposed for conservation by local bodies and, although well over 70, spent long days in the field. The report of his Committee, published in 1947, contains a vast amount of information and formed the basis on which the Nature Conservancy has been built. When the Conservancy came into being, Tansley's life work was crowned by this important event in the struggle for the preservation of wild life in Britain. Appropriately enough he was appointed the first Chairman of the Conservancy and in 1950 was knighted for his services to the cause which he had so much at heart.

His Presidency of the Council for the Promotion of Field Studies (1947-1953) afforded him the opportunity of aiding the work of spreading knowledge of all aspects of the countryside, an essential adjunct to any sound conservation policy.

All field botanists owe a great debt to him for his unceasing work for the preservation of our wild plants as well as for the knowledge of ecological problems which has added so greatly to the interest and value of the work of members of the Botanical Society. Those who were fortunate enough to know him mourn the loss of a good friend and inspiring leader.

T. G. TUTIN.

PERSONALIA AND NOTES TO MEMBERS

RUMEX ACETOSELLA L. agg.

Mr. P. M. Benoit, Pencarreg, Barmouth, Merioneth, is studying the British segregates of *Rumex acetosella*, and would be grateful for fresh or herbarium material from all types of habitat. Specimens from localities on acid sandy soil would be particularly welcome.

GENTIANELLA

Mr. N. M. Pritchard, University Department of Botany, South Parks Road, Oxford, is studying the British species of *Gentianella*. He would be grateful to receive herbarium material or seeds of any species. The genus is widespread throughout the British Isles, and herbarium material has too frequently been gathered from the same few localities.

LACTUCA

Mr. L. E. Watts, National Vegetable Research Station, Wellesbourne, Warwick, is anxious to obtain as many samples of seed of *Lactuca serriola*, *L. altaica* and *L. virosa* as possible.

Seed samples should be sent to him at the above address; postage will be refunded.

REPRODUCTIVE SUCCESS OF WILD *DAPHNE MEZEREUM* L.

The despoliation of *Daphne mezereum*, in gardens, by *Chloris chloris* L., the Greenfinch—which may eat every single seed on a bush in May or early June—has been described recently and an investigation initiated (*J. Roy. Hort. Soc.* **81**: 36, 1956; *Nature*, **177**: 709 (1956) and elsewhere). The question arises as to whether or not this calamity also happens to the shrub in its wild condition. Dr. Max Pettersson, at the Linnean Society, Burlington House, Picadilly, W.1., would therefore be glad either (a) to learn exactly where such plants may be visited (security guaranteed), or preferably (b) to hear first hand reports on the point, without disclosure of pinpoint localities. A visit in early July or late June should be decisive, showing either the full crop of unripe drupes, or their shrivelled remnants hanging and strewn on the ground.

WOOL ADVENTIVE FLORA OF BRITAIN

In view of increasing interest in wool aliens, material passing through my hands is now being distributed with labels printed with the above heading. It should, however, be put on record that these specimens are not to be regarded as having all the qualities of good

exsiccata. The rarer species are usually found in very small quantity and sometimes only one or two specimens can be collected from the same place. Occasionally a single plant can be divided to prepare several sheets but more often the same number is given to individual plants found scattered about a field. Every care has been taken to ensure that these are as uniform as possible, but it must be remembered that the wool industry is so organised that the shoddy used in any given field is likely to contain seeds from widely different sources, and sometimes even from different continents.

During 1955, 270 numbers have been used for material collected in Worcestershire, Bedfordshire, Yorkshire and Roxburgh by myself, Miss C. M. Goodman, C. W. Bannister, D. McClintock and J. G. Dony.

J. E. LOUSLEY.

THE BOTANICAL SOCIETY OF LONDON

This Society was founded in 1836 and the first two year's activities were recorded in its *Proceedings*, published in 1839, and subsequent years in reports printed in contemporary periodicals such as *The Phytologist* and *Botanical Gazette*. In 1852 and 1853 less frequent meetings were reported but the exchange activities were still carried on energetically, and at the end of 1853 or early 1854 there were proposals for a new Foreign Exchange section on terms which indicated some financial stringency (*Phyt.*, 5, 95-96 (1854)). The last meeting reported was that of February 4, 1853. Early in 1857 the herbarium and duplicates were sold, and the Society was said to be dissolved (*Gardener's Chronicle*, 1857, 648, and *Phyt.*, 2 (N.S.), 143 (1857)) or rather in a "state of abeyance" (*London Catalogue of British Plants*, Ed. 5 (1857), & *Hooker's Journal of Botany*, 9, 379-380 (1857)). At a meeting of the Thirsk Natural History Society on November 2, 1857, J. G. Baker stated that the exchanges of British plants carried on by the London Botanical Society were suspended and resolutions were passed taking over these activities (*Phyt.*, 2 (N.S.), 294-296). It appears that the Honorary Secretary, G. E. Dennes, disappeared about 1856, and is believed to have gone to Australia (*J. Bot.*, 60, 364 (1922)) and this no doubt has a bearing on the sudden crisis in the affairs of the Botanical Society of London, and the suspension of its activities. Since the B.S.B.I. is descended from this Society it would be interesting to have further information about its affairs from 1853 to 1857 on which so much reticence is shown in contemporary literature and later chronicles. I would be grateful if members would draw my attention to any further information about this period I may have overlooked.

J. E. LOUSLEY.

BARDSEY BIRD AND FIELD OBSERVATORY

Bardsey Bird and Field Observatory, North Wales, plans to complete a survey of the island's flora during 1956. Visits by botanists would therefore be particularly welcome during the coming season.

Inquiries re accommodation to W. M. Condry, Eglwysfach, Machynlleth, Mont.

PERMITS FOR VISITING NATURE RESERVES

For details of the Nature Reserves declared by the Nature Conservancy and procedure for obtaining permits to visit them see *Proceedings B.S.B.I.*, 1, 565 (1955).

NEWBOROUGH WARREN, ANGLESEY

The Air Ministry propose to establish a range at Newborough Warren but following representations made at a Public Local Inquiry by this Society and others, have agreed to make advance notices of firing practices available to research workers and students. These notices will be sent to our Local Secretary, Prof. P. W. Richards, Coed Menai, Upper Bangor, Caernarvonshire, and members wishing to visit the Warren are advised to make arrangements with him well in advance of the time of their visits.

THREATS TO BRITISH FLORA

Members are urged to report to the Hon. General Secretary any threats to the British flora. The Council has appointed a Conservation Committee to deal with such matters and every effort will be made "to promote in every way possible the conservation of the British flora".

TOXIC SPRAYS

The Society is collecting information about the effect on native vegetation of toxic chemicals used for spraying crops. The increasing use of weed-killing chemicals on arable land implies a threat to neighbouring uncultivated land or woods since the spray can be carried a considerable distance under suitable conditions. Members who observe damage from this cause are asked to send full details to J. E. Lousley, 7 Penistone Road, London, S.W.16.

SYSTEMATICS ASSOCIATION

A card index of autecological and/or cytogenetic-taxonomic researches that are being carried out on British flowering plants is maintained by the Association. Copies of the index may be consulted at the Royal Botanic Gardens, Kew, or at the Royal Botanic Garden, Edinburgh. Its purpose is to obviate overlapping between different workers. Members taking up research of this nature are asked to send particulars either to Mr. R. D. Meikle, Royal Botanic Gardens, Kew, Surrey, or to Mr. B. L. Burtt, Royal Botanic Garden, Edinburgh, 4.

LIBRARY FACILITIES

Members are reminded that through the kindness of the Council of the Linnean Society of London, they have the privilege of consulting the Library of the Linnean Society at Burlington House, Piccadilly, London, W.1.

MR. H. N. RIDLEY—A CENTENARIAN

Mr. H. N. Ridley, an Honorary Member of the Society, celebrated his hundredth birthday on December 10, 1955, when our congratulations and good wishes were added to those from other organisations. Mr. Ridley was Director of Singapore Botanical Gardens from 1888 to 1911 and originated the tapping technique which is the foundation of the modern rubber industry. In Malaya his birthday was celebrated by floodlighting of the gardens, a banquet and an exhibition. He is so well known for his work on the Flora of Malaya, and on the distribution of seeds and fruits, that the valuable contributions he made to the knowledge of British plants before he left for Singapore is apt to be overlooked. Some 70 years ago he published a series of papers on our Flora ranging from Dorset to the Shetlands—in 1885 alone he added *Schoenus ferrugineus* and *Carex salina* to our list, and gave us the first account of *Juncus tenuis*. Mr. Ridley is the first centenarian member of the Society.

COMMITTEES FOR 1956-57

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Miss M. S. Campbell
Dr. J. G. Dony
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†Appointed by the Botanical Society of the British Isles

WATSONIA

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PUBLISHED DECEMBER 1955

SPECIES STUDIES IN THE BRITISH FLORA

Edited by J. E. LOUSLEY

The purpose of this volume is to make available to a wider public the papers read at the very successful Conference arranged by the Botanical Society of the British Isles in 1954. The sixteen contributions cover the subject over a very wide field and, in addition to those dealing with special studies of flowering plants, from palaeobotany to experimental taxonomy, others are concerned with fungi, algae, bryophytes and ferns. The contributors include Prof. Alan Burges, Prof. J. H. Burnett, Mr. J. S. L. Gilmour, Prof. S. C. Harland, Prof. J. Heslop-Harrison, Dr. E. W. Jones, Prof. I. Manton, Dr. A. Melderis, Dr. R. Melville, Dr. H. Hamshaw Thomas, Dr. W. B. Turrill and Prof. T. G. Tutin. The discussion which followed some of the papers is also included.

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PROCEEDINGS

OF THE
BOTANICAL SOCIETY OF THE BRITISH ISLES

Editor: D. H. KENT

Vol. 2

OCTOBER 1956

Pt. 2

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APRIL 12TH, 1956

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N. Y. Sandwith

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NOTES ON THE FLORA OF OXFORDSHIRE
AND BERKSHIRE II

By J. P. M. BRENNAN, M.A.

The following notes are a continuation of those published in *Rep. Bot. Soc. & E.C.*, **13**, 781-802, 1946, and relate especially to the writer's botanising in Oxfordshire and Berkshire, mainly in the neighbourhood of the city of Oxford. It should be emphasised that these notes are not in any way a complete catalogue of all records for Oxfordshire and Berkshire made during the last few years, but simply a selection of those made by the writer, and by certain friends and correspondents, which seem worthy of mention.

As in the first part of these notes, the records are arranged under their appropriate vice-counties: Berkshire ("22, Berks.") and Oxfordshire ("23, Oxon."), and the numbers between 1 and 7 preceding records refer to the botanical districts as defined in Druce's *Fl. Berks.*, 1897, and in the second edition of his *Fl. Oxfordsh.*, 1927. The districts are in serial order under each vice-county.

The abbreviation "(sp.)" after the date indicates that a voucher specimen is in the writer's herbarium (Herb. Brennan). If it is to be found in another herbarium, then it is indicated.

The following abbreviations are used for recorders' names:—R.B. for Mr. R. Burn, with whom numerous finds were jointly made, and to whom my gratitude is due for his help and companionship; and J.P.M.B. for the writer's name. My thanks are also due to Mr. P. G. Beak and Dr. E. W. Jones, who have kindly allowed me to include various records they have made and who, with others too many to enumerate here, are gratefully remembered for their acute observation and good fellowship on botanical outings.

Last but not least, acknowledgment must be made of the expert help of Mr. J. E. Lousley with *Rumex*, Mr. R. D. Meikle with *Callitriche*, and Mr. E. Nelmes with *Carex*.

- 6/5. RANUNCULUS BULBOSUS L. 23, Oxon. 5. A few plants with petals and stamens pale lemon-yellow on a grassy roadside strip not far from Cassington station, 1946 (sp.). The upper part of the petals inside is almost white, and the sepals have whitish, not yellowish, margins. The striking colour is not due to natural bleaching as the flowers were mostly only just opened; plenty of the normally coloured plants grew with this colour-form.

- 6/27. *RANUNCULUS SPHAEROSPERMUS* Boiss. & Blanche. 22, Berks. 4. In the Kennet Avon Canal E. of Kintbury station, 1946 (sp.), Dr. E. W. JONES & J.P.M.B.
- †17/2. *MAHONIA AQUIFOLIUM* (Pursh.) Nutt. 23, Oxon. 5. S. border of Singe Wood, adjoining cultivated field, 1946, N. D. SIMPSON & J.P.M.B.
- †49/3. *SISYMBRIUM ALTISSIMUM* L. 22, Berks. 2. Several plants on a rubbish-heap, Frilford Heath, 1946 (sp. in Druce Herbarium), N. D. SIMPSON & J.P.M.B.
- †49/4. *SISYMBRIUM ORIENTALE* L. 23, Oxon. 5. One large plant on a small tip by a railway bridge near Yarnton, 1946.
- †60/1. *CORONOPUS DIDYMUS* (L.) Sm. 22, Berks. 5. Cultivated field reverting to grassland at N. end of Windsor Great Park, 1955.
- 64/2. *THLASPI PERFOLIATUM* L. 23, Oxon. 5. Although a number of localities for this rare plant are given in *Fl. Oxfordsh.*, in recent years it seems to have been lost sight of as a permanency in the county except near Woodstock and at its well-known Stonesfield station. In 1946, Mr. R. Burn and myself had the good fortune to encounter it in a new locality in a part of the district away from its previous ones; here it was growing in great profusion on banks and dry stony ground for some 300 yards or so. The ground had been much disturbed, and it is possible that it may originally have been an introduction here, especially as the geological deposit is one on which, so far as I am aware, it has not been previously recorded. At least, its abundance seems to indicate a long tenancy. The locality is purposely not precisely defined, but lies in the approximately quadrilateral area between Witney, Bampton, Eynsham and the great bend of the river Thames between the two last-named towns (sp.).
- 85/3. *RESEDA LUTEOLA* L. 23, Oxon. 5. Sparingly at Taynton and Milton Quarries, 1946.
- 88/10. *VIOLA CALCAREA* (Bab.) Gregory. 23, Oxon. 5. On a limited area only of stony limestone ground among scattered bushes at Taynton Quarries, 1946 (sp.).
- 89/5. *POLYGALA CALCAREA* F. W. Schultz. 23, Oxon. 5. Abundant in rough, open, limestone grassland at Taynton Quarries, 1946.
- †98/9. *AGROSTEMMA GITHAGO* L. 22, Berks. 1. A weed in cornfield on Wytham Hill, 1946. A specimen shown to me by Mr. P. F. Burgess, then at the University School of Forestry.
- 100/2. *CERASTIUM ARVENSE* L. 23, Oxon. 5. Sparingly in a rough, open field by the quarries at Taynton, 1946.
- 100/8. *CERASTIUM SEMUDECADRUM* L. 22, Berks. 4. Snelsmore Common, 1947, R.B. & J.P.M.B.

- 112/12. *HYPERICUM MACULATUM* Crantz. 23, Oxon. 5. Rather plentiful by sides of track on heathy ground, often among bracken, Singe Wood, 1946 (sp. in Herb. Simpson), N. D. SIMPSON & J.P.M.B.
- 112/15. *HYPERICUM HUMIFUSUM* L., sens. lat. 23, Oxon. 5. Scarce on track over heathy ground, Singe Wood, 1946 (sp. in Herb. Oxon.), N. D. SIMPSON & J.P.M.B.
- 112/15d. *HYPERICUM HUMIFUSUM* var. *DECUMBENS* (Peterm.) Reichb. 23, Oxon. 5. Damp ground by path, Bladon Heath, 1946 (sp.).
- †117/7. *MALVA NICAENSIS* All. 23, Oxon. 5. Garden weed, 19, Beaumont Street, Oxford, 1945, Dr. E. W. JONES (sp.). A form with densely hairy fruits.
- 127/12. *GERANIUM PUSILLUM* L. 22, Berks. 4. Grassy ground by the canal at Aldermaston, 1948, R.B. & J.P.M.B. 23, Oxon. 3. On some short grassy, apparently calcareous hillocks near the Bretch (between North Newington and Banbury), 1946 (sp. in Herb. Oxon.).
- 133/2. *IMPATIENS CAPENSIS* Meerb. 22, Berks. 5. By river Thames between Aston and Hambleden Lock, 1955.
- †133/3. *IMPATIENS PARVIFLORA* DC. 22, Berks. 2. By a ride in Bagley Wood close to the upper road to Abingdon, probably introduced with rubbish used for building up the ride, 1946, Dr. E. W. JONES.
- 136/1b. *ILEX AQUIFOLIUM* var. *LAURIFOLIUM* Lej. 22, Berks. 1. A single, rather large tree in ash woodland on N. slopes of Wytham Hill, 1947 (sp.).
- 150/1. *SAROTHAMNUS SCOPARIUS* (L.) Wimm. ex Koch. 22, Berks. 2. Near Churn, rare, 1946, R.B. & J.P.M.B.
- †154/2. *MELILOTUS ALBA* Medic. 23, Oxon. 5. One plant on a small tip by a railway bridge near Yarnton, 1946.
- †154/4. *MELILOTUS INDICA* (L.) All. 23, Oxon. 5. Waste ground, Port Meadow, 1953, R. D. MEIKLE & J.P.M.B.
- 155/11. *TRIFOLIUM STRIATUM* L. 22, Berks. 3. In rather small quantity on a trampled path in an enclosure of chalk grassland, near the golf course, Lough Down near Streatley, 1948 (sp.), R.B. & J.P.M.B. On the chalk here there is a capping of sandy soil, with gorse and *Filago*, to which the clover seems restricted. 23, Oxon. 4. Locally plentiful on sandy ground near Bayswater Mill, 1945 (sp.), Dr. E. W. JONES, A. P. D. JONES & J.P.M.B.
- 178/8. *LATHYRUS NISSOLIA* L. 22, Berks. 1. In grassland near Hid's Copse Road, Cumnor Hill, 1948, Dr. E. W. JONES.
- 178/25. *LATHYRUS MONTANUS* Bernh. 23, Oxon. 5. Heathy ground under bracken, Singe Wood, 1946, N. D. SIMPSON & J.P.M.B.
- 183/4. *PRUNUS CERASUS* L. 22, Berks. 4. A few trees in woodland on Snelsmore Common, 1947 (sp.), R.B. & J.P.M.B.

- 191/2. *AGRIMONIA ODORATA* (Gouan) Mill. 23, Oxon. 4. Among bushes by green lane between Stonehouse Farm and Stonepit Hills, Weston-on-the-Green, 1946 (sp. in Herb. Oxon.), N. D. SIMPSON & J.P.M.B.
- 193/2b. *POTERIUM POLYGAMUM* var. *PLATYLOPHUM* (Spach). 23, Oxon. 6. Edge of cultivated field near Littlemore, 1945 (sp.), R.B. & J.P.M.B.
- 194/6r. *ROSA CANINA* var. *RAMOSISSIMA* Rau. 23, Oxon. 4. Near Wood Eaton, by the road to Marston, 1946 (sp.), N. D. SIMPSON & J.P.M.B.
- 194/7j. *ROSA CANINA* var. *SYLVULARUM* f. *ADSCITA* (Déségl.) Rouy. 23, Oxon. 6. Chalk grassland, Crowell Hill, 1946 (sp.), J. F. G. CHAPPLE, H. W. PUGSLEY, N. D. SIMPSON & J.P.M.B.
- 194/9b. *ROSA CANINA* var. *BLONDAEANA* f. *VINACEA* (Baker) Rouy. 23, Oxon. 6. Chalk grassland, Crowell Hill, 1946 (sp.), J. F. G. CHAPPLE, H. W. PUGSLEY, N. D. SIMPSON & J.P.M.B.
- 194/18e. *ROSA OBTUSIFOLIA* var. *DECIPIENS* f. *GLANDULOSA* (Crép.). 22, Berks. 2. Open bushy enclosure, Boar's Hill, 1946 (sp.), N. D. SIMPSON & J.P.M.B.
- †197/3. *COTONEASTER SIMONSII* Baker. 22, Berks. 3. A single shrub about 1.5 m. high, presumably bird-sown, in *Rosa-Crataegus* scrub marginal to chalk grassland on S. side of Lough Down near Streatley, 1948 (sp.), R.B. & J.P.M.B.
- 199/17. *SAXIFRAGA GRANULATA* L. 22, Berks. 4. Sparingly on a hedgebank near Snelsmore Common, 1947, R.B. & J.P.M.B.
- 203/2. *CHRYSOSPLENIUM OPPOSITIFOLIUM* L. 22, Berks. 4. Abundant in marshy, semi-shaded ground in More Wood N. of Hampstead Marshall, 1946, Dr. E. W. JONES & J.P.M.B.
- 217/2. *CALLITRICHE OBTUSANGULA* Le Gall ex Hegelm. 23, Oxon. 4. Pool on Otmoor, N. of Beckley, 1937 (sp.). J. F. G. CHAPPLE & J.P.M.B., conf. R. D. MEIKLE.
- 218/1. *PEPLIS PORTULA* L. 23, Oxon. 5. Rare, growing with *Centunculus* and a dwarf *Callitriche* in the dampest part of a path, Bladon Heath (sp. in Herb. Oxon.); very plentiful on wet clay rides in Churchill Heath Wood near Kingham, especially where there are deep cart-ruts, 1948, R.B. & J.P.M.B.
- 220/5×3. *EPILOBIUM ADNATUM* × *HIRSUTUM*. 23, Oxon. 6. Waste ground, with putative parents, Jackdaw Lane, Oxford, 1940 (sp.), conf. G. M. ASH.
- 220/6. *EPILOBIUM LAMYI* F. W. Schultz. 23, Oxon. 6. Waste ground, Jackdaw Lane, Oxford, 1940-41 (sp.), conf. G. M. ASH.
- 220/7. *EPILOBIUM OBSCURUM* Schreb. 23, Oxon. 5. Cleared woodland, Slatepits Copse, on W. side of Wychwood, 1946 (sp. in Herb. Oxon.), J. F. G. CHAPPLE & J.P.M.B.
- †220/7(2). *EPILOBIUM ADENOCALON* Hausskn. 22, Berks. 3. A fair quantity in a small clearing in open woodland on top of the downs S.W. of Streatley, 1948 (sp.), R.B. & J.P.M.B. 23.

- Oxon. 5. A few plants in rough, bushy ground on the Begbroke side of Bladon Heath, 1946 (sp. in Herb. Oxon.); numerous plants in cleared woodland, Slatepits Copse on W. side of Wychwood, 1946 (sp. in Herb. Oxon.), J. F. G. CHAPPLE & J.P.M.B.; one patch by a stream in Sarsgrove Wood near Churchill, 1948. 6. One plant among huts at the Churchill Hospital, Headington, 1947.
- 261/2. ANTHRISCUS CAUCALIS Bieb. 23, Oxon. 5. Plentiful on a small area of a steep, shaded, sandy bank bordering a gravel-pit between Eynsham and Cassington, 1946. There are several gravel-pits hereabouts, but I have only seen this species in the one.
- †291/1. LONICERA CAPRIFOLIUM L. 22, Berks. 2. Rediscovered in Bagley Wood by Dr. E. W. JONES in 1945 (sp.). Previously recorded by the Rev. W. T. Bree in 1835 (see Druce, *Fl. Berks.*, 257). Dr. Jones kindly conducted me to the locality, where the plant appeared to be well established in a small clearing in woodland of oak standards with coppice.
- 328/3. GNAPHALUM SYLVATICUM L. 23, Oxon. 5. Heathy ground by track, Singe Wood, 1946 (sp. in Herb. Oxon.), N. D. SIMPSON & J.P.M.B.
- †330/4. HELICHRYSUM BRACTEATUM (Vent.) Andr. 23, Oxon. 5. Waste ground, Port Meadow, Oxford, 1953 (sp.), R. D. MEIKLE & J.P.M.B.
- 383/8. SENECIO VISCOSUS L. 23, Oxon. 5. Rather plentiful for a short distance on cindery ground by the L.M.S. line between Polstead Road and Port Meadow, Oxford, 1946 (sp.), R.B. & J.P.M.B. A remarkably rare plant in the county, with a single previous record from near Reading.
- 391/1. CARLINA VULGARIS L. 23, Oxon. 5. Taynton Quarries, 1946.
- †399/1. SILYBUM MARIANUM (L.) Gaertn. 23, Oxon. 6. One plant on waste ground, Jackdaw Lane, Oxford, Miss MARRIOTT, comm. by the late H. W. PUGSLEY.
- 421/3. HYPOCHOERIS GLABRA L. 22, Berks. 2. Short turf on sandy ground on Cumnor Hurst Hill, 1948 (sp.), Dr. E. W. JONES & J.P.M.B.
- 425/2c. LACTUCA SERRIOLA var. DUBIA (Jord.) Rouy. 22, Berks. 5. Cultivated field reverting to grassland, N. end of Windsor Great Park, 1955 (sp. in Herb. Kew.).
- 427/2b. SONCHUS ARVENSIS var. GLABRESCENS Günth., Grab. & Wimm. 23, Oxon. 3. Several plants on a disturbed patch of ground in an extensive open, swampy area of *Glyceria maxima* and *Carices* between Polstead Road and Port Meadow, Oxford, 1946 (sp.), R.B. & J.P.M.B. Typical *S. arvensis* was also present, but no intermediates were seen.
- 463/5. LYSIMACHIA NEMORUM L. 23, Oxon. 4. Noke Wood, 1946, R.B. & J.P.M.B.

- 467/2d. *ANAGALLIS ARVENSIS* var. *LILACINA* Alef. 22, Berks. 4. Rare, mixed with an abundance of the normal red form, in an arable field N. of Fieldridge Copse, East Garston, 1946 (sp.), Dr. E. W. JONES. Corolla claret-coloured. Leaves with numerous, minute, deep purple dots on lower surface.
- 469/1. *SAMOLUS VALERANDI* L. 22, Berks. 2. Damp ground in Pusey Wood, 1946, Dr. E. W. JONES.
- 481/1. *MENYANTHES TRIFOLIATA* L. 22, Berks. 1. Boggy ground on S. side of Wytham Hill, 1947, Dr. E. W. JONES.
- †488/7. *Phacelia viscida* (Benth. ex Lindl.) Torr., *Botany U.S. Mexican Boundary Survey*, 143, 1858; Brand in *Das Pflanzenr.*, IV, 251, 68, 1913; Abrams, *Ill. Fl. Pacific States* 3, 514, fig. 4123, 1951; G. W. Gillett in *Univ. Calif. Publ. Bot.*, 28 (2), 66, 1955. *Eutoca viscida* Benth. ex Lindl., *Bot. Reg.*, 21, t. 1808, 1835. Native of California. 23, Oxon. 5. Waste ground, Port Meadow tip, Oxford. 1946 (sp.).
- A very striking plant, more or less glandular all over except on the flowers, with ovate, coarsely and irregularly incise-serrate leaves, and large (1.5-2 cm. in diameter), bright intense blue, white-eyed, shortly funnel-shaped corollas borne in lax, terminal scorpioid cymes.
- †497/4. *SYMPHYTUM* × *UPLANDICUM* Nyman. 22, Berks. 4. By the canal a short way E. of Kintbury Station, 1946 (sp.), Dr. E. W. JONES & J.P.M.B.
- †511/2. *CALYSTEGIA SYLVESTRIS* (Waldst. & Kit. ex Willd.) Roem. & Schult. 23, Oxon. 6. Edge of old tip, Jackdaw Lane, Oxford. 1946 (sp.), N. D. SIMPSON & J.P.M.B.
- 515/2. *CUSCUTA EUROPAEA* L. 22, Berks. 5. By backwater of river Thames between Aston and Hambleton Lock, 1955 (sp. in Herb. Kew.).
- 532/3. *LINARIA REPENS* (L.) Mill. 23, Oxon. 6. One plant in a quarry at Headington, 1946 (sp. in Herb. Pugsley), H. W. PUGSLEY.
- †543/41. *VERONICA FILIFORMIS* Sm. 23, Oxon. 5. Bampton, as a garden weed and in the cemetery, 1946, Dr. DAVEY, comm. P. G. BEAK (sp. in Herb. Beak!).
- 545/5×21. *EUPHRASIA NEMOROSA* × *PSEUDOKERNERI*. 23, Oxon. 6. Chalky bank, Crowell Hill, 1946 (sp.), J. F. G. CHAPPLE, H. W. PUGSLEY, N. D. SIMPSON & J.P.M.B., det. H. W. PUGSLEY.
- †556/4(2). *Verbena elegans* Kunth, *Nov. Gen. Sp. Pl.*, 2, 273, 1817. See Lily Perry in *Ann. Miss. Bot. Gard.*, 20, No. 2, 1933. Native of Mexico. 23, Oxon. 6. Waste ground, Jackdaw Lane, Oxford, 1938 (sp.), J. F. G. CHAPPLE & J. P. M. BRENNAN, det. N. Y. SANDWICH & J. P. M. BRENNAN at Kew.

A handsome vervain with pinnatifid leaves triangular in outline, and red-purple flowers in short, dense, terminal spikes.

- 569/1. *NEPETA CATARIA* L. 23, Oxon. 7. Hedge near Lambridge Wood, Henley, 1946, N.Y.S., R. GRAHAM & J.P.M.B.
- 578/4h. *GALEOPSIS ANGSTIFOLIA* var. *arenaria* Gren. & Godr., *Fl. Fr.*, 2, 684, 1850, sec. Briquet, *Labiées Alp. Marit.*, 167, 1894.
23, Oxon. 5. In a cornfield on calcareous soil about 1 mile N.E. of Woodstock, 1942 (sp.), R.B. & J.P.M.B.; scattered through a potato-field adjoining Singe Wood near Hailey, 1946 (sp.), N. D. SIMPSON & J.P.M.B.
- The above appears to be the correct name for what has often, but apparently wrongly, been called in Britain var. *canescens* (Schultes); other synonyms are *G. arvatica* Jord. in Billot, *Annot. Fl. Fr. Allem.*, 130, 1858, and *G. ladanum* subsp. *angustifolia* var. *calcareo* (Schoenh.) Briq., *Monogr. Genre Galeopsis*, 255, 1893, the latter based on *G. calcarea* Schoenh. in *Flora* (1832), 593-4. The name var. *monticola* Lannes, employed in *B.P.L.*, ed. 2, dates from 1885 according to Briquet, and, according to F. N. Williams, *Prod. Fl. Brit.*, 399, 1910, is a *nomen nudum*.
- In its densely spreading-hirsute calyces and its usually rather squat and compact, often much branched habit, it seems a distinct enough plant. It is probably not uncommon in our area, though normal *G. angustifolia* with appressed-hairy calyces also occurs. The distributions of these two, and any possible ecological differences between them, require working out.
- 587/1. *AJUGA REPTANS* L. 23, Oxon. 4. A single white-flowered inflorescence seen in Noke Wood, 1946, R.B. & J.P.M.B. 22, Berks. 1. Two white-flowered inflorescences seen at Appleton Lower Common, 1946, in company with Dr. C. WEST, J. BROOKE & Dr. F. ROSE.
- +596/11. *AMARANTHUS GRAECIZANS* L. 23, Oxon. 6. Waste ground, Jackdaw Lane, Oxford, 1939 (sp.).
- 600/12. *CHENOPODIUM FICIFOLIUM* Sm. 22, Berks. 5. Cultivated field reverting to grassland, N. end of Windsor Great Park, 1955.
- 618/3×8. *RUMEX CRISPUS* × *SANGUINEUS* var. *VIRIDIS*. 23, Oxon. 4. Edge of hayfield on Otmoor N. of Beckley, 1946 (sp.), J. F. G. CHAPPLE and J.P.M.B., conf. J. E. LOUSLEY.
- 618/6×8. *RUMEX OBTUSIFOLIUS* subsp. *AGRESTIS* × *SANGUINEUS* var. *VIRIDIS*. 23, Oxon. 4. Edge of hayfield on Otmoor N. of Beckley, 1946 (sp.), J. F. G. CHAPPLE & J.P.M.B., conf. J. E. LOUSLEY.
- 627/1. *THESIMUM HUMIFUSUM* DC. 23, Oxon. 5. Taynton Quarries, 1945, Dr. E. W. JONES.
- 632/1. *MERCURIALIS PERENNIS* L. 23, Oxon. 4. One small patch of a remarkably broad-leaved form, perhaps to be put under var. *ovata* Mitt., in Noke Wood, 1946 (sp.), R.B. & J.P.M.B.
- +646/3. *QUERCUS CERRIS* L. 22, Berks. 4. Heathy ground, Padworth Common, 1948, R.B. & J.P.M.B.

- 650/3e. *SALIX ALBA* var. **chermesina** Hartig, *Vollst. Naturgesch. d. Forstl. Culturpfl. Deutschlands*, 421, 1851; *S. alba* var. *britzensis* Spaeth, *Cat. No. 57, 67, 1883*.

23, Oxon. 5. Two small trees in a thicket of mixed willows in a gravel-pit near Cassington, 1944-46 (sp.), R.B. & J.P.M.B.

One of these trees has not yet produced catkins; the other is ♀. Both, however, appear to come under this variety, characterised by crimson branchlets. J. Fraser, in *Rep. Bot. Soc. & E.C.*, 9, 720, 1932, seems to have been the first to draw the attention of British botanists to this striking willow, but the name that he used, var. *britzensis* Spaeth, is antedated by the varietal name given above. I have been unable to consult the original place of publication of var. *britzensis*, but accept it on the authority of Fraser and of Elwes & Henry, *Trees Great Brit. & Irel.*, 7, 1769, 1913.

- 650/3×2. *SALIX ALBA* × *FRAGILIS* (*S.* × *RUBENS* Schrank.). 23, Oxon. 5. In two gravel-pits near Cassington, 1946 (sp.). These are ♂ plants with narrow leaves, nearer to *S. fragilis* than to *S. alba*.

- 650/3×2. *SALIX ALBA* × *FRAGILIS* forma *monstrosa*, sens. Floderus (*S.* × *ALOPECUROIDES* auct.); vide Fraser in *Rep. Bot. Soc. & E.C.*, 9, 367-8, 1933.

22, Berks. 1. A large tree in a roadside hedge at Bablock Hythe, 1946 (sp.), R.B. & J.P.M.B. 23, Oxon. 5. Several trees, together with *S. fragilis*, in Ferry Hinksey Lane, Oxford, 1945-6 (sp.); a row of trees seen on the Oxfordshire side of the Thames at Bablock Hythe, 1946. R.B. & J.P.M.B.

The trees of *S.* × *alopecuroides* in this area confirm Fraser's notes on this remarkably distinct and uniform willow. It is immediately separable from *S. fragilis* auct. when not in flower by its broader leaves of a deep glossy green above, recalling those of *S. pentandra* L., and more laxly arranged on the branches, which are fewer and more divaricate, making a lighter crown. Mr. P. G. Beak remarks that the Ferry Hinksey trees lack the "witches'-brooms" that are so characteristic of normal *S. fragilis* auct., so that non-susceptibility to this gall may be a further distinguishing character.

Although the hybrid formula used here for this willow has become familiar to British botanists, the taxonomic status of this plant will most probably be changed in the future.

- 650/3×4. *SALIX ALBA* × *TRIANDRA* (*S.* × *UNDULATA* Ehrh.). 23, Oxon. 5. Damp ground by a backwater of the R. Thames, Botley, 1946 (sp.), R.B. & J.P.M.B.

The published accounts of British willows apparently fail to mention that the long shoots and their leaves when young

are conspicuously suffused with dull red-purple. This feature, which I have observed on *S. × undulata* in Oxfordshire, Surrey and Somerset, enables the hybrid to be separated at a glance in the field from both the putative parents, at any rate in spring and early summer. The comment made in the last sentence under the preceding willow applies also here.

- 669/4. *ORCHIS USTULATA* L. 22, Berks. 2. Several patches in an area of chalk grassland on Gore Hill, S. of Chilton, just in this district, 1946 (sp.), R.B. & J.P.M.B. The locality is probably now destroyed by ploughing.
- 669/7. *ORCHIS INCARNATA* L. 22, Berks. 4. One plant in a rough wet field by the canal E. of Marsh Benham, 1946, Dr. E. W. JONES & J.P.M.B. 23, Oxon. 4. Sparingly, in company with *O. praetermissa*, in one wet alluvial enclosure on S.W. side of Otmoor, 1946, R.B. & J.P.M.B.
- 669/8. *ORCHIS PRAETERMISSA* Druce. 23, Oxon. 4. Sparingly in one alluvial enclosure on the S.W. side of Otmoor, 1946, R.B. & J.P.M.B.
- 674(5)/1. *PLATANTERA CHLORANTHA* (Cust.) Reichb. 23, Oxon. 4. Sparingly in Noke Wood, 1946, R.B. & J.P.M.B.
- 674(5)/2. *PLATANTERA BIFOLIA* (L.) Rich. 23, Oxon. 5. Sparingly on a densely bushy slope on limestone at Pool Bottom, 1946.
- 707/1. *ORNITHOGALUM PYRENAICUM* L. 22, Berks. 4. Edge of wood near Lower Poughley, between Lambourn and Hungerford, 1946, Dr. E. W. JONES.
- 707/2. *ORNITHOGALUM UMBELLATUM* L. 23, Oxon. 4. Between Stow Wood and Beckley, in small quantity, 1946 (sp.). Dr. J. N. MILLS, the finder, kindly directed me to this locality.
- +718/16. *JUNCUS TENUIS* Willd. 22, Berks. 5. Damp ground near King's Mere, Finchampstead, 1955 (sp. in Herb. Kew.).
- 719/3. *LUZULA FORSTERI* (Sm.) DC. 22, Berks. 3. Beechwood near Sulham, 1946 (sp. in Herb. Oxon.).
- 746/1. *SCIRPUS SYLVATICUS* L. 22, Berks. 4. By the river Enborne near Greenham Common, 1946, Dr. E. W. JONES (sp. in Herb. Oxon.).
- 746/11. *SCIRPUS SETACEUS* L. 23, Oxon. 3. Several patches in boggy pastures by a stream between Shutford and Welshcroft Hill (near North Newington), 1946 (sp. in Herb. Oxon.). 5. Clayey ride in Churchill Heath Wood near Kingham, rare, 1948, R.B. & J.P.M.B.; by a rivulet in a pasture near Sarsgrove Wood, 1948, R.B. & J.P.M.B.
- 747/2. *ERIOPHORUM ANGUSTIFOLIUM* Honck. 22, Berks. 1. Sparingly in a spring below Wytham Hill, 1945 (sp.). This plant, unexpected in this habitat and area, was first found by the Rev. N. E. G. CRUTTWELL, who kindly directed me to it.
- 753/28. *CAREX CAROPHYLLEA* Latourr. 23, Oxon. 5. Abundant in rough, open, limestone grassland at Taynton Quarries, 1946.

- 753/46h. *CAREX ACUTA* var. *PROLIXA* Fr. 22, Berks. 1. By a back-water of the R. Thames, Hagley Pool near Wytham, 1940 (sp.), conf. Mr. E. NELMES.
- 753/61(2). *CAREX POLYPHYLLA* Kar. & Kir. 22, Berks. 3. In rather open woodland on sandy soil capping chalk on the downs S.W. of Streatley, 1948 (sp.), R. B. & J.P.M.B. 23, Oxon. 5. Roadside at Burford, 1938 (sp.). 7. Grassy bank in open chalk meadow between Lambridge Wood and the Fair Mile near Henley, 1946 (sp.), N. Y. SANDWICH, R. GRAHAM & J.P.M.B.
- 800/1. *SIEGLINGIA DECUMBENS* (L.) Bernh. 23, Oxon. 3. Sparingly in a damp hillside pasture between Shutford and Welshcroft Hill (near North Newington), 1946 (sp. in Herb. Oxon.).
- 826/4b × 829/1. *FESTUCA PRATENSIS* × *LOLIUM PERENNE* (× *FESTULOLIUM LOLLACEUM* (Huds.) P. Fourn.). 22, Berks. 1. Alluvial pasture near St. John's Lock, Lechlade, 1947 (sp.), J. F. G. CHAPPLE & J.P.M.B.
- 827/18. *BROMUS RACEMOSUS* L. 23, Oxon. 3. Hay meadow by the river Cherwell near Old Grimsbury, 1946 (sp. in Herb. Oxon.).
- 827/19i. *BROMUS THOMINII* Hard. 22, Berks. 1. Pasture near St. John's Lock, Lechlade, 1947 (sp.). 23, Oxon. 5. Grassy verge by the Burford road about $\frac{3}{4}$ mile W. of Witney, 1946 (sp.).
- 827/19(2). *BROMUS LEPIDUS* Holmb. 22, Berks. 1. Pasture near St. John's Lock, Lechlade, 1947 (sp.), J. F. G. CHAPPLE & J.P.M.B. 2. Plentiful by roadsides, tracks and field-borders over a wide area on the chalk S. and S.E. of Chilton, 1946 (sp. in Herb. Oxon.), R.B. & J.P.M.B. 23, Oxon. 5. Roadside verge about $1\frac{1}{2}$ miles W. of Witney, 1946 (sp. in Herb. Oxon.); plentiful in field of rye-grass near Pool Bottom, 1946 (sp. in Herb. Oxon.). 7. Grassy roadside at the Fair Mile near Henley, 1946 (sp. in Herb. Oxon.) N. Y. SANDWICH, R. GRAHAM and J.P.M.B.
- 827/19(2). *BROMUS LEPIDUS* f. *LASIOLEPIS* Holmb. 23, Oxon. With the typical plant, on the grassy verge of the main Witney road a short way W. of Duke's Lock, Wolvercote, 1946 (sp.). In Oxfordshire and Berkshire at least, plants of this species with hairy spikelets are very much scarcer than these with glabrous spikelets.
- 850/1. *PHYLITIS SCOLOPENDRIUM* (L.) Newm. 22, Berks. 4. On bricks of a culvert by the railway E. of Kintbury, 1946. Dr. E. W. JONES & J.P.M.B. 23, Oxon. 5. Numerous but mostly small plants on the brick wall of a railway station building at Charlbury, 1946.
- 851/2. *ASPLENIUM TRICHOMANES* L. 22, Berks. 4. On the bricks of a culvert, growing with the last, by the railway E. of Kintbury, 1946. Dr. E. W. JONES & J.P.M.B. 23, Oxon. 5. Under the coping of the station platform at Charlbury, 1946.

SENECIO SQUALIDUS L. IN THE BRITISH ISLES—1, EARLY RECORDS (TO 1877)

By DOUGLAS H. KENT

This is the first of a series of papers in which it is proposed to outline the historical spread and present distribution of *Senecio squalidus* in Britain and Ireland.

Senecio squalidus L. was cultivated in the Oxford Botanic Garden at least 265 years ago, and early dried specimens from there are preserved in Hb. Du Bois (Oxford) and Hb. Sloane (British Museum) under the name 'Jacobaea aetnea glauco folio'. The species was described by Linnaeus in 1753 from material cultivated at Uppsala, Sweden. Walker (1833) stated that Linnaeus obtained the seed for his cultures from the Botanic Garden at Oxford via J. J. Dillenius, the first Sherardian Professor of Botany, but Smith (1828) had already shown that there was no definite evidence of this. The Linnean description is very brief, and the plant is described as an annual from southern Europe. In Britain *S. squalidus* behaves as an annual, biennial and perennial, and often flowers and fruits in 12 weeks or less from the time of germination. It is now known to be native in Sicily, where it flourishes on the slopes of Mount Etna and southern Italy. It is a polymorphic species and in Italy a number of microspecies, varieties and forms are recognised.

S. squalidus having been cultivated in the Oxford Botanic Garden since at least 1690 it seems curious that the species was not reported as an established escape on walls in that city until over a century later. Sibthorp (1794) was the recorder, and he, being unaware of the identity of the plant, merely described it as 'Senecionis species'. Smith (1799) eventually identified the plant, and in 1800 described it 'as very plentiful on almost every wall in Oxford'. The extreme local occurrence of the plant attracted many collectors, as evidenced by the large number of early nineteenth century specimens in all the principal herbaria, and it is known that some of them took seed for cultivation in their gardens in various parts of the kingdom and that the plumed fruits escaped to become established on adjacent walls and banks. It is likely, therefore, that many of the early records from other counties originated in this manner, although it is also known in some cases to have been deliberately introduced on to walls and waste ground.

The earliest British record outside Oxford is from Worcester where the plant was first observed growing on old buttresses by the Rev. T. Shirley in 1801 (Lees, 1868). In 1820 it was seen

growing on walls at Taunton, S. Somerset, by Dr. Southby (Flower, 1886) and is said to have been deliberately introduced there by the Rev. W. Tuckwell (Murray, 1896). During 1827 Edward Forster found it 'growing by the roadside from Bideford (N. Devon) to the turnpike on the Torrington road, and on walls and banks in the town', and in 1829 the Rev. W. T. Bree wrote 'some years since I introduced the plant from Oxford into my garden, whence by means of its volatile seeds, it has made its escape, and has now for a long time, voluntarily and firmly established itself on walls and waste banks in this village' (Allesley, Warwick.).

In 1833 it was located on a wall at Wytham, Berks. (Baxter, 1843) and here may have originated from seed wind-borne from Oxford. The first Irish record came in 1839 when it was reported on walls and roofs of houses in the southern part of the City of Cork (Power, 1845). Four years later the plant was collected at Bristol by W. A. Bromfield, and may have been an isolated introduction direct into the port from southern Europe. In the same year it was gathered from garden walls at Gorleston, E. Suffolk, where it was said to have been introduced by Dawson Turner. During 1849 the Rev. P. Lothbury discovered it in quantity at Bury, W. Suffolk (Hind, 1889), and in 1850 it was recorded from walls near Canterbury Cathedral, E. Kent ('G', 1873) and from Eaton Lime Kiln, E. Norfolk, where it was believed to have been introduced by J. W. Ewing (cf. Deacon, 1943 & Nicholson, 1914). In 1855 it was noted from Anwick, S. Lines. (*Proc. Bot. Soc. Edinb.*, 1856, 13), and in 1866 was reported to be spreading on walls at Eaton (Trimmer, 1866). A solitary specimen was found by W. T. Dyer in a newly laid out road between Twickenham and Teddington, Middlesex, in 1867, possibly as a result of the ballast being used as a foundation originating from the Oxford area. Allen (1871) records *S. squalidus* from Marazion Marsh, W. Cornwall, but this was almost certainly a misnomer. In 1877 it was reported from Norwich, E. Norfolk, and from near Thorparch, Mid-W. Yorks., by T. Scatcherd (Miall, 1877), but Lees (1888) considered the latter record to be an error.

The following exsiccata supporting the records and observations mentioned above have been seen by the author except where otherwise stated.

V.c. 4, N. DEVON. Bideford, 1827, *E. F[orster]*, Hb. Mus. Brit. 1843, *S. O. Gray*, Hb. Manchester, teste Dr. E. M. Rosser. 1850, *G. Maw*, Hb. Mus. Brit. Bideford Churchyard, 1865, *W. T. Dyer*, Hb. Kew. Bideford, 1877, *Johnstone*, Hb. Oxon. 1880, *W. Waterfall*, Hb. Mus. Wales, teste A. E. Wade. Near Bideford, 1881, *T. B. Blaw*, Hb. Mus. Brit. Bideford, 1916, *G. C. Druce & Lady Fortescue*, Hb. Druce.

V.-c. 15, E. KENT. Canterbury, 1866, *J. S. Mill*, Hb. Kew.

V.c. 21, MIDDLESEX. In a newly laid out road between Twickenham and Teddington, near Strawberry Hill, a solitary plant, 1867, W. T. Dyer, Hb. Mus. Brit.

V.c. 23, OXON. Walls, Oxford, 1799, Hb. Sherard. 1800, W. Middleton, Hb. Yorks. Phil. Soc., teste C. M. Rob. 1805, E. F[orster], Hb. Mus. Brit. Magdalen College, 1808, W. Dowell, Hb. J. D. Salmon (Norwich Museum), teste E. A. Ellis. Oxford, 1821, W. Blake, Hb. Druce. 1828, 'W.W.B.', Hb. Oxon. 1832, W. Christy, Hb. Mus. Brit. College walls, Oxford, 1833, F. Twining, Hb. Univ. Coll. N. Wales, teste Prof. P. W. Richards Oxford, 1836, Hb. Geldart (Norwich Museum), teste E. A. Ellis. 1840, T. B. Flower; 1859, Hb. Oxon.

V.-c. 25, E. SUFFOLK [NOW NORFOLK]. Garden walls, Gorleston (introduced by Dawson Turner), 1843, S. Hailstone, Hb. Yorks. Phil. Soc., teste C. M. Rob.

V.-c. 26, W. SUFFOLK. Bury St. Edmunds, 1856, Hb. Syme. 1875, Hb. Mus. Brit. 1876, Jordan, Hb. Manchester, teste Dr. E. M. Rosser. 1883, W. M. Hind, Hb. Cantab., teste Dr. S. M. Walters.

V.c. 27, E. NORFOLK. Eaton Lime-kiln (introduced by J. W. Ewing), 1850, 'F.M.', Hb. Geldart, teste E. A. Ellis. Norwich, 1877, A. W. Preston, Hb. Manchester, teste Dr. E. M. Rosser. Eaton, 1882, A. W. Preston, Hb. Mus. Wales, teste A. E. Wade. 1883, E. F. Linton, Hb. Mus. Brit.

V.c. 34, W. GLOUCESTER. Bristol, 1843, Bromfield, Hb. Kew.

V.c. 37, WORCESTER. Worcester Cathedral, 1837, Hb. Cantab., teste Dr. S. M. Walters. Worcester, 1841 & 1844, E. Lees, Hb. H. C. Watson (Kew).

V.c. 38. WARWICK. Allesley, 1862, W. W. Lyle, Hb. Mus. Brit.

V.cc. H.3-5, CORK. Cork, 1840, W. Wilson; 1841, S. O. Gray, Hb. Manchester, teste Dr. E. M. Rosser. 1848, J. Carroll, Hb. Mus. Brit. Bandon, 1870, Rev. T. Albin, Hb. Manchester, teste Dr. E. M. Rosser.

ACKNOWLEDGMENTS

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SELINUM CARVIFOLIA (L.) L. IN BRITAIN

By S. M. WALTERS

This Umbellifer was first discovered in Britain by the Rev. W. Fowler at Broughton, Lincs., in 1880; it was identified and fully described by F. A. Lees (1882, a, b) who, it is clear from the accounts, had no doubt that it was native, predicting that it would be discovered elsewhere in the Eastern Counties. This prediction was quickly fulfilled by W. J. Cross, a young botanist of Ely, who discovered the plant 'on swampy land near Fordham [misprinted as Foulham], Cambridgeshire', in August 1882. W. Marshall of Ely, who contributed the note on the discovery (1882) stated that the plant was in his opinion quite native at Fordham, 'and in the two adjacent parishes of Snailwell and Chippenham the plant is abundant'. (Lees, 1882, c). A. Bennett and A. Fryer, however, visiting the Chippenham Fen locality in 1883, came to the conclusion 'that it was not an indigenous species', a conclusion unacceptable to Lees; and eventually a somewhat touchy 'exchange of notes' was published (Bennett, A., et al, 1899). Reading between the lines, one is tempted to conclude that Bennett and Fryer were so ashamed at not having recorded the plant that they decided it was a relatively recent introduction which had spread rapidly. Actually the complete absence of records of Chippenham Fen plants in Babington's *Flora of Cambridgeshire* or elsewhere for the period 1840 to 1880 suggests strongly that no Cambridge botanists visited the fen until Cross's discovery of *Selinum* drew their attention to it! Druce and Riddelsdell, visiting the fen in 1903, saw no reason to doubt that *Selinum* was native there, pointing out its resemblance in habit to *Daucus* . . . 'it is quite conceivable and probable that botanists, even careful and keen-eyed men, may have overlooked it time after time'. (Riddelsdell, 1903).

In 1909, J. W. Carr discovered the plant in Notts.; this time even Bennett, who was consulted, conceded that the plant was native *there* . . . but still implied that it was introduced in the Lincs. and Cambs. localities by suggesting that the Notts. plant resembled the Continental one and differed from the others in its less robust habit! (Carr, 1909).

The plant has now apparently disappeared from the Notts. locality through drainage; and in the original Lincs. locality it has not been seen in the last few years. Localities in Cambs. are therefore at present the only known ones. These are (1) the well-known Chippenham Fen locality; (2) a locality in the grounds of Fordham Abbey, about a mile from the fen; (3) a small wet grazed pasture near Sawston. This last is a newly-discovered

locality, and is of great interest in that the species here associated with *Selinum* resemble those at Chippenham remarkably closely. (See lists). The Fordham Abbey station is presumably a relic of the original distribution of the plant in the Chippenham-Fordham-Snailwell area; it was good to verify that the plant still grows here, however, as there is now little ground in this area which has not either been drained or become woodland.

The conditions under which *Selinum* grows at Sawston suggest strongly that it might be surviving elsewhere in the Eastern Counties in rough-grazed marshy pasture where there is a high calcareous water-table, perhaps unable to flower properly and thus showing only radical leaves. Indeed, I have no doubt that the combination of late flowering (August to September) and similarity of foliage to *Silva* and *Peucedanum palustre* (and to a lesser extent to *Daucus*) could explain the mystery and confusion which has surrounded the plant and caused it to be overlooked and unrecorded.

Certain generalisations can be made about the habitats of *Selinum* in Britain, which resemble rather closely its habitats on the Continent. In all British localities the species list suggests strongly, even if the records do not state, that the ground water is calcareous—thus *Juncus subnodulosus* occurs in all the lists except Fordham. It is also clear that the habitats are marshy throughout the year, probably with regular winter flooding; and, further, that the plant is intolerant of shade from trees (cf. Lees' description of the Lincs. locality (1882, c)): so that suitable habitats may be of a rather temporary and fluctuating nature. Thus ill-drained marshy pasture will be colonised by trees if grazing or other interference is absent; if grazing, etc., is too intense (and particularly if accompanied by attempts at drainage) the plant will be unable to flower properly and presumably will in time be eliminated. One would expect, therefore, an optimum grazing or interference effect, large enough to prevent tree colonisation, but not large enough to damage the plant directly. This optimum seems to be found at present in the Chippenham locality, but it is quite clear that there is a delicate balance of factors, and a good deal of variation in the size of the *Selinum* population and the luxuriance of growth seems to have occurred over the 70 years since the plant was first recorded at Chippenham.

ASSOCIATION TABLE

1. Fordham Abbey grounds, Cambs. List made September 1949 (S.M.W.).
2. Sawston, Cambs. Lists made September 1949 (S.M.W.), and September 1955 (F. H. Perring).
3. Chippenham Fen, Cambs. List made September 1949 (S.M.W.).
4. Broughton, Lincs. Composite list of Lees (1882, c) and Woodruffe-Peacock (1908); those with asterisk added or confirmed by Miss E. J. Gibbons 23.8.49.
5. Teversall, Notts. Carr's list, 1909 (clearly incomplete).

	1	2	3	4	5
<i>Selinum carvifolia</i>	+	+	+	+	+
<i>Succisa pratensis</i>	+	+	+	+	+
<i>Eupatorium cannabinum</i>	+	+	+	+ *	
<i>Mentha aquatica</i>	+	+	+	+ (a)	
<i>Filipendula ulmaria</i>	+	+	+	+	
<i>Carex flacca</i>	+ (a)	+		+	
<i>Cirsium palustre</i>	+	+		+	
<i>Molinia caerulea</i>	+	+		+	
<i>Serratula tinctoria</i>	+	+		+	
<i>Galium uliginosum</i>	+		+	+	
<i>Holcus lanatus</i>	+		+	+	
<i>Senecio jacobaea</i>	+	+	+		
<i>Festuca ovina</i>	+		+		
<i>Agrostis stolonifera</i>		+	+	+	
<i>Centaurea nigra</i>		+	+	+	
<i>Prunella vulgaris</i>		+	+	+	
<i>Anagallis tenella</i>		+		+	
<i>Alnus glutinosa</i>		+		+ *	
<i>Angelica sylvestris</i>		+		+ *	
<i>Lythrum salicaria</i>				+	
<i>Carex distans</i>		+			+
<i>Juncus articulatus</i>		+			+
<i>Senecio aquaticus</i>		+			+
<i>Juncus subnodulosus</i>		+ (a)	+ (a)	+ (a)	+ (Sd)
<i>Cirsium arvense</i>	+				
<i>Dactylis glomerata</i>	+				
<i>Festuca arundinacea</i>	+				
<i>Heracleum sphondylium</i>	+				
<i>Lathyrus pratensis</i>	+				
<i>Trifolium repens</i>	+				
<i>Plantago lanceolata</i>	+				
<i>Vicia cracca</i>	+	+			
<i>Carex disticha</i>		+			
<i>C. lepidocarpa</i>		+			
<i>C. panicea</i>		+			
<i>Juncus inflexus</i>		+			
<i>Leontodon leysseri</i>		+			
<i>Linum catharticum</i>		+			
<i>Lotus corniculatus</i>		+			
<i>Ranunculus flammula</i>		+			
<i>Sieglingia decumbens</i>		+			
<i>Cladium mariscus</i>		+	+		
<i>Deschampsia cespitosa</i>		+	+		
<i>Equisetum palustre</i>		+	+		
<i>Potentilla erecta</i>		+	+		
<i>Valeriana dioica</i>		+	+		
<i>Potentilla reptans</i>			+		
<i>Schoenus nigricans</i>			+		
<i>Cirsium dissectum</i>			+	+	
<i>Hydrocotyle vulgaris</i>			+	+	
<i>Phragmites communis</i>			+	+	

	1	2	3	4	5
<i>Potentilla anserina</i>			+	+	
<i>Silaum silaus</i>			+	+	
<i>Epitobium parviflorum</i>				+	
<i>Frangula alnus</i>				+	
<i>Geum rivale</i>				+	
<i>Juncus acutiflorus</i>				+	
<i>Lychnis flos-cuculi</i>				+	
<i>Lysimachia vulgaris</i>				+	
<i>Samolus valerandi</i>				+	
<i>Stachys officinalis</i>				+	
<i>Triglochin palustris</i>				+	+
<i>Blysmus compressus</i>				+	+
<i>Achillea ptarmica</i>					+
<i>Carex hirta</i>					+
<i>C. nigra</i>					+
<i>Juncus conglomeratus</i>					+
<i>J. effusus</i>					+
<i>Lysimachia nummularia</i>					+

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NOTES ON THE INTRODUCTION AND DISTRIBUTION OF
CYMBALARIA MURALIS GAERTN., MEY. & SCHERB. IN
SCOTLAND

By HUGH BOYD WATT
(written c. 1932)

The accepted belief has been that Dillenius (1724) was the first recorder of *Cymbalaria muralis* as a British plant. He considered that the Physic Garden at Chelsea, London, was the place whence the plant, a native of southern Europe, originated in England, or at all events about London. It has, however, recently been ascertained from John Goodyer's notes that its first introduction was into William Coys's garden at Stubbers, North Ockington, Essex, in the early seventeenth century, and that it was planted in Goodyer's garden at Droxford, Hants., in 1617. From there it became dispersed over the British Isles. It is a prolific flowerer, and well deserves the name "mother of thousands", by which it is known in the west of England. Other vernacular names are "roving jenny" and "roving sailor".

In Scotland, as might be expected, the plant is not mentioned in the works of the pioneers of Scottish botany—Reid (1683), Sibbald (1684) and Lightfoot (1777). The Edinburgh Botanic Garden was founded in 1680, and by 1683 is said to have contained 3,000 species of plants, but *Cymbalaria muralis* is not named among them. Mr. J. R. Matthews of the Royal Botanic Garden, Edinburgh, tells me that he has no knowledge of the plant's introduction to that Garden, but since the Garden has occupied its present site for just over a century its cultivation would not date so very far back. He also says that it is just possible that the plant was cultivated in one or other of the Gardens before removal to Inverleith Row.

The probability is that it was brought into Scotland as a garden plant during the period when planting and gardening came into vogue about the beginning of the eighteenth century, but the first Scottish record is given by Hopkirk (1813)—"at Bothwell Castle on the Clyde", where it continues at the present time. Hooker (1821); considered it very rare, and mentions the Bothwell Castle station, as does Hennedy (1878); he also adds "garden walls in various places". Patrick (1831) records the species, and the *Annals of the Andersonian Naturalists' Society* (1893) notes its occurrence at Chatelherault (Gadzow), Lochwinnoch and Balloch Castle, while the British Association *Handbook on the Clyde Area* (1901) records the plant in four divisions. My first acquaintance

with this attractive species was on the occasion of an Andersonian Naturalists' Society excursion to Chatelherault about forty years ago, when its abundant festoons of delicate pale purple flowers were a delight to the eyes.

Cymbalaria muralis is now well distributed in the Clyde area, and I am indebted to observers in the above named Society for the following information.

At Barncluith (Hamilton) it has spread so much over old gardens that it has recently had to be cleaned off the walls as a troublesome weed. In upper Clydesdale it occurs so far up as near Elvanfoot (Dr. Donald Patton). In Renfrewshire it is recorded as rare, but on the walls of the old Collegiate Church at Lochwinnoch it used to be plentiful, and probably is so still. In Dunbartonshire it is found on the kitchen walls at Balloch Castle, and at Rhu it is remarkably abundant on walls at Gareloch head and at Ardmay: below Arrocher it has long been known to Mr. John R. Lee. Mrs P. Ewing reports that she found it at Kilmun, Argyllshire, first about the year 1884, since when it has spread and is now abundant there. Dr. Patton records its abundance on the Island of Bute. In Ayrshire the species is recorded as an alien. Further south it is described as an outcast or escape: in Dumfriesshire and Kirkcudbrightshire the localities mentioned are Kirkcudbright, 1882; Dumfries, 1890; Wigtown, 1893. In Peeblesshire it is noted as common on walls, but originally introduced. In the eastern border counties *Cymbalaria* is recorded previous to 1853 as established in so many gardens, on walls, etc., that its eradication would be difficult. North Berwick, East Lothian, is another locality named further north.

In the Forth area there are early records by Woodforde (1824) and Greville (1824), and the stations named are the debris of Salisbury Craigs: wall near Newhaven; new road to Portobello, Trinity Mains. Martin (1927) says that the species is frequent, and the localities show that it occurs on or about all the old castles and similar buildings of the district.

In the vicinity of Larbert, Stirlingshire, it occurs on a wall around a wood, well away from gardens. Instances of this character, some distance away from possible centres of cultivation, are exceptional.

In Perthshire it is recorded as naturalised on some old walls, and in Forfarshire there was only one record given by Gardiner (1848). Dr. William G. Smith of Edinburgh tells me that at a later date he knew this station, and that the plant now occurs in other places in Forfarshire, but not in so many as in the Lothians. Stations in that county named by another observer are a garden wall at Bervie, and at a small village near Montrose.

In Aberdeenshire it is recorded previous to 1853 for the Den of Rubislaw and on old walls, but always the outcast of a garden. At a later date Ferryhill and elsewhere around Aberdeen are

named. Traill (1923) gives five stations in Aberdeen, and the species occurs in only one, doubtfully two, parishes adjacent to Aberdeen.

In Banffshire the parishes of Fordyce, Banff, Gamrie, Alvah, King Edward, Rothiemay and Aberlour are named. The parish of Fyvie is named by Prof. Traill. There is an early record from Elgin, namely on the wall at Gordon Castle, 1832; rare, and certainly introduced.

On the north-west coast the only report that I have is that the species occurs on an old castle in west Ross-shire, and in various places in the west, Loch Duich, and elsewhere. Further south it occurs on walls near Oban, Argyllshire.

The list of references names the authors from whose works information has been collected, but makes no claim to be exhaustive.

I have also gratefully to acknowledge assistance kindly given by Dr. William G. Smith, Mr. J. R. Matthews and Mr. J. R. Lee, without whose help these notes would have been much less complete.

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UNUSUAL ADVENTIVES ON ALKALI-WASTE IN S. LANCASHIRE

By G. HIND

At a botanical exhibition at Bolton School in July 1954, I was surprised to see specimens of *Orchis fuchsii* Druce and *Gymnadenia conopsea* (L.) R.Br. in a section dealing with local flora, since neither plant was recorded for the district (2).

Their given locality was an alkali-waste heap, disused and overgrown, which, on investigation by myself and others, revealed in addition:—

Erigeron acer L., *Linum catharticum* L., *Orchis purpurella* T. & T. A. Steph., *Orchis incarnata* L., *Orobanche minor* Sm. and *Sisyrinchium angustifolium* Mill.

LOCALITY

The waste-heap is very large, flat-topped, and approximately triangular with steep sides. It is at the confluence of two rivers and its third side is bounded by a canal.

SOIL

The soil is well-drained and has a pH of 7.1 to 7.3 at a depth of 1". Its surface is thinly covered with cinders, below which is a black loam in increasing admixture with waste until, 7" to 9" down, raw waste is reached.

When tipped, the waste would contain sandstone (of local origin) and calcium sulphide (3), but on weathering, the latter undergoes the following change:

1. $\text{CaS} + 2\text{O}_2 = \text{CaSO}_4$ to produce the neutral and almost insoluble sulphate. The following reaction occurs to a lesser extent:

2. $\text{CaS} + \text{H}_2\text{CO}_3 = \text{CaCO}_3 + \text{H}_2\text{S}$ (simplified) and thus the weathered waste contains sandstone, calcium sulphate and a small proportion of calcium carbonate. This last, together with limestone imported as a raw material and often spilled when being unloaded, accounts for the alkalinity of the soil.

SOURCE OF ADVENTIVES

Waste was last tipped in c. 1880 and since then a colony of *G. conopsea* containing several hundred plants, has developed.

It is possible that this colony may have arisen from a single casual introduction, but it is also possible either that a number of tubers were introduced, or that seed was brought in over a period.

The tubers or seed were probably introduced with the limestone, which was brought by canal from either Buxton (Derbyshire) or the Clitheroe district (E. Lancs. and W. Yorks.).

Linum catharticum, which is abundant on the tip, was common and generally distributed in both Derbyshire (6) and the West Riding (4) as also was *Orchis fuchsii*. Both *O. incarnata* and *G. conopsea* were, however, rare and local in Derbyshire in 1889, but in W. Yorks were respectively very common and locally common (4 & 1). Furthermore, *O. purpurella* is recorded as such only for Yorkshire where it is 'common in calcareous marshes' (5).

It is difficult to be sure how seeds of, say, *O. purpurella* reached the quarried limestone, but it is possible that when the waste-heap became disused it was covered with soil (containing tubers and perhaps seeds) brought specially for the purpose from an orchidiferous locality, most likely in Yorks.

Indeed, it is notable that all the orchids mentioned often occur together in such Yorkshire calcareous bogland as that near Malham Tarn, and that *Taraxacum spectabile* agg., *Pulicaria dysenterica* and *Succisa pratensis* occur with them on the waste, indicating a helophytic origin.

It is assumed that *L. catharticum* and *Erigeron acer* were introduced with the limestone. In support of this is the fact that *L. catharticum* abounds on nearby alkali-waste heaps where it is not accompanied by any orchids.

Orobanche minor here grows on *Trifolium pratense* and both were probably introduced together. I am unable, however, to find any record of *O. minor* from the Clitheroe area.

Sisyrinchium angustifolium is likewise of doubtful origin but is most likely an adventive because there are no gardens near by. I can find no old record for Yorkshire or E. Lancs. and it is perhaps not coincidental that this species and *O. minor* occur close together some distance from the main orchid colony, and hardly elsewhere.

One naturally suspects their source to be where both are native, possibly W. Ireland, and I find that between 1760 and 1834 iron pyrites were imported from Wicklow (7) to supply a sulphuric acid plant on the same site.

Wicklow, however, is in E. Ireland and further difficulties arise in explaining how the seeds or rhizomes escaped subsequent burial in alkali-waste.

CONCLUSION

Similar waste-heaps occur near many industrial towns and deserve investigation by both botanists and local historians, ideally in co-operation. The results of this investigation would have been even more inconclusive had not the industrial history of the site been the subject of recent research.

ACKNOWLEDGMENTS

I am indebted to Mr. J. B. L. Worthington for historic details, to the Rev. C. E. Shaw, to Imperial Chemical Industries Ltd., General Division, and to Mr. A. Hazelwood of the Bolton Museum for his continued encouragement and advice.

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SEED DISPERSAL ON FOOTWEAR

H. T. CLIFFORD

(The Durham Colleges, University of Durham)

The presence of seeds in the mud scraped from the feet of birds has often been demonstrated. There are, however, few reports of the seeds or other propagules found in the mud which may accumulate on footwear. As Sir Edward Salisbury was reported to have stated (*Yorkshire Post*, 4th November 1954), such reproductive structures may be present in great numbers, especially on the footwear of those who work in the country. Furthermore, the presence of seeds on footwear may result in their transport to places far from where they were collected.

On the return to England of the Durham University Exploration Society's Eire Expedition in 1954, the members were asked to scrape off the mud from any footwear worn on the expedition but not since their return. The samples of mud received were placed on pots of sterilised soil in an unheated glasshouse. They were kept damp and within a few days seedlings began to germinate. From the 22.1 gms. of dry mud sown, 65 plants were raised among which the following were identified:

Aira praecox, *Anthoxanthum odoratum*, *Bellis perennis*, *Carex* sp., *Festuca* sp., *Juncus bufonius*, *J. effusus*, *Plantago lanceolata*, *P. major*, *Sagina procumbens*, *Vulpia bromoides*.

Similarly, from boots not worn since their wearer's return from Madeira 2.5 gms. of mud were obtained. This yielded 10 seedlings, all of which unfortunately died before being identified; they comprised 4 dicotyledons and 6 grasses.

Many samples of mud from the writer's footwear and that of friends have been tested. Only a few of these failed to produce plants within the three months for which each sample was tested. A list of the plants identified from all the samples tested is given in the accompanying Table.

TABLE I

PLANTS RAISED FROM MUD OFF FOOTWEAR

<i>Agrostis stolonifera</i>	<i>Capsella bursa-pastoris</i>
<i>Aira praecox</i>	<i>Cardamine pratensis</i>
<i>Anthoxanthum odoratum</i>	<i>Carex</i> sp.
<i>Atriplex patula</i>	<i>Cerastium</i> ? <i>semidecandrum</i>
<i>Bellis perennis</i>	<i>Galium hercynicum</i>
<i>Bromus mollis</i>	<i>Chamaenerion angustifolium</i>

<i>Chenopodium album</i>	<i>Poa annua</i>
<i>Cirsium arvense</i>	<i>Polygonum aviculare</i>
<i>Crataegus</i> sp.	<i>Prunella vulgaris</i>
<i>Deschampsia cespitosa</i>	<i>Ranunculus acris</i>
<i>Euphrasia</i> sp.	<i>R. repens</i>
<i>Festuca ovina</i> subsp. <i>tenuifolia</i>	<i>Rubus</i> sp.
<i>Glyceria fluitans</i>	<i>Sagina procumbens</i>
<i>Gnaphalium uliginosum</i>	<i>Senecio jacobaea</i>
<i>Holcus mollis</i>	<i>Spergula arvensis</i>
<i>Juncus bufonius</i>	<i>Stellaria media</i>
<i>J. effusus</i>	<i>Taraxacum officinale</i>
<i>J.?</i> <i>articulatus</i>	<i>Trifolium repens</i>
<i>Lolium perenne</i>	<i>Urtica dioica</i>
<i>Matricaria maritima</i> subsp. <i>inodora</i>	<i>Viola arvensis</i>
<i>Plantago lanceolata</i>	<i>Vulpia bromoides</i>
<i>Plantago major</i>	

From the Table it can be seen that plants with many different types of dispersal mechanism may be carried on footwear, and it would appear that many species are capable of being so dispersed. There would be little use discussing the number of individuals of each species that appeared during the tests as this depends upon several factors, including the amount of mud available for testing, the season of its collection and the type of habitat from which it was derived. Nevertheless, it is perhaps of interest to note that *Poa annua* occurred in more samples than did any other species; the greatest number of seedlings obtained from a single sample was 176.

As the samples were all taken from footwear that had travelled a considerable distance from where the mud was acquired to where it was scraped off, it is evident that large numbers of seeds may be dispersed on the footwear of travellers. This is fairly obvious, but as has been said by Ridley (1930). "Though it is highly probable that most of the seeds of the herbs common on roadsides and ploughed fields owe much of their distribution to their becoming attached in mud to the feet of men and domestic cattle, the amount of actual proof of this is not great".

The data presented above are a contribution to the analysis of this problem. They differ somewhat from those usually presented in that they have been obtained by cultivation. Some previous workers have postulated a pedestrian dispersal for certain plants after studying their distribution and usual habitats, while others such as Praeger, (1915) have identified the seeds present in mud scraped from footwear. The former of these methods is unreliable in that it offers no conclusive proof of pedestrian dispersal, and the latter method does not show the

seeds to be viable. Using the technique described above these difficulties are partially overcome, though unless the experiment is conducted for a long time, dormant seeds will be overlooked.

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SHORT NOTES

IRISH HERBARIA

I am sure that many British botanists will agree with me that Professor D. A. Webb has performed a real service in pointing out the availability of material from the Dublin herbaria (*Proc. B.S.B.I.*, 2, 18, 1956). As Professor Webb has referred to my own investigation of *Limonium*, may I assure him that I was not at all unaware of these collections. For personal reasons I was forced to return from my Irish visit before I could carry out my intention of visiting them and I mistakenly assumed subsequently that the controlling authorities would not have permitted the loan of specimens overseas (to England). My impending departure for a distant part of the world seemed to preclude another visit.

I am relieved to know that the specimens there do not in any way contradict my conclusions and they will be fully considered in a publication of wider scope which is now being prepared.

H. G. BAKER.

THE MENACE OF CELLULOSE TAPE!

Since the war cellulose tape has become very popular for mounting botanical specimens. All too frequently collections arrive at large herbaria liberally plastered with this tape. One collector even went to the extreme of carefully "protecting" each delicate flower with it, never considering that when the tape was removed the flower would be torn apart. As a result not only was his collection spoiled and hours of labour wasted, but the collector himself became thoroughly disheartened.

Many botanists make a practise of using small strips of tape for mounting plants in their private herbaria, and I did so myself for several years because of the ease and efficiency with which it can be applied. But with the lapse of time the adhesive substance loses much of its proper qualities, squeezes out along the sides and becomes coated with dust and grit. Another unfortunate result is that sheets above one another tend to stick together—and this can make looking through a pile of specimens quite a frustrating experience! Also for these reasons it should never be used to repair books. Even when cellulose tape is used temporarily on tougher woody plants much of the tacky adhesive remains on the twig when the tape is removed.

Useful as cellulose tape may be for parcels and exhibition work, my advice is never to use it for anything permanent or semi-permanent, and then on nothing weaker than itself, for its hygroscopic nature means that it will stretch or contract according to atmospheric moisture. In fact, cellulose tape is a snare and deception and quite a menace.

F. N. HEPPER.

AN MS. IN WISBECH MUSEUM

In July 1955 a visit to Wisbech Museum resulted in the discovery there of a manuscript by an unknown hand which contains much useful information on Cambridgeshire plants from the north of the county at the end of the eighteenth century and the beginning of the nineteenth.

On the fly leaf the following explanation occurs:—"This book contains the Catalogue of Plants contained in Mr. Skrimshire's Hortus Siccus—sold some years since to Lord Milton—and also of Plants contained in a Hortus Siccus bought by me and collected by Mr. Skrimshire after the sale of the former".

Skrimshire was a correspondent of Relhan's and is responsible for some entries in the latter gentleman's *Flora Cantabrigiensis*, the first edition of which was published in 1785. Examination of the manuscript has revealed one new county record, *Silene maritima*. This species may well have occurred in the past with other maritime elements of the flora of Cambridgeshire on the banks of the tidal Nene north of Wisbech. Another species, *Limonium bellidifolium*, was recorded by Skrimshire from the same area and the fact was noted by Babington in his Flora of the county. However, this plant has not been seen within the county boundaries since 1860. *Halimione pedunculata* is a further maritime species recorded by Skrimshire from below Wisbech which has since become extinct.

A number of other records in the MS. antedate previous first records for species in the county. The entry for *Oxalis corniculata* may be included amongst these and is also interesting in the light it throws on rural economy at that period. "From Mr. Peckover's Garden 1793. It is now a weed in my garden at Wisbh. 1798. From hence it has been carried with manure into my Peppermint Plantation where it is now a troublesome weed, 1822".

The first record for this weed was made in Britain about 1585. The plant must have persisted at Wisbech for many years for I have a record from Dr. D. P. Young of a specimen in the British Museum from south of Wisbech, collected in 1862.

The collection was not entirely confined to Cambridgeshire. Many entries refer to neighbouring Norfolk and for rare species Skrimshire acquired specimens, mainly from the classic localities.

It would be of interest to know whether any part of Skrimshire's Hortus Siccus is still in existence and further whose was the benevolent hand which transcribed this valuable information about 130 years ago, though this may yet be revealed by internal evidence within the MS. or by researches at Wisbech Museum.

I would like to thank the Curator of Wisbech Museum, Mr. J. N. Hardie, who kindly allowed me to borrow the MS.

PLANT NOTES

3/1. *PULSATILLA VULGARIS* Mill. This plant is thought by many to be extinct in Yorkshire (cf. Lees, F. A., Cheetham, C. A. & Sledge, W. A., *A Supplement to the Yorkshire Florus*, 1941). In a recent letter to *Country Life* (vol. 117, 1441 (1955)) a correspondent writes "year by year these beautiful little flowers appear through uncut grass in our garden here (Tickhill, Doncaster) and in other gardens of this ancient township". It seems possible therefore that although its habitats are now enclosed the plant still persists in south-west Yorks.—D. H. KENT.

127/15. *GERANIUM PURPUREUM* Vill. It was both interesting and pleasing to read Mr. J. E. Lousley's further evidence from his field notes of the appearance and relative positions in 1930 of erect and prostrate plants of this species on the beach at Clymping (West Sussex) (*Proc. B.S.B.I.*, 2, 19, 1956). It was just the paucity of anthocyanin and the broadness of the leaf-segments of the specimens which he distributed which suggested to me that some of the erect plants might have grown in shade. Even plants which have grown prostrate on the pebbles can give an appearance of uprightness when they are disinterred from deep shingle for the seeds normally germinate beneath the shingle on the moist sand and the leading shoot must grow up to the light before branching profusely.

Mr. Lousley's question in the last sentence of his note is readily answered. Subsp. *forsteri* (Wilm.) Baker does keep its characters if carefully cultivated and, as I was at pains to make plain in the introduction to my paper (*Watsonia*, 3, 163, 1955), it is where a taxon has both an ecological significance and genetically determined morphological characters of its own that I have recognised it as a subspecies (taxonomically) and an ecological race (genecologically). The experiments upon which these and other conclusions are based are fully described in an article which is in the press in another journal.

I do not think it is likely that, as Mr. Lousley suggests "a better water and food supply around the roots" would cause a genetically prostrate form to grow erect (and does not do so in this case in the garden). Consequently, as Lt.-Col. A. H. Wolley-Dod first pointed out in 1931 (*Rep. Bot. Soc. & E.C.*, 9, 511), it is most likely that the erect plants at Clymping belong to what is now called subsp. *purpureum* and not to subsp. *forsteri* which is also present. Mr. Lousley's observations give support to Mr. O. Buckle's record of a small population of ascending plants still growing near Clymping, suggesting that subsp. *purpureum* lingers yet in West Sussex.—H. G. BAKER.

176/9. *Vicia lutea* L. and 176/10. *Vicia hybrida* L. In going through British material of *Vicia lutea* in the Cambridge University Herbarium recently it became clear that there had in the past been some confusion between this species and *Vicia hybrida*, this confusion probably arising from the hasty determination of any yellow-flowered *Vicia* as the former species. When compared side by side, however, the two are quite distinct. *V. hybrida* has a hairy standard and truncate or shallowly emarginate leaflets whereas in *V. lutea* the standard is glabrous and the mucronate leaflets vary between obtuse and acute but are never emarginate. As some of this confusion has passed into print it seems worth while making a note of these errors.

Vicia lutea L. V.c. 24, Bucks. Chalfont, F. H. Woods, 1897. Spec. in Hb. Univ. Oxon. (fide E. F. Warburg). As *V. hybrida* in Druce, *Flora of Bucks.* and *Flora of Berks.*

Vicia hybrida L. V.c. 26, W. Suffolk. Brandon, W. J. Cross, 1882. Spec. in Hb. Univ. Cantab. As *V. lutea* in Hind, *Flora of Suffolk.*

Vicia hybrida L. V.c. 30, Beds. Manor Farm, Cardington, J. McLaren, 1884. Spec. in Hb. Univ. Cantab. Originally published in *Bot. Rec. Club Rep.*, 1884, as *V. lutea*; also in Dony, *Flora of Beds.*—F. H. PERRING.

217/3. *CALLITRICHE PALUSTRIS* L. In her recent paper, "A taxonomic spectrum of the Section Eu-Callitriche in the Netherlands", published in *Acta Bot. Neerlandica*, 3 (3), ann. 1954, Dr. H. D. Schotsman gave an appendix of localities of the five Dutch species in which she cited (p. 379) a single British collection of *C. palustris* from Petersham, Surrey, 1877, in the Herbarium Delessert at the Conservatoire Botanique, Geneva. Earlier on in the same paper (pp. 349-350) she discussed the distribution of *C. palustris* outside the Netherlands and marked the Surrey locality on her map with a dot indicating evidence from a dried specimen, but she did not mention the occurrence in Britain in the accompanying text. As we have failed to find any evidence of *C. palustris* as a British species in the national herbaria (British Museum, Kew and Edinburgh) and suspect that the published records are based on misidentifications, we were anxious to see the Petersham specimen. Dr. Charles Baehni, Director of the Conservatoire Botanique, most kindly lent to Kew the only two British gatherings of the genus *Callitriche* in the possession of the Conservatoire. They are: C. B. Clarke 32212B, "Petersham, Surrey, 2 Sept. 1877", written up by Clarke as "*Callitriche verna* Linn."; and C. B. Clarke 47551B, "Ashtead, Surrey, 27 May 1894", written up by him as "*Callitriche verna* Linn. var. *hamulosa* Kuetz". Clarke evidently added the letter B to indicate a duplicate of a given number and the Ashtead gathering is represented, as no. 47551, in the Kew Herbarium but there seems to be no material of the Petersham plant, no. 32212. The Geneva specimens were presented by the collector to the Herbarium Delessert, and were incorporated in the European collection in 1901.

Both gatherings are the terrestrial form of *C. stagnalis* Scop. and were labelled "*C. stagnalis* Scop." by the late Prof. G. Samuelsson in 1925. Mr. J. P. Savidge, of the Hartley Botanical Laboratories, Liverpool University, who has also examined the specimens, agrees that they are *C. stagnalis*. Dr. Baehni writes that Clarke 32212B is the only *Callitriche* at Geneva from Petersham, Surrey, and considers that it corresponds to the material cited by Dr. Schotsman who, he adds, made no annotations in the Geneva herbaria. This Petersham material shows conspicuously keeled fruits of the size and shape of *C. stagnalis*, and we are sure that Dr. Schotsman herself would not refer it to *C. palustris*, were she to re-examine it. We should like to add that the distribution of *C. palustris*, as given by Dr. Schotsman, is not at all against its occurrence here, perhaps at relatively high altitudes in the north of England, Wales or Scotland.—R. D. MEIKLE and N. Y. SANDWICH.

517(2)/1. *SALPICHRUA ORIGANIFOLIA* (Lam.) Baillon. 10, Wight; St. Lawrence, 1927, E. & H. Drabble, Hb. Mus. Brit., det. E. B. Bangerter. This antedates the record given for this locality (*Proc. B.S.B.I.*, 1, 158 (1954) by 25 years, and the first British record by 10 years.—E. B. BANGERTER.

558/14. *MENTHA PULEGIUM* L. In the autumn of 1954 I was weeding a herbaceous border that is usually left to my gardener when, to my great surprise, my nostrils were suddenly assailed by the unmistakable odour of *Mentha pulegium*. A search revealed two patches of the plant in the weedy turf of the corner of the lawn on which I was kneeling. Owing to mowing the plants were small and starved, and the leaves were small. They had no opportunity to flower and visually one might almost have passed them by as *Veronica serpyllifolia*, which was also present.

In the two years that have passed since the discovery, I have continued the past type of garden management, and the quantity and quality of the plant appear to have remained unchanged. It has certainly not been introduced during the eight years of my occupation of the house, and its deliberate introduction beforehand seems improbable. The one suspicious circumstance is the presence in the turf of *Colula coronopifolia*. Its other associates are: *Bellis perennis*, *Cerastium vulgatum*, *Hieracium pilosella*, *Holcus lanatus*, *Luzula campestris*, *Plantago major*, *Prunella vulgaris*, *Sagina procumbens*, *Taraxacum* sp., *Thymus* sp., *Trifolium dubium* and *T. micranthum*. I confess with shame the absence of any legitimate grass.

The origin of the plant in this site can hardly, of course, now be known, but Mr. R. A. Graham, to whom I am grateful for his help, suggests two possibilities: accidental introduction with turf for the lawn, or being a relic of the terrain over which the lawn was laid or sown. The house was built shortly before the First World War. Local residents recall that in earlier times the land had been pasture for

many years, including some boggy patches, but shortly before the building began some parts were in cultivation as allotments. It is not known whether the exact area of my garden coincided either with former allotment or with former bog.

The garden is in Reading, Berkshire, v.c. 22 (4). It is on plateau gravel at a height of 267 feet a.s.l. and in normal weather tends to be very dry. Druce's *Flora of Berkshire* (1897) gives three old records for *Mentha pulegium* on commons in the district, one three miles away and two about six miles away; but it is extremely unlikely that the plant survives at any of them, nor do I know of any recent record elsewhere in the county.—J. OUNSTED.

615/20(2). **Polygonum campanulatum** Hook. F., 1886, *Fl. Brit. India*, 5, 51. 3, S. Devon.; bank of stream, Bovey Tracey, 1954, E. A. DUFFY, det. E. B. BANGERTER. 17, Surrey; swamp near Warren Farm, Wimbledon Common, 1952, C. AVERY: 1955, R. A. BONIFACE. 36, Hereford.; wet lane outside a cottage, Colwall, 1949, F. M. DAY (Hb. Kew.). 105, W. Ross; shore of Lochcarron, 1953, Miss D. HILLCOAT (Hb. Mus. Brit.). Herbaceous perennial 30-60 cm. high. Stem creeping or stoloniferous, branching above. Plant pubescent or tomentose. Leaves variable in shape and size, ovate to ovate-elliptic or lanceolate from a blunt or pointed base (3.5-12 cm. by 1.5-6 cm.), dark green with or without a blackish blotch along midrib, whitish to buff and felted below. Flowers pale pink in usually much contracted panicles; cymes 3-5-flowered; perianth campanulate, 4.5 mm. long and 5 mm. across; nut ellipsoid, triquetrous, 2 mm. long, brown in colour. Illustrated in Curtis's *Botanical Magazine*, 151, t. 9098 (1926). Native of Himalaya.—D. H. KENT.

PLANT RECORDS

Compiled by E. C. WALLACE

Records are for the year 1955 when no date is given.

The following signs are used:—

- § before the *B.P.L.* number: to indicate that the paragraph contains information necessitating a correction to an annotated copy of the *Comital Flora*.
- † before the *B.P.L.* number: to indicate that the plant is not a native species in the British Isles.
- † before the record: to indicate a species which, though native in some parts of the British Isles, is not so in the locality recorded.
- * before the record: to indicate a new vice-county record, not published previously to this issue of the *Proceedings*.
- ‡ before the record: to indicate a record additional to an annotated copy of *Comital Flora*, but published elsewhere prior to the issue of the *Proceedings* in which it appears.
- [] enclosing a record: to indicate doubt as to the validity of the record, either of identification or locality.

It will be useful if, in future, National Grid Co-ordinates, made as accurate as is thought advisable, are added to all records.

6/5g. *RANUNCULUS BULBOSUS* var. *VALDEPUBENS* (Jord.) Corb. 71. Man; common along sandy brows from Kirkmichael northwards. D. E. ALLEN.

9/1. *HELLEBORUS VIRIDIS* L. 17, Surrey; old earthwork, Lodge Farm, Bletchingley. B. A. KNELLER, comm. D. P. YOUNG.

§9/2. *HELLEBORUS FOETIDUS* L. *†H.13. Carlow; Slyguff, probable escape, but well established. Lady NESTA FITZGERALD.

†21/13. *PAPAVER LATERITICUM* C. Koch. 13, W. Sussex; railway siding, Littlehampton station, 1951: 14, E. Sussex; near St. Elizabeth's Church, Eastbourne, 1951; rubbish-tips, Princes Park, Crumbles, Eastbourne, 1950; bombed site, Michelgrove, Eastbourne, 1950-1954; weed at Litlington Tea-gardens, 1954: 16, W. Kent; weed at Boyne Park, Tunbridge Wells: 17, Surrey; weed near Rose Hill House, Dorking: 33, E. Glos.; plentiful in an abandoned garden, main street, Chipping Campden, K. E. BULL.

§32/1. *FUMARIA CAPREOLATA* L. *101, Kintyre; Kilchonsland shore. E. Kintyre. M. H. CUNNINGHAM, det. N. Y. SANDWICH.

32/9. *FUMARIA BASTARDI* Bor. 101, Kintyre; seashore by Pans, S. Kintyre, M. H. CUNNINGHAM, det. N. Y. SANDWITH.

35/1(2)×1. *RORIPPA* × *STERILIS* Airy Shaw. 101, Kintyre; Baraskomil shore marsh, near Campbeltown, M. H. CUNNINGHAM, det. H. K. AIRY SHAW.

36/5. *BARBAREA INTERMEDIA* Bor. †85, Fife; Corporation rubbish-tip, St. Andrews, several plants, 1954, A. W. ROBSON.

†40/2. *LUNARIA ANNUA* L. 14, E. Sussex; plentiful on waste ground, Sheepcote Valley, Brighton, 1954; rubbish-tips, Heathfield, 1952-1954, K. E. BULL.

54/4d. *BRASSICA RAPA* var. *BRIGGSII* H. C. Wats. 71, Man; locally frequent about Kirkmichael, 1955, D. E. ALLEN.

†54/20 *ERUCASTRUM GALLICUM* (Willd.) O. E. Schulz. 14, E. Sussex; waste ground, Shoreham-on-Sea, 1954, K. E. BULL, det. at KEW.

§61/7. *LEPIDIUM SMITHII* Hook. *101, Kintyre; banks of Breckerie Water, S. Kintyre, plentiful, M. H. CUNNINGHAM, det. E. C. WALLACE.

80/1c. *RAPHANUS RAPHANISTRUM* var. *AUREUS* Wilmott. 71, Man; near Kirkmichael; among rye-grass near Sandhouse, German, D. E. ALLEN.

†96/16. *SILENE DICHOTOMA* Ehrh. 17, Surrey; in several cornfields, Chipstead, 1954, W.F.S. FIELD MEETING.

101/4. *STELLARIA NEGLECTA* Weihe. 101, Kintyre; burnside near Bellochroy, W. Kintyre, M. H. CUNNINGHAM, det. E. C. WALLACE.

103/2. *SAGINA SUBULATA* (Sw.) C. Presl. 8, S. Wilts.; re-found in its only known Wilts. locality at Hamptworth whence it was last recorded by E. J. Tatum in 1890, S. Sandell (1955, *Wilts. Arch. & N.H. Mag.*, 56, 36).

†108/1. *CLAYTONIA ALSINOIDES* Sims. 71, Man; by stream, White House, Kirkmichael, M. QUAYLE, comm. D. E. ALLEN.

109/2. *MONTIA FONTANA* subsp. *FONTANA*. 48, Mer.; wet place on bank by path through Talybont Wood, P. M. BENOIT, det. S. M. WALTERS.

125/2. *LINUM ANGLICUM* Mill. 53, S. Lincs.; Ermine Street, near Grantham, R. M. PAYNE.

127/4. *GERANIUM PRATENSE* L. †71, Man; grassy laneside near Ballacooiley, Ballough, presumably only naturalised, D. E. ALLEN.

127/13. *GERANIUM LUCIDUM* L. 14, E. Sussex; old mossy wall, Willingdon village; 16, W. Kent; wall, Yalding Churchyard, K. E. BULL. 96, Easternness; Strone Point, Loch Ness, A. A. SLACK.

§†133/2. *IMPATIENS CAPENSIS* Meerb. ‡63, S.W. Yorks.; Rockly end of Worsborough Reservoir, L. Magee (1956, *The Nat.*, 1956, 29).

§†133/4. *IMPATIENS GLANDULIFERA* Royle. ‡25, E. Suffolk; Oulton Broad, Miss N. Harding (1950, *Ann. Rep. Lowestoft Field Club*, 5, 154).

166/3. *ASTRAGALUS DANICUS* Retz. 53, S. Lincs.; Ermine Street, near Grantham, R. M. PAYNE.

†176/5. *VICIA VILLOSA* Roth. 15, E. Kent; waste ground by Guildford Hotel, Sandwich Bay, 1951, K. E. BULL, det. at KEW.

†176/26. *VICIA PANNONICA* Crantz. 14, E. Sussex; among bushes, chalky waste ground, Eastbourne, 1951, K. E. BULL, det. at KEW.

†176/37. *VICIA ERVILIA* (L.) Willd. 17, Surrey; (V) Leigh, in a vetch-oat crop, D. P. YOUNG.

178/7. *LATHYRUS HIRSUTUS* L. †16, W. Kent; rough field near Bromley, J. CUSDEN, conf. and comm. D. P. YOUNG.

§183/4. *PRUNUS CERASUS* L. *101, Kintyre; hillside, Balbuie meadowland, S. Kintyre, M. H. CUNNINGHAM, det. R. MELVILLE.

187/2×1. *GEUM* × *INTERMEDIUM* Ehrh. 53, S. Lincs.; Little Ponton, in wood, R. M. PAYNE.

†189/13. *POTENTILLA RECTA* L. 14, E. Sussex; grassy bank, Mayfield village, 1950-1954, K. E. BULL, det. at KEW.

190(2)/1. *APHANES ARVENSIS* L. 57, Derby.; exposed carboniferous limestone rocks, Dovedale, D. E. ALLEN.

§194/2. *ROSA ARVENSIS* Huds. *101, Kintyre; roadside, North Bay, Tarbert, Loch Fyne, M. H. CUNNINGHAM, det. R. MELVILLE.

§194/10. *ROSA DUMETORUM* Thuill. *101, Kintyre; Kilkerran roadside, Campbeltown Loch, M. H. CUNNINGHAM, det. R. MELVILLE.

§194/12. *ROSA AFZELIANA* Fr. ‡44, Carm.; single bush among siliceous rocks by roadside, Rhandirmwyn, Mrs. I. M. Vaughan (1956, *Nature in Wales*, 2, 230). *101, Kintyre; sea shore rocks at Balloch-na-giachan and by roadside between Tayinloan and Rhunahaorine, W. Kintyre, M. H. CUNNINGHAM, det. R. MELVILLE.

§194/15. *ROSA RUBIGINOSA* L. ‡101, Kintyre; roadside, North Bay, Tarbert, Loch Fyne, M. H. CUNNINGHAM, det. R. MELVILLE. But see *Top. Bot.*

§194/20. *ROSA SHERARDI* Davies. ‡44, Carm.; in half shade at edge of *Quercus petraea* woodland, Rhandirmwyn, Mrs. I. M. Vaughan (*Nature in Wales*, 2, 230). 101, Kintyre; banks of Coniglen Water near Balbuie, S. Kintyre, M. H. CUNNINGHAM, det. R. MELVILLE as f. *resinosoides* (Crép.) W.-Dod.

§†197/9. *COTONEASTER HORIZONTALIS* Decne. *51, Flint; naturalised on a limestone cliff, Dyserth, 1950, E. P. A. JONES, comm. D. P. YOUNG.

§217/2. *CALLITRICHE OBTUSANGULA* Le Gall ex Hegelm. *71, Man; ditch by Pulrose power station, 1954, J. T. WILLIAMS, det. and comm. D. E. ALLEN.

220. *EPILOBIUM*. All records determined or confirmed by G. M. ASH.

220/3×10. *EPILOBIUM HIRSUTUM* × *MONTANUM*. 24, Bucks.; rubbish-tip, Burnham Beeches, A. F. WOOD.

220/5×6. *EPILOBIUM ADNATUM* × *LAMYI*. 24, Bucks.; rubbish-tip, Burnham Beeches, 1954, A. F. WOOD.

§220/6. *EPILOBIUM LAMYI* F. W. Schultz. *38, Warwick; Southam Holt, margin of salt spring marsh, 1954, R. C. READETT.

220/6×4. *EPILOBIUM LAMYI* × *PARVIFLORUM*. 24, Bucks.; rubbish-tip, Burnham Beeches, A. F. WOOD.

220/7×14. *EPILOBIUM OBSCURUM* × *PALUSTRE*. 48, Mer.; ditch near Arthog, P. M. BENOIT.

§+220/7(2). *EPILOBIUM ADENOCAULON* Hausskn. ‡63, S.W. Yorks.; by the stream, Goit Stock, near Bingley, G. A. Shaw (1956, *The Nat.*, 1956, 29).

220/7(2)×7. *EPILOBIUM ADENOCAULON* × *OBSCURUM*. 48, Mer.; rubbish-tip, Dolgelly, with the parents, P. M. BENOIT.

220/7(2)×10. *EPILOBIUM ADENOCAULON* × *MONTANUM*. 48, Mer.; rubbish-tip, Dolgelly, with the parents, P. M. BENOIT.

220/10×7. *EPILOBIUM MONTANUM* × *OBSCURUM*. 48, Mer.; roadside, Dolgelly, P. M. BENOIT.

†224/2. *FUCHSIA GRACILIS* Lindl. 101, Kintyre; naturalised in woodland by Glenramskill, S. Kintyre, and in glen by Muasdale, W. Kintyre, M. H. CUNNINGHAM, det. at ROYAL BOTANIC GARDEN, EDINBURGH.

225/3. *CIRCAEA ALPINA* L. 48, Mer.; cliffs in Llaethnant, Pennant Dyfi, near Llanymawddwy, W. M. CONDRY and M. RICHARDS, conf. A. E. WADE.

†245/6. *BUPLEURUM LANCIFOLIUM* Hornem. 17, Surrey; outside corn chandlers, Chipstead railway station, 1954, B. M. C. MORGAN, det. A. MELDERIS.

†261/3. *ANTHRISCUS CEREFOLIUM* (L.) Hoffm. 22, Berks.; sandy roadside, Whiteknights Park, Reading, 1945, B. VERDCOURT.

†285/3. *CORNUS STOLONIFERA* Michx. 17, Surrey; several bushes, roadside between Witley and Chiddingfold, 1953; slaggy ground, Wareham Brickworks, one plant, 1953, K. E. BULL.

288/1. *VIBURNUM OPULUS* L. 88, Mid Perth; Dunning Glen, near Pitmeadow, one bush, A. W. ROBSON.

296/5. *GALIUM STERNERI* subsp. *STERNERI*. 96, Easternness; slopes of Mealfourvie, Loch Ness, at about 1,500 ft., A. A. SLACK, det. K. M. GOODWAY.

296/10. *GALIUM TRICORNE* Stokes. 17, Surrey; (VI) Leigh, in a vetch-oat crop, probably introduced, D. P. YOUNG.

†320/3. *ERIGERON CANADENSIS* L. 37, Wores.; Droitwich Park, D. E. ALLEN.

†320/11. *ERIGERON GLAUCUS* Ker-Gawl. 4, N. Devon; a patch on cliff at Croyde Bay, among *Carpobrotus*, 1954, K. E. BULL. det. at KEW.

326/1. *ANTENNARIA DIOICA* (L.) Gaertn. 49, Caern.; Bardsey Island, 1954, H. PRICE, det. and comm. D. E. ALLEN.

328/4. *GNAPHALIUM NORVEGICUM* Gunn. 97, Westernness; plentiful in a deep rocky gully on the cliffs of Coire Ardair on Creag Meagaidh above Loch Laggan, C. D. PIGOTT.

353/1b. *BIDENS CERNUA* f. *RADIATA* (Roth) Larsson. 4, N. Devon; Great Torrington, K. T. COTTRILL, det. and comm. D. E. ALLEN.

‡354/1. *GALINSOGA PARVIFLORA* Cav. ‡25, E. Suffolk; Oulton, Miss N. Harding (1950, *Ann. Rep. Lowestoft Field Club*, 5, 154).

+354/2. *GALINSOGA CILIATA* (Raf.) Blake. 14, E. Sussex; Park Wood, Hellingly, apparently introduced by timber fellers, D. P. YOUNG.

§+378/21. *ARTEMISIA VERLOTORUM* Lamotte. 16, W. Kent; wasteground near Tonbridge railway station, K. E. BULL. *24, Bucks.; rubbish-tip, Burnham Beeches, A. F. WOOD, conf. R. A. GRAHAM.

§393/2. *ARCTIUM VULGARE* (Hill) A. H. EVANS. *101, Kintyre; Keil Woods, S. Kintyre, M. H. CUNNINGHAM, det. W. A. SLEDGE.

396/1b×2. *CIRSIUM ERIOPHORUM* subsp. *BRITANNICUM* × *VULGARE*. 61, S.E. Yorks.; field between North Grimston and Wharram Percy, W. A. Sledge—a former record by J. F. Pickard is a misnomer (1956, *The Nat.*, 1956, 29).

401/1. *SAUSSUREA ALPINA* (L.) DC. 104, N. Ebudes; slopes of Sgur Thuilm, Skye, in abundance, R. A. BONIFACE.

419. *HIERACIUM*. All determined or confirmed by P. D. SELL and C. WEST.

419/73. *HIERACIUM DICELLA* Sell & West. *49, Caern.; rocks above Bodafon, near Llandudno, C. E. A. ANDREWS.

419/99 bis. *HIERACIUM CINDERELLA* (Ley) Ley. *36, Hereford; Grittles End, Cradley, 1952: 37, Wores.; Stanford-on-Teme, 1954, C. E. A. ANDREWS.

419/99 bis. *HIERACIUM CINDERELLA* (A. Ley) A. Ley. *36, Hereford; Ribblehead, 1954, C. E. A. ANDREWS.

419/169. *HIERACIUM STRUMOSUM* (W. R. Linton) A. Ley. 40, Salop; main road, Wyken, near Bridgnorth, 1952, C. E. A. ANDREWS.

419/226. *HIERACIUM RETICULATUM* Lindeb. 96b, Nairn; island on river Nairn, Holm Rose, M. McCALLUM WEBSTER.

419/246. *HIERACIUM SALTICOLA* (Sudre) Sell & West. *37, Wores.; Hall Green; Kings Heath, 1952. *38, Warwick; Sutton Park; Edgbaston Park, 1953, C. E. A. ANDREWS: University Grounds, Edgbaston, J. G. HAWKES, comm. C. E. A. ANDREWS. *39, Staffs.; near Brownhills, on main road, 1952, C. E. A. ANDREWS.

419/255. *HIERACIUM COLLINIFORME* (Naegeli & Peter) Roffey. *96b, Nairn; kitchen garden, Holme Rose, M. McCALLUM WEBSTER.

§422/1. *LEONTODON HISPIDUS* L. *71, Man; sandpit near Peel Road railway station, D. E. ALLEN.

423/34. *TARAXACUM SPECTABILE* Dahlst. agg. 37, Wores.; marshes near "The Maypole", South Birmingham: 38, Warwick; Sutton Park, in plenty: 39, Staffs.; Yoxhall Bridge; Hamstall Ridware: 71, Man; frequent in bogs in the hills, D. E. ALLEN.

425/4. *MYCELIS MURALIS* (L.) Reichb. 71, Man; Glentrammon, Lezayre, G. E. QUAYLE: Ballaterson, Ballough, M. QUAYLE: Rhencallin, Michael, R. DAWSON, all comm. D. E. ALLEN.

†428/1. *TRAGOPOGON PORRIFOLIUS* L. 71, Man; Andreas, M. QUAYLE; Kirkmichael, one plant, D. E. ALLEN.

439/1. *VACCINIUM OXYCOCCOS* L. 12, N. Hants.; bog in Woolmer Forest, near Liphook, R. A. BONIFACE.

453/4. *ORTHLIA SECUNDA* (L.) House. 96, Easternness; ledges in a ravine in the birch woods beside the Allt Calder, near Coignafearn, Strath Dearn, Monadhliath, M. E. and C. D. PIGOTT.

†474/2. *BUDDLEJA DAVIDI* Franch. 48, Mer.; waste ground by Dolgelly Road, 1½ miles from Barmouth, 1954, P. M. BENOIT.

478/7. *CENTAURIUM CAPITATUM* (Willd.) Borbás. 3, S. Devon: mixed with dwarf forms of *Centaurium minus* in short turf on the cliff tops at Cathole Cliff near Sewer and above Elenden Cove near Prawle Point, 1951, C. D. PIGOTT.

497/2. *SYMPHYTUM TUBEROSUM* L. 101, Kintyre: Ronachan shore verge and roadside, Machrihanish, W. Kintyre, M. H. CUNNINGHAM, det. A. E. WADE.

†497/3. *SYMPHYTUM ORIENTALE* L. 16, W. Kent; abundant in a weedy shrubbery, Boyne Park, Tunbridge Wells, K. E. BULL.

506/9. *MYOSOTIS HISPIDA* Schlecht. 101, Kintyre; roadside, Keil, S. Kintyre, and elsewhere, M. H. CUNNINGHAM, det. A. E. WADE.

†517(2)/1. *SALPICHRUA ORIGANIFOLIA* (Lam.) Baillon. 1, W. Cornwall: waste ground, St. Michael's Mount, a large patch, K. E. BULL, det. at KEW.

†532/21(2). *CHAENORHINUM ORIGANIFOLIUM* (L.) Fourr. 3, S. Devon: waste ground near Meadfoot Beach, Torquay, 1954, K. E. BULL, det. at KEW.

535/2. *SCROPHULARIA AQUATICA* L. 71, Man; bank of river Neb near The Congery, Peel, D. E. ALLEN.

‡537/2. *MIMULUS MOSCHATUS* Dougl. ex Lindl. *48, Mer.; completely naturalised in a ditch near Borthwen Point, Llwyngwriil, 1951, P. M. BENOIT, conf. A. E. WADE.

- 543/10. *VERONICA ALPINA* L. 97, Westernness; wet ledges on the cliffs of Coire Ardair on Creag Meagaidh above Loch Laggan, C. D. PIGOTT.
- 545/3. *EUPHRASIA BREVIPILO* Burnat & Greml. 101, Kintyre; widespread on both coasts and inland—Ballochnagiachan shore, Muasdale Glen, by Penngown, etc., M. H. CUNNINGHAM, det. E. F. WARBURG.
- 545/10. *EUPHRASIA OCCIDENTALIS* Wettst. 49, Caern.; several places on Bardsey Island, H. PRICE and Mrs. A. E. TILL, det. and comm. D. E. ALLEN. 101, Kintyre; widespread on both coasts—Baraskomil shore, Ranachan hill, Clochkeil links, etc., M. H. CUNNINGHAM, det. E. F. WARBURG.
- 545/15. *EUPHRASIA MICRANTHA* Reichb. 101, Kintyre; rough pasture by Carskies burn, S. Kintyre, M. H. CUNNINGHAM, det. E. F. WARBURG.
- §545/18. *EUPHRASIA CONFUSA* Pugsl. *101, Kintyre; Mull Gap. Carskies Machair and pasture above Gartvaigh, S. Kintyre, M. H. CUNNINGHAM, det. E. F. WARBURG.
- §558/3×1f. *MENTHA* × *NILIACA* var. *WEBBERI* Fraser. *112, Zetland; roadside, Sandwick, W. SCOTT, det. R. A. GRAHAM.
- 559/1. *LYCOPUS EUROPAEUS* L. 85, Fife; Loch Lindores, A. W. ROBSON.
- §562/1. *ACINOS ARVENSIS* (Lam.) Dandy. *H.13, Carlow; Slyguff. Lady NESTA FITZGERALD.
- §572/1. *SCUTELLARIA GALERICULATA* L. †71, Man; weed in a garden at Onchan for over ten years—the only Manx station, W. S. COWIN. This is an unusually densely glandular form corresponding with the description of var. *hirsuta* Saut., Dalla-Torre & Sav., and must be assumed to have been introduced. Bracket record in *C.F.*, D. E. ALLEN.
- §573/2. *PRUNELLA LACINIATA* (L.) L. ‡25, E. Suffolk; Sotterley, R. Fisk (1950, *Ann. Rep. Lowestoft Field Club*, 5, 154).
- 576/1. *MARRUBIUM VULGARE* L. †16, W. Kent; waste ground by Christchurch, Southborough, 1950, K. E. BULL.
- 581/4. *LAMIUM HYBRIDUM* Vill. 101, Kintyre; grassy verge of Glenbarr shore, W. Kintyre, M. H. CUNNINGHAM, det. E. C. WALLACÈ.
- †588/1. *PLANTAGO INDICA* L. 101, Kintyre; on seashore drift line. Atlantic coast, S. Kintyre, by Pans, M. H. CUNNINGHAM, det. A. MELDERIS.

590/1. *ILLECEBRUM VERTICILLATUM* L. 22, Berks.; near Bracknell, on bed of dried-up pond, 1952, B. M. C. MORGAN and E. M. C. ISHERWOOD.

§604/4. *BETA MARITIMA* L. *101, Kintyre; seashore, Brunerican, S. Kintyre, M. H. CUNNINGHAM, det. at KEW.

611/1. *SALICORNIA PERENNIS* Mill. 48, Mer.; mudflats near Fairbourne, E. V. WATSON.

615/1. *POLYGONUM DUMETORUM* L. 13, W. Sussex; plentiful in a hedge at Trotton, R. A. BONIFACE.

§618/16(2). *RUMEX TENUIFOLIUS* (Wallr.) Löve. 25, E. Suffolk; Great Martin's Hill Wood, near East Bergholt, 1954: 27, E. Norfolk; Horning, 1952: 37, Worcs.; Great Malvern; Hartlebury Common, in great abundance: 38, Warwick; Sutton Park; Coleshill Bog, D. E. ALLEN. ‡64, Mid-W. York.; Dallowgill, C. M. Rob (1956, *The Nat.*, 1956, 29).

621/1. *ASARUM EUROPAEUM* L. 24, Bucks.; in view of threats by building to the well known Halton station for this plant (cf. Druce, *Flora of Buckinghamshire*, 292 (1926)) specimens have been transplanted in two new sites across the road by the N.E. edge of Weston Turville Reservoir, Lady BARLOW.

628/5. *EUPHORBIA PLATYPHYLLOS* L. 17, Surrey; (V) arable field north of Outwood, B. A. KNELLER, conf. and comm. D. P. YOUNG.

§628/8. *EUPHORBIA AMYGDALOIDES* L. *+H.12, Wexford; Bunclochy, possibly introduced with trees or shrubs, Miss E. M. BOOTH.

632/2. *MERCURIALIS ANNUA* L. 71, Man; garden weed, Ballough, W. H. HARDAKER, comm. D. E. ALLEN.

642/3. *BETULA NANA* L. 96, Easternness; bog on the undulating ground near Loch Spey at the source of the Spey, head of Glen Roy, C. D. PIGOTT.

650/5. *SALIX PURPUREA* L. 71, Man; The Congery, near Peel, looking native in alder-willow carr, D. E. ALLEN.

650/8×6. *SALIX CAPREA* × *VIMINALIS*. 101, Kintyre; burnside by Knocknaha, S. Kintyre, M. H. CUNNINGHAM, det. R. D. MEIKLE.

652/2. *EMPETRUM HERMAPHRODITUM* (Lange) Hagerup. 96, Easternness; slopes of Mealfourvie, Loch Ness, at about 1,500 ft., A. A. SLACK, conf. B. W. RIBBONS.

654/1. *HYDROCHARIS MORSUS-RANAE* L. 17, Surrey; (IX) pond at Bletchingly, near gravel pit; not seen before 1955 and very uncommon in this part of the county, B. A. KNELLER, comm. D. P. YOUNG.

§668/5. *EPIPACTUS ATRORUBENS* (Hoffm.) Schult. *66, Durham, on magnesian limestone, Cassop, 1911, G. W. T. H. FLEMING, det. and comm. D. P. YOUNG.

§669/2. *ORCHIS MILITARIS* L. ‡26, W. Suffolk; see *Proceedings B.S.B.I.*, 2, 4.

§669/9. *ORCHIS PURPURELLA* T. & T. A. Steph. *11, S. Hants.; a large colony in marshland E. of Southampton, with *O. praetermissa*, *O. fuchsii*, etc., A. ROSEWEIR, det. and comm. V. S. SUMMERHAYES. 85, Fife; Tentsmuir, Nature Conservancy Area, A. M. STIRLING & A. A. SLACK. 96, Easternness; Glen Convinth; Laggan Bridge, roadside, A. A. SLACK. 97, Westernness; wet moor S. of river Spean, 1954, A. M. STIRLING & A. A. SLACK. 98, Argyll; flushes on Meallmor, Glencoe, A. A. SLACK. 104, N. Ebudes; shores of Loch Cill Chriosd, Skye, 1954, A. M. STIRLING & A. A. SLACK. 108, W Sutherland; Sangomore Bay, Durness, A. A. SLACK

§669/9(3). *ORCHIS TRAUNSTEINERI* Sauter. *52, Anglesey; Cors Bodeilio, in swamp with *O. ericetorum*, *O. incarnata*, *Gymnadenia conopsea*, *Ophrys muscifera* and *Schoenus nigricans*, R. H. ROBERTS, det. and comm. V. S. SUMMERHAYES.

674(2)/1. *LEUCORCHIS ALBIDA* (L.) E. Mey. ex Schur. 104, N. Ebudes; rocky slope of Sgur Thuilm, Skye, R. A. BONIFACE.

§†683/1. *CROCOSMIA* × *CROCOSMIFLORA* (Lemoine) N.E.Br. *48, Mer.; thicket by Mynach Road, Barmouth, 1954, P. M. BENOIT.

§686/2. *LEUCOJUM AESTIVUM* L. ‡8, S. Wilts.; riverside near Ford, 1953, Miss D. Stevens (1955, *Wilts. Arch. & N.H. Mag.*, 56, 38).

718/9×10. *JUNCUS ACUTIFLORUS* × *ARTICULATUS*. 45, Pemb.; wet ground at Mynachlogddu, with the parents: 47, Montg.; marshy ground near Dovey Junction railway station, P. M. BENOIT.

718/12bis. *JUNCUS KOCHII* F. W. Schultz. 45, Pemb.; Skomer Island, T. A. W. DAVIS; Prescelly Mountain, P. M. BENOIT. 47, Montg.; roadside ditch between Forge and Dylife, near Machynlleth. W. M. CONDRIY.

718/13. *JUNCUS SQUARROSUS* L. 38, Warwick; two tufts in centre of Ryton Wood—very rare in the eastern half of the county, BIRMINGHAM NAT. HIST. & PHIL. SOC. EXCURSION, comm. D. E. ALLEN.

718/20. *JUNCUS CASTANEUS* Sm. 97, Westernness; wet rock ledges on the cliffs of Coire Ardair on Creag Meagaidh above Loch Laggan, C. D. PIGOTT.

†725/1. *DRACUNCULUS VULGARIS* Schott. 14, E. Sussex; on chalky rubble, bomb-damaged site, The Avenue, Eastbourne, 1951-1953, K. E. BULL, det. at KEW.

§727/1. *LEMNA MINOR* L. *†112, Zetland; Clickhimmin Loch, near Lerwick, in small quantity and doubtfully native, W. SCOTT.

§738/2. *RUPPIA MARITIMA* L. *101, Kintyre; seashore rocks at Clachan, W. Kintyre, M. H. CUNNINGHAM, det. G. TAYLOR.

§†742/1. *APONOGETON DISTACHYOS* L. f. †8, S. Wilts.; river Avon, S. of Salisbury, H. J. Patrick (1955, *Wilts. Arch. & N.H. Mag.*, 56, 38).

744/1. *CYPERUS LONGUS* L. †14, E. Sussex; lake at side of Herstmonceux Castle, 1952, K. E. BULL.

746/11. *SCIRPUS SETACEUS* L. 14, E. Sussex; cleared ground. Runtin-Tun Wood, Heathfield, K. E. BULL.

746/15. *BLYSMUS RUFUS* (Huds.) Link. 104, N. Eubudes; edge of Loch Portree, Skye, R. A. BONIFACE.

§753/2. *CAREX RIPARIA* Curt. *48, Mer.; marsh between Towyn and Aberdovey, P. M. BENOIT, conf. A. E. WADE.

§753/13. *CAREX LAEVIGATA* Sm. 71, Man; wood by sea, Port Corna. D. E. ALLEN and A. D. WALKER. *108, W. Sutherland; bushes near sea, Loch Laxford, A. A. SLACK, conf. E. NELMES.

§753/19. *CAREX HOSTIANA* DC. *14, E. Sussex; marshy ground, Ditchling Common, R. A. BONIFACE and D. H. KENT.

§753/22. *CAREX SEROTINA* Mérat. *46, Cards.; dune slacks, Ynysläs, P. M. BENOIT, conf. A. E. WADE. 48, Mer.; Morfa Harlech, 1953; Moehras, near Llanbedr; Morfa Dyffryn, 1952; Aberdovey golf links, P. M. BENOIT. 96, Easternness; Loch na ba Ruaide, Glen Convinth, at 800 ft.; 99, Dunbarton; shores of Loch Lomond, 1953, A. A. SLACK, conf. E. NELMES.

753/23c. *CAREX EXTENSA* var. *PUMILA* Anderss. 71, Man; rock-clefts under Peel Castle, D. E. ALLEN.

§753/28. *CAREX CARYOPHYLLEA* Latouff. 71, Man; Peel golf links; brows near Brooghjaing, Ballaugh; cliff at mouth of Dalby Glen; remove brackets in *C.F.*, D. E. ALLEN.

§753/38. *CAREX LIMOSA* L. *62, N.E. York; with *Carex rostrata* and *Menyanthes* in soakways in the valley bog near Fen Bog Houses on Goathland Moor, C. D. PIGOTT.

§753/60. *CAREX CONTIGUA* Hoppe. 71, Man; the Eairy Reservoir record (1954, *Proc. B.S.B.I.*, 1, 16) has proved on re-examination to be an error for an abnormally robust form of *C. echinata* Murr. Delete from *C.F.*, D. E. ALLEN.

753/61(2). *CAREX POLYPHYLLA* Kar. & Kir. 17, Surrey; (VIII) Croham Hurst, Croydon, D. P. YOUNG, det. E. NELMES.

753/63×57. *CAREX* × *BOENNINGHAUSIANA* Weihe. 16, W. Kent; one large tuft, with parent species, by lake, Bedgebury Park, 1954, J. P. M. BRENNAN.

§758/3. *SPARTINA TOWNSENDII* H. & J. Groves. *†47, Montg.; salt-marshes by Dovey Junction railway station, P. M. BENOIT.

775/1. *MILIUM EFFUSUM* L. 87, W. Perth; rocks, Glen of Case, near Castle Campbell, Dollar, A. W. ROBSON.

§780/4. *AGROSTIS SETACEA* Curt. *13, W. Sussex; sandy track on Iping Common: first recorded by Borrer for Heathfield (v.c. 14) and by Roper in 1881 but not since, and thought to be long extinct in Sussex (*Flora of Sussex*), R. A. BONIFACE.

797/1. *CYNODON DACTYLON* (L.) Pers. †17, Surrey; edge of Reigate Heath, a patch about 20 ft. long and 1½ ft. wide, B. M. C. MORGAN.

814/1. *CATABROSA AQUATICA* (L.) Beauv. 4, N. Devon; plentiful in shallow ditches, Westward Ho, R. M. PAYNE.

814/1b. *CATABROSA AQUATICA* var. *LITTORALIS* A. & D. Löve. 101, Kintyre; seashore, Muasdale, W. Kintyre, M. H. CUNNINGHAM, det. C. E. HUBBARD.

§824/2(3). *POA SUBCAERULEA* Sm. †44, Carm.; sea edge of shifting dunes, Towyn Burrows, I. M. Vaughan (1956, *Nature in Wales*, 2, 230).

824/10. *POA COMPRESSA* L. 71, Man; sandy brow at mouth of river Ballaugh; walls about Peel; Foxdale; Patrick; St Johns; Crosby; The Barory, Maughold—clearly native and apparently more plentiful than in Ireland, D. E. ALLEN.

825/3. *GLYCERIA PLICATA* Fr. 71, Man; Ballalough Curragh near Peel; Ballabooye, German; edge of salt-marsh, Port Corna, D. E. ALLEN.

§826/1. *CATAPODIUM RIGIDUM* (L.) C. E. Hubbard. *†47, Montg.; railway station platform, Dovey Junction, P. M. BENOIT, conf. A. E. WADE.

§826/15. *VULPIA MEMBRANACEA* (L.) Dum. 1, W. Cornwall; locally abundant on Penhole Sands, near Perranporth, R. A. BONIFACE. *90, Forfar; sand-dunes, Monifieth, A. W. ROBSON, det. C. E. HUBBARD.

†827/1(2). *BROMUS DIANDRUS* Roth. 17, Surrey; sandy verge of Frensham Great Pond, 1954, W. E. WARREN.

†827/13. *BROMUS UNIOLOIDES* Kunth. 16, W. Kent; garden weed, Bickley, J. CUSDEN, det. A. MELDERIS, comm. D. P. YOUNG; rubbish-tip, Earlswood, 1954, B. M. C. MORGAN, det. B. WELCH.

§828/2. *BRACHYPODIUM PINNATUM* (L.) Beauv. 85, Fife; cliff-banks, Pettycur Harbour, near Kinghorn, 1954, A. W. ROBSON.

†829/2. *LOLIUM TEMULENTUM* L. 4, N. Devon; Clovelly, a few plants at the foot of cliffs, R. M. PAYNE.

830/1×4. *AGROPYRON JUNCEIFORME* × *REPENS*. 48, Mer.; seashore, Morfa Dyffryn, 1953, P. M. BENOIT, det. C. E. HUBBARD. 101, Kintyre; Kilchousland seashore, E. Kintyre, M. H. CUNNINGHAM, det. C. E. HUBBARD.

844/1. *EQUISETUM TELMATEIA* Ehrh. 71, Man; cliff-top, Balleby, near Dalby; railway bank by The Congery, near Peel; roadside N. of Knockshurry, D. E. ALLEN.

851/2. *ASPLENium TRICHOMANES* L. 18, S. Essex; wall of railway bridge, Woodham Ferrers, many large plants, R. M. PAYNE.

851/4. *ASPLENium OBOVATUM* Viv. 101, Kintyre; seashore rocks near Peninver, M. H. CUNNINGHAM, det. A. H. G. ALSTON.

851/5. *ASPLENium ADIANTUM-NIGRUM* L. 17, Surrey; (VIII) old walls, Carshalton, D. P. YOUNG; (IX) Dormans, P. GREENFIELD.

854/3. *POLYSTICHUM LONCHITIS* (L.) Roth. 96, Easternness; crevices on the cliffs of the corrie on the north-east face of Marg na Craige, above Laggan Bridge, Monadhliath, C. D. PIGOTT.

856/1(2). *DRYOPTERIS BORRERI* Newm. 59, S. Lancs.; in shade of pines, Freshfield dunes, 1951, D. E. ALLEN, conf. A. H. G. ALSTON.

§856/5. *DRYOPTERIS AEMULA* (Ait.) Kuntze. ‡46, Cards.; on a shady stream bank, Cwm Enion, A. O. Chater (1956, *Nature in Wales*, 2, 230).

863 2. *HYMENOPHYLLUM WILSONI* Hook. 101, Kintyre; growing on rocks at Mull of Kintyre hills in unusually exposed situation, M. H. CUNNINGHAM.

ABSTRACTS FROM LITERATURE

Compiled by DOUGLAS H. KENT

Thanks are due to E. B. Bangerter, P. M. Benoit, J. Ounsted and A. E. Wade for their assistance.

SYSTEMATIC, ETC.

6/4. *RANUNCULUS AURICOMUS* L. Haas, P. A., 1952, Neue süd-deutsche Arten aus dem Formenkreis des *Ranunculus auricomus* L., *Ber. Bayer. Bot. Ges.*, **29**, 5-12. Four new microspecies of *R. auricomus* are described.—[D.H.K.]

6/4. *RANUNCULUS AURICOMUS* L. Haas, P. A., 1954, Neuer Beitrag zur Kenntnis des Formenkreis von *Ranunculus auricomus* L. in Süddeutschland, *Ber. Bayer. Bot. Ges.*, **30**, 27-32. Four more new microspecies of *R. auricomus* are described.—[D.H.K.]

6/4. *RANUNCULUS AURICOMUS* L. Jasiewicz, A., 1956, Badania nad jaskrami z cyklu Auricomi Owcz w okolicach Krakowa; w potnocnej części Karpat, *Fragm. Flor. Geobot.*, **2**, 62-110. The Polish microspecies of *R. auricomus* are described and some detail is given of their distribution.—[D.H.K.]

6/4. *RANUNCULUS AURICOMUS* L. Rousi, A., 1956, Cytotaxonomy and reproduction in the apomictic *Ranunculus auricomus* group, *Ann. Bot. Soc. Zool.-Bot. Fenn. 'Vanamo'*, **29** (2), 1-64.

21→ PAPAVERACEÆ. Bersillon, G., 1955, Recherches sur les Papavéracées: contribution a l'étude du développement des dicotylédones herbacées, *Ann. Sci. Nat. Bot.*, **16**, 225-448.

25/1. *CHELIDONIUM MAJUS* L. Lawalrée, A., 1955, La Chélidone double et la Chélidone laciniée en Belgique, *Bull. Jard. Bot. Brux.*, **25**, 409-410. Two mutant forms of *Chelidonium majus* have been discovered in Belgium; the first, described as a new variety, var. *pleniflorum* Lawalrée, differs from the typical plant in having double flowers. The second is var. *tenuifolium* Retz. f. *multifidum* (Fast) Lawalrée, comb. nov. Fast recognises four taxa among the laciniate *Chelidoniums* (some occur in the British Isles, usually under the name var. *laciniatum*, which is antedated however by the name var. *tenuifolium*).—[E.B.B.]

33→ CRUCIFERÆ. Yarnell, S. H., 1956, Cytogenetics of the vegetable crops. 2. Crucifers, *Bot. Rev.*, **22**, 81-166. Gives much information, especially on the various taxa of *Brassica* and *Raphanus*.—[D.H.K.]

35. *RORIPPA*. Van Ooststroom, S. J. & Reichgelt, T. J., 1956, Floristische notities 1-18, *Acta Bot. Neerl.*, **5**, 94-101. The differences between *Rorippa nasturtium-aquaticum* and *R. microphyllum* are given and the distribution of the two species in the Netherlands is discussed.—[D.H.K.]

39. **CARDAMINE.** Banach-Pogan, E., 1955, Dalsze badania cytologiczne nad gatunkami rodzaju *Cardamine* L., *Acta Bot. Soc. Pol.*, **24**, 275-286. An account of cytological studies on *Cardamine* species.—[D.H.K.]

45. **COCHLEARIA.** Lawalrée, A., 1956, *Cochlearia pyrenaica* DC. en Belgique, *Bull. Jard. Bot. Brux.*, **25**, 205-208.

49/7. **ARABIDOPSIS THALIANA** (L.) Heynh. Napp-Zinn, K., 1955, Spontanes Auftreten von Kötlyvarianten bei *Arabidopsis thaliana* (L.) Heynh., *Ber. Deutsch. Bot. Ges.*, **68**, 369-373.

53/1. **SUBULARIA AQUATICA** L.—See 199/22. **SAXIFRAGA HIRCULUS** L.

54. **BRASSICA.**—See 33→ **CRUCIFERAE.**

80. **RAPHANUS.**—See 33→ **CRUCIFERAE.**

98(2). **MELANDRIUM.** Kunze, G., 1955, Ein Fall von geschlechtsgebundener Vererbung bei *Melandrium* (Garcke), *Ber. Deutsch. Bot. Ges.*, **68**, 249-256.

128. **ERODIUM.** Rottgardt, K., 1956, Morphologische, cytologische und physiologische Untersuchungen von Ökotypen in Schleswig-Holstein, *Beitr. Biol. Pflanz.*, **32**, 225-278. Studies on *Erodium cicutarium*, *Odontites verna* and *Matricaria maritima*.—[D.H.K.]

133/4. **IMPATIENS GLANDULIFERA** Royle. King, A. L. K., 1956, Extension of range of *Impatiens glandulifera* Royle and *Mentha rotundifolia* L., *Irish Nats. J.*, **12**, 71. New vice-county records are given for *Impatiens glandulifera* and *Mentha rotundifolia* in Ireland.—[D.H.K.]

138. **RHAMNACEAE.** Pritchard, E. C., 1955, Morphological studies in Rhamnaceae, *J. Elisha Mitchell Sci. Soc.*, **71**, 82-106.

153. **MEDICAGO.** Shinnars, L. H., 1956, Authorship and nomenclature of bur-clovers (*Medicago*) found wild in the United States, *Rhodora*, **58**, 1-3. Includes many species also found in Britain. A number of new combinations are made, in one of which *M. apiculata* Willd. is reduced to *M. polymorpha* var. *ciliaris* f. *apiculata* (Willd. em. Urban) Shinnars.—[D.H.K.]

155/2. **TRIFOLIUM PRATENSE** L. Pandey, K. K., 1956, Mutations of self-incompatibility alleles in *Trifolium pratense* and *T. repens*, *Genetics*, **41**, 327-343.

155/2. **TRIFOLIUM PRATENSE** L. Pandey, K. K., 1956, Incompatibility of autotetraploid *Trifolium pratense*, *Genetics*, **41**, 353-366.

155/2. **TRIFOLIUM PRATENSE** L. Povilaitis, B. & Boyes, J. W., 1956, A cytological study of autotetraploid red clover, *Amer. J. Bot.*, **43**, 169-174.

155/2. **TRIFOLIUM PRATENSE** L. Thaler, I. & Weber, F., 1955, Ein merkwürdiges *Trifolium* mit mehrzähligen Blättern, *Phyton*, **6**, 73-75.

155/12. **TRIFOLIUM SUBTERRANEUM** L. Morley, F. H. W., Brock, R. D. & Davern, C. I., 1956, Subspeciation in *Trifolium subterraneum*, *Austral. J. Biol. Sci.*, **9**, 1-17.

155/16. **TRIFOLIUM REPENS** L.—See 155/2. **TRIFOLIUM PRATENSE** L.

160. LOTUS. Louis-Marie, P., 1954, La graine du lotier (*Lotus corniculatus*), *Rev. Oka*, **28**, 77-86. The author gives details of methods of identification based on seed characters of various species and vars. of *Lotus*.—[D.H.K.]

185/1. RUBUS IDAEUS L. Williams, I. H. & Hudson, J. P., 1956, Effect of environment upon the growth and development of raspberry canes, *Nature*, **177**, 798-799.

192/1. ACAENA ANSERINIFOLIA (L.) J. R. & G. Forst. Lousley, J. E., 1956, Menace of the New Zealand bur, *Country Life*, **119**, 495-497. An account, illustrated by photographs, of the rapid spread of *Acaena anserinifolia* in Holy Island, Northumberland. The burs of the plant are spread by birds, dogs, rabbits and humans. The known British distribution of the species is also reviewed.—[D.H.K.]

199. SAXIFRAGA. Marsden-Jones, E. M. & Turrill, W. B., 1956, Additional breeding experiments with *Saxifraga*, *J. Genetics*, **54**, 186-193. Comparative descriptions are given of British material of *Saxifraga rosacea*, *S. cespitosa* and *S. hypnoides*.

Families have been raised from selfings and from crossings of our stock plants of these taxa, and from reciprocal crosses of *S. hypnoides* and *S. granulata*.

In the discussion it is shown that genetical sterility barriers are not important in keeping the taxa distinct and their absence or incompleteness explains the occurrence of 'intermediates' in certain wild populations and in some plants in cultivation.

The doubtful taxonomic value of the differences between *S. cespitosa* and *S. rosacea* is considered and the need for further comparative researches on Welsh and Scottish populations is suggested.—[Authors' summary.]

199/2. SAXIFRAGA OPPOSITIFOLIA L. James, V. & Richards, P. W., 1956, *Saxifraga oppositifolia* L. (Biological Flora), *J. Ecol.*, **44**, 300-316.

199/22. SAXIFRAGA HIRCULUS L. Kertland, M. P. H., 1956, *Subularia aquatica* and *Saxifraga hirculus* in Co. Antrim, *Irish Nats. J.*, **12**, 51-52. *Subularia aquatica* and *Saxifraga hirculus* have been rediscovered in Co. Antrim.—[D.H.K.]

216/1. MYRIOPHYLLUM SPICATUM L. Patten, B. C., 1956, Notes on the biology of *Myriophyllum spicatum* L. in a New Jersey lake, *Bull. Torr. Bot. Club*, **83**, 5-18.

217. CALLITRICHE. Heine, H., 1954, *Callitriche cophocarpa* Sendtner, *Ber. Bayer Bot. Ges.*, **30**, 32-37. The nomenclature of various species of *Callitriche* is discussed, and the author shows that *C. cophocarpa* Sendtn. is an earlier valid name than *C. polymorpha* Lönnr.—[D.H.K.]

217. CALLITRICHE. Pawlowski, B., 1956, Rozmieszczenie gatunków rodzaju *Callitriche* L. w Polsce; w krajach sasiednich, *Fragm. Flor. Geobot.*, **2**, 27-48. The Polish species of *Callitriche* are described and figured and their distribution is outlined.—[D.H.K.]

263/1. *FOENICULUM VULGARE* Mill. Bruch, H., 1955, Beiträge zur Morphologie und Entwicklungsgeschichte der Fenchelwurzel (*Foeniculum vulgare* Mill.), *Beitr. Biol. Pflanz.*, **32**, 225-278.

283/3. *TORILIS JAPONICA* (Houtt.) DC. Erskine, D., 1955, *Torilis japonica* in the Ottawa district, *Canad. Field Nat.*, **69**, 131. *Torilis japonica* has been found as an adventive roadside weed in the Ottawa district. Only two other Canadian records are known.—[D.H.K.]

284/1. *HEDERA HELIX* L. Hadfield, M., 1956, Does ivy damage trees?, *Country Life*, **119**, 670. The literature of the subject is reviewed and it is concluded that there is no real evidence of ivy harming its host trees.—[D.H.K.]

285/2. *CHAMAEPERICLYMENUM SUECICUM* (L.) Aschers. & Graebn. Stapelvelde, E., 1956, De zweedse kornoelje, *De Levende Natuur*, **59**, 84-88.

296. *GALIUM*. Urschler, I., 1955, Die Fruchtbehaarung des *Galium septentrionale* Roemer & Schultes, *Phyton*, **6**, 48-56.

320. *ERIGERON*. Ziegler, H., 1952, Beitrag zur Kenntnis der in Deutschland eingewanderten nordamerikanischen *Erigeron*-Arten. *Ber. Bayer. Bot. Ges.*, **29**, 88-91. The spread of *Erigeron annuus* and *E. strigosus* in Germany is discussed.—[D.H.K.]

371/1. *MATRICARIA MARITIMA* L.—See 128. *ERODIUM*.

395. *CARDUUS*. Moore, R. J. & Mulligan, G. A., 1956, Natural hybridisation between *Carduus acanthoides* and *Carduus nutans* in Ontario, *Canad. J. Bot.*, **34**, 71-85. A survey was made of the occurrence of natural hybrids between two species of introduced thistles, *Carduus acanthoides* var. *acanthoides* and *C. nutans* var. *nutans*, in Grey County, Ontario. The population of one field was studied in detail. Specimens were taken and their morphological variation was evaluated by means of a hybrid index. These species have different chromosome numbers, *C. acanthoides*, $2n=22$; *C. nutans*, $2n=16$. All the intervening numbers were found in the hybrids. There is a clear correlation between chromosome number and hybrid index. Plants with the chromosome number of a first generation hybrid have an index intermediate between those of the parental species. The chromosome numbers of seedlings raised from seed collected from hybrid plants were determined. It was found that seedlings with the number $2n=22$ were much more frequent than those with other numbers. It is suggested that both ecological and gametic selection are acting in this area to favour production and survival of plants with the chromosome number and morphology of *C. acanthoides*.—[Authors' summary.]

423. *TARAXACUM*. Van Soest, J. L., 1956, New *Taraxaca* from the Netherlands, *Acta Bot. Neerl.*, **5**, 94-101. Five new dandelions are described.—[D.H.K.]

438/2. *VACCINIUM MYRTILLUS* L. Ritchie, J. C., 1956, *Vaccinium myrtillus* L. (Biological Flora), *J. Ecol.*, **44**, 291-299.

462. *CYCLAMEN*. Schwarz, O., 1955, Systematische der Gattung *Cyclamen*, *Fedde Rep. Spec. Nov.*, **58**, 234-283.

467/2. *ANAGALLIS ARVENSIS* L. Domac, R., 1955, Beiträge zur Flora Jugoslawiens, *Phyton*, **6**, 15-23. Includes some information on *Anagallis arvensis* and its subspecies.—[D.H.K.]

543. *VERONICA*. Thieret, J. W., 1955, The seeds of *Veronica* and allied genera, *Lloydia*, **18**, 37-45. A discussion on certain evolutionary changes which the author claims can be clearly traced in the seeds of *Veronica* and allied genera.—[D.H.K.]

543/41. *VERONICA FILIFORMIS* Sm. Viola, S., 1955, Presenza della *Veronica filiformis* Smith in Italia, *Nuov. Giorn. Bot. Ital.*, **61**, 697-699. *Veronica filiformis* has been detected at Lecco near Neguccio. It is new to Italy.—[D.H.K.]

546/5. *ODONTITES VERNA* (Bellardi) Dum.—See 128. *ERODIUM*.

550. *OROBANCHE*. Hamblen, D. J., 1956, Further chromosome counts in *Orobanchaceae*, *Nature*, **177**, 438-439.

551. *LATHRAEA*. Ziegler, H., 1955, *Lathraea*, ein Blutungssaftschmarotzer, *Ber. Deutsch. Bot. Ges.*, **68**, 311-318.

558/1. *MENTHA ROTUNDIFOLIA* (L.) Huds.—See 133/4. *IMPATIENS GLANDULIFERA* Royle.

561. *THYMUS*. Machule, M., 1954, Die bayerischen *Thymus*arten, *Ber. Bayer. Bot. Ges.*, **29**, 88-90. The author keys the six species of *Thymus* known to occur in Bavaria; these include *T. serpyllum* and *T. pulegioides*.—[D.H.K.]

588/8f. *PLANTAGO LANCEOLATA* var. *LANUGINOSA* Bluff & Fing. Nehou, J., 1955, Recherches sur la valeur taxonomique de deux *Plantaginacées*: *Plantago carinata* Schrad. var. *littoralis* Rouy et *Plantago lanceolata* L. var. *lanuginosa* Bl. et Fing., *Bull. Soc. Sci. Bret.*, **29**, 113-133. Experimental studies on *Plantago lanceolata* var. *lanuginosa* (*P. lanuginosa* DC., *P. eriophora* H. & L.) has led to the conclusion that it is an ecotype. Found on maritime sands, it differs from *P. lanceolata* by its very woolly leaves and its ovoid or subglobose spike.—[E.B.B.]

606. *ATRIPLEX*. Brown, G. D., 1956, Taxonomy of American *Atriplex*, *Amer. Midl. Nat.*, **55**, 199-210.

606. *ATRIPLEX*. Klimmek, F., 1955, Die Strandmelken Niedersachsens, *Bietr. Natur. Nied. Hanover*, **8**, 56-60.

615. *POLYGONUM*. Marek, S., 1954, Cechy Morfologiczne: anatomiczne owoców rodzajów *Polygonum* L.; *Rumex* L. oraz klucze do ich oznaczania, *Monogr. Bot.*, **2**, 77-161. The author gives keys (based on morphological and anatomical features of flowers and fruits) of 21 species of *Polygonum* and 22 species of *Rumex* found in Poland.—[D.H.K.]

618. *RUMEX*.—See 615. * *POLYGONUM*.

621→ *ARISTOLOCHIACEAE*. Gregory, M. P., 1956, A phyletic arrangement in the *Aristolochiaceae*, *Amer. J. Bot.*, **43**, 110-122.

633/5. *ULMUS PROCERA* Salisb. Morris, P. F., 1956. Notes on the growth of an English elm, *Muelleria*, **1**, 54.

642. *BETULA*. Vaartaja, O., 1956, Photoperiodic response in germination of seed of certain trees, *Canad. J. Bot.*, **34**, 377-388. Studies on the germination of seeds of *Betula pubescens* and *B. verrucosa*.—[D.H.K.]

643/1. *ALNUS GLUTINOSA* (L.) Gaertn. McVean, D. N., 1956, Ecology of *Alnus glutinosa* (L.) Gaertn. 3. Seedling establishment, *J. Ecol.*, **44**, 195-218. 4. Root system, *op. cit.*, **44**, 219-225.

646. *QUERCUS*. Fenton, E. W., 1956, An outline of oak distribution in Scotland and the need for local records, *Scot. For.*, **10**, 104-107.

649. *FAGUS*. Borza, A., 1956, Über *Fagus orientalis* und *F. taurica* in Rumänien sowie über die Verbreitung zweier Varietäten von *F. silvatica*, *Fedde Rep. Spec. Nov.*, **59**, 113-116.

649/1. *FAGUS SYLVATICA* L. Podgorska, J., 1955, Materiały do studium nad geograficzną zmiennością liści buka (*Fagus silvatica* L.) w Polsce, *Acta Soc. Bot. Pol.*, **24**, 95-108. The distribution of *Fagus sylvatica* in Poland is reviewed.—[D.H.K.]

666/1. *EPIPOGIUM APHYLLUM* Sw. Smallcombe, W. A., 1954, *Epipogium aphyllum*, *Reading Nat.*, **6**, 1-3. An account of the 5 appearances of this species in the Reading District from 1924-1953, with a photograph of the plant *in situ*. In 1953 careful removal of the beech litter at the exact spot where a flower appeared in 1931 showed the underground parts still apparently healthy, though there is no evidence of the plant's having flowered in the interval. Similar search near the 1953 flower revealed two more underground plants.—[J.O.]

669/7. *ORCHIS INCARNATA* L. Heslop-Harrison, J., 1956, Some observations on *Dactylorchis incarnata* (L.) Verml. in the British Isles, *Proc. Linn. Soc.*, **166**, 51-82. Analytical studies of characteristic populations of *Orchis incarnata* in the British Isles have shown that the taxonomic subdivision into subspecies is of limited application. The "subsp." represent specialized 'radiations' of the species. There are also populations which cannot be referred to any one infraspecific taxon. Numerous subspecific forms of *D. incarnata* have been described on the Continent, and some of these have obvious affinities with the British forms. A key is given to the British "subspecies" which are discussed in detail. Flower variation (colour, flower patterning, labellum shape and spur size), floral variation and environmental influence and reproductive biology are also discussed.—[D.H.K.]

669/9(3). *ORCHIS TRAUNSTEINERI* Saut. Heslop-Harrison, J., 1956, *Dactylorchis traunsteineri* Saut. in Co. Antrim, *Irish Nats. J.*, **12**, 56-57.

672. *OPHRYS*. Kullenberg, B., 1956, On the scents and colours of *Ophrys* flowers and their specific pollinators among the aculeate hymenoptera, *Svensk Bot. Tidsk.*, **50**, 25-46.

672. *OPHRYS*. Stebbins, G. L. & Ferlan, L., 1956, Population variability, hybridization and introgression in some species of *Ophrys*, *Evolution*, **10**, 32-46.

691→ *POLYGONATEAE*. Therman, E., 1956, Cytotaxonomy of the tribe Polygonateae, *Amer. J. Bot.*, **43**, 134-142.

713. COLCHICUM. D'Amato, F., 1955, Revisione citosistematica del genere Colchicum. 1. *C. autumnale* L., *C. lusitanicum* Brot. e *C. neopolitanum* Ten., *Caryologia*, **7**, 292-348.

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750/1. CLADIUM MARISCUS R. Br. Heslop-Harrison, J., 1956, *Cladium mariscus* in Co. Antrim, *Irish Nats. J.*, **12**, 72. *Cladium mariscus* has been refound in Co. Antrim after being thought extinct.—[D.H.K.]

753. CAREX. Nelmes, E., 1956, Key to the Carices of the London Area, in Kent, D. H. & Lousley, J. E., *A Hand List of the Plants of the London Area*, part 6, 291-294.

753/33. CAREX FLACCA Schreb. Taylor, F. J., 1956, *Carex flacca* Schreb. (Biological Flora), *J. Ecol.*, **44**, 281-290.

754→ GRAMINEAE. Meredith, D., (Editor), 1955, *The grasses and pastures of South Africa*, pp. 1-771. Central News Agency, Cape Times Ltd., Parow, C.P. Price 63/-. Keys and describes all the known grasses of S. Africa, including many found as adventives in Britain. Numerous figures are given.—[D.H.K.]

754→ GRAMINEAE. Senaratna, S. D. J. E., 1956, *The grasses of Ceylon*, pp. 1-229, plus 52 plates. Peradeniya Manual No. 8. Price 15 rupees. Figures, describes and keys the grasses of Ceylon. Many alien species found in Britain are included.—[D.H.K.]

754→ GRAMINEAE. Takeoka, T., 1955, Karyotaxonomic studies in Poaceae. 2. *Ann. Rep. Nat. Inst. Genetics (Japan)*, **5**, 68-69. Chromosome counts are given of 86 taxa of *Gramineae* including some species also found in Britain.—[D.H.K.]

777/1. PHELEUM PRATENSE L. Langer, R. H. M., 1956, Growth and nutrition of Timothy (*Phleum pratense*). 1. The life history of individual tillers, *Ann. Appl. Biol.*, **44**, 166-187.

777/2. PHELEUM COMMUTATUM Gaudin. Michalski, T., 1955, *Studia cytologiczno-morfologiczne nad Phleum commutatum z Tatr.*, *Acta Soc. Bot. Pol.*, **24**, 181-188.

792/1. HOLCUS MOLLIS L. Ovington, J. D., & Scurfield, G., 1956, *Holcus mollis* L. (Biological Flora), *J. Ecol.*, **44**, 272-280.

794. AVENA. Joshi, A. B. & Howard, A. W., 1955, Meiotic irregularities in hexaploid oats. 4. Hybrids between *Avena sativa* (spring and winter varieties), *A. fatua*, *A. sterilis*, *A. byzantina* and *A. nuda*, *J. Agric. Sci.*, **46**, 183-190.

794/7. AVENA SATIVA L. Coffman, F. A., 1955, *Avena sativa* L. probably of Asiatic origin, *Agron. J.*, **47**, 281. *Avena sativa*-like forms have arisen from a variety of the polymorphous *A. byzantina* after its

introduction into the U.S.A. It is suggested that *A. sativa* itself may have originated in a like manner when *A. byzantina* was brought by migrants from the Middle East to Europe.—[D.H.K.]

807. *DANTHONIA*. Vickery, J. W., 1956. A revision of the Australian species of *Danthonia*, *Contrib. New South Wales Nat. Herb.*, **2**, 249-325.

809. *KOELERIA*. Shinnors, L. H., 1956, Illegitimacy of Persoon's species of *Koeleria* (Gramineae), *Rhodora*, **57**, 93-96. In his *Synopsis Plantarum* vol. 1, p. 97 (1805) Persoon described the genus *Koeleria* with 5 species. Four of the five names are illegitimate since an earlier legitimate epithet in the same rank is cited as a synonym but not taken up. The fifth (*K. tuberosa*) is illegitimate also since the synonymy quoted by Persoon with a question mark does in fact apply to the same plant. The earliest valid names for the five species are given as follows:—for *K. gracilis*—*K. macrantha* (Ledeb.) Spreng., *Mant.*, **2**, 345-46 (1824): for *K. cristata*—*K. pyramidata* (Lam.) Beauv., *Agrost.* pp. 84, 166 and 175 (1812): for *K. phleoides*—*K. gerardi* (Vill.) Shinnors, comb. nov., based on *Festuca gerardi* Vill., *Hist. Pl. Dauph.*, **1**, 249 (1786) (in footnote): for *K. villosa*—*K. pubescens* (Lam.) Beauv. ex Cosson & Durieu, *Fl. Alg.*, **2**, p. 122 (1854-57): for *K. tuberosa*—*K. pectinata* (Lam.) Shinnors, comb. nov. based on *Poa pectinata* Lam. Ill., **1**, p. 182 (1791)—[D.H.K.]

825. *GLYCERIA*. Gjaerevell, O., 1955. *Glyceria grandis* S. Wats. som mølleplante i Norge, *Blyttia*, **13**, 109-112. The North American species *Glyceria grandis* S. Wats. has been detected in two localities in Norway where it is believed to have been introduced with American grain. In one locality it has been known to persist since 1918 but has hitherto been confused with *G. maxima*.—[D.H.K.]

825/1. *GLYCERIA MAXIMA* (Hartm.) Holmb. Gutteridge, R. L., 1954, *Glyceria maxima* on the Mississippi River, Ontario, 1953, *Canad. Field Nat.*, **68**, 133-135. *Glyceria maxima* has been found as a naturalised alien along 13 miles of the Mississippi river near Ottawa. It is compared with the related American *G. grandis*.—[D.H.K.]

826. *FESTUCA*.—See 829/1. *LOLIUM PERENNE*.

826/4. *FESTUCA PRATENSIS* Huds. Bosemark, N. O., 1956, On accessory chromosomes in *Festuca pratensis*. 3. Frequency and geographical distribution of plants with accessory chromosomes. *Hereditas*, **42**, 189-210. 4. Cytology and inheritance of small and large accessory chromosomes, *op. cit.*, **42**, 235-260.

827/9. *BROMUS INERMIS* Leyss. Nielsen, E. L., 1955, Cytological disturbances influencing fertility in *Bromus inermis*, *Bot. Gaz.*, **116**, 293-305.

829/1. *LOLIUM PERENNE* L. Carnahan, H. L., & Hill, H. D., 1955. *Lolium perenne* L. × tetraploid *Festuca elatior* L., triploid hybrids and colchicine treatments for inducing autoallohexaploids, *Agron. J.*, **47**, 258-262.

841→ *CONIFERAE*. Mehra, P. N. & Khoshoo, T. N., 1956, Cytology of conifers, *J. Genetics*, **54**, 165-185.

843. PICEA. Laing, E. W., 1956, The genus *Abies* and recognition of species, *Scot. For.*, **10**, 20-25. Includes keys to the identification of species (1) vegetative shoots and (2) cones and coning shoots.—[D.H.K.]

857/4. CYSTOPTERIS FRAGILIS (L.) Bernh. Wagner, W. H. Jr. & Hagenah, D. J., 1956, A diploid variety in the *Cystopteris fragilis* complex, *Rhodora*, **58**, 79-87.

872→ CHARACEAE. Wood, R. D. & Muenscher, W. C., 1956, *The Characeae of the State of New York*, Memoir 338, Cornell Univ. Experiment Station, Ithaca, New York. Keys and describes the Charophytes of New York State some of which also occur in Britain. Excellent figures are given.—[D.H.K.]

TOPOGRAPHICAL (See also ECOLOGICAL)

1, W. CORNWALL. Coombe, D. E. & Frost, L. C., 1956, The heaths of the Cornish serpentine, *J. Ecol.*, **44**, 226-255.

3, S. DEVON. Burke, D. P. T., 1956, An investigation of factors influencing the luxuriance of the field layer on different slopes in Eppscleave Wood, *Mag. Blundell's School Sci. Soc.*, **10**, 20-26.

3-4, DEVON. Martin, W. Keble, 1955, 47th report on the botany of Devon. *Rep. & Trans. Devon. Assoc.*, **87**, 327-330.

4, N. DEVON. Gillham, M. E., 1955, Some effects of the larger animals on the flora of Lundy, *Rep. & Trans. Devon. Assoc.*, **87**, 206-209.

6, N. SOM. & 34, W. GLOS. Sandwith, C. I. & N. Y., 1955, Bristol botany in 1954, *Proc. Bristol Nats. Soc.*, **29**, 17-24.

7, N. WILTS. Grose, J. D., 1955, A botanical survey of Colerne Park, *Wilts. Arch. & N.H. Mag.*, **56**, 39-47.

7-8, WILTS. Grose, J. D., 1955. Wiltshire plant notes (16), *Wilts. Arch. & N.H. Mag.*, **56**, 35-38. Gives further localities for Wilts. plants, including some new vice-county records.—[D.H.K.]

16, W. KENT, 17, SURREY, 18-19, ESSEX, 20, HERTS, 21, MIDDX. & 24, BUCKS. Kent, D. H. & Lousley, J. E., 1956, *A Hand List of the Plants of the London Area*, part 6, Juncaceae to Gramineae (*Festuca*), supplement *Lond. Nat.*, **35**. Includes a key to *Carex* of the London area by E. Nelmes.—[D.H.K.]

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21, MIDDX. Murray, D., 1956, *The flora of Chiswick, 1955*, 6 pp. Privately printed. A systematic list of flowering plants and vascular cryptogams observed by the author during 1955.—[D.H.K.]

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33-34, GLOS. Fleming, G. W. T. H., 1955. Phanerogams and vascular cryptogams, *Proc. Cotteswold N.F.C.*, 31, 256-262. Many alien species are recorded from Avonmouth Dock, Bristol, and Sharpness Dock, Gloucester.—[D.H.K.]

34, W. GLOS.—See 6, N. SOM.

38, WARWICK. Cooper, G., 1956. Some notes on the flora of the Avon and canal at Emscote, *Ann. Rep. Warwick N.H.S.*, 1956, 11-12.

38, WARWICK. Hawkes, J. G., Readett, R. C. & Skelding, A. D., 1956, The Warwickshire County Flora revision. mapping distribution. *Proc. Birmingham N.H. & Phil. Soc.*, 18, 109-112.

38, WARWICK. Roberts, H. A., 1956. Unusual plants in common places, *Ann. Rep. Warwick N.H.S.*, 1956, 9-10. A few notes on plants seen in the Wellesbourne district.—[D.H.K.]

39, STAFFS. Rees, W. J., 1956. Some preliminary observations on the flora of derelict land, *Proc. Birm. N.H. & Phil. Soc.*, 18, 119-129. A preliminary account of the flora of coal measure spoil heaps of various ages, furnace slag heaps, etc., in the industrial areas of Staffs.—[D.H.K.]

41, GLAM. Carter, P. W., 1955, Some account of the history of botanical exploration in Glamorgan, *Trans. Cardiff Nats. Soc.*, 82, 5-31.

41, GLAM. Wade, A. E., 1956. Botanical notes, 1953-54, *Trans. Cardiff Nats. Soc.*, 83, 25-26.

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48, MER. Carter, P. W., 1955. Some account of botanical exploration in Merionethshire, *Merioneth Miscellany*, 3, 1-40. A good detailed

account of botanical exploration in this much-botanised county, together with a list of most of the published references to the flora.—[P.M.B.]

53-54, Lincs. Gibbons, E. J., 1955, Botany, *Trans. Lincs. Nats. Union*, **13**, 246-248.

61-65, Yorks. Shaw, G. A., 1956, Plant records, *The Nat.*, **1956**, 28-30. Records are given for all the vice-counties.—[A.E.W.]

64, MID-W. Yorks. Holmes, P. F., 1956, Malham Tarn: a background for freshwater biologists, *Field Studies Council Ann. Rep.*, **1954-55**, 48-57. Gives some details of the aquatic vegetation of Malham Tarn.—[D.H.K.]

66, DURHAM. Morgan, D., 1955, Extermination of plants on the Wear at Wolsingham (66), *Vasc. (Subst.)*, **40**, 14. A short note on the wholesale disappearance of many riverside plants due to gravel bed operations.—[D.H.K.]

66, DURHAM & 67-68, NORTHUMB. Heslop-Harrison, J. W., 1956. Records: flowering plants, *The Vasc. (Subst.)*, **41**, 7.

77, LANARK. Patton, D. & Rennie, W., 1955, The plants of Possil Marsh, *Glasgow Nat.*, **17**, 161-172. 216 plants are recorded, of which 18 have disappeared from the marsh.—[A.E.W.]

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92, S. ABERDEEN, 94, BANFF & 96, EASTERNESS. Roger, J. G., 1956, Flowering plants of the Cairngorms, *Cairngorms Club J.*, **17**, 57-72.

H.18, OFFALY. Moore, J. J., 1956, Plants associated with *Ramischia (Pyrola) secunda* on Pollagh Bog, Offaly, *Irish Nats. J.*, **12**, 42-43.

S., GUERNSEY. Girard, P. J., 1955, New botanical records for Guernsey, *Rep. & Trans. Soc. Guern.*, **15**, 339-340. *Helxine soleirolii*, *Saponaria officinalis* and *Lysimachia vulgaris* are reported as new to Guernsey.—[D.H.K.]

S., SARK. Sowerby, W. B. H., 1955, Some new records for Sark (Channel Islands), *Rep. & Trans. Soc. Guern.*, **15**, 340-342.

ECOLOGICAL (See also TOPOGRAPHICAL).

AGNEW, A. D. Q., 1954, Some problems in the ecology of rush-infested pastures, *Proc. Brit. Weed Control. Conf.*, **1954**, 89-94.

BERGHEN, C. V. & COUTEAUX, M., 1955, Contribution à l'étude de la végétation et de la flore du district Lorrain, 3. Note sur la végétation forestière du district Lorrain, *Bull. Soc. Roy. Bot. Belge*, **87**, 231-240, Three types of forest are found in the Lorrain district: typical beech, mixed beech, oak and hornbeam and a sub-association of the latter (with *Pulmonaria officinalis*). These three are briefly described and their distribution indicated by a map. The sub-association is analysed in more detail by a table showing the distribution of about 120 species (most are also found in Britain) over 36 woodland stations.—[E.B.B.]

COOMBE, D., 1955, Plant growth and light in woodlands, *Abstr. Diss. Camb.*, **1952-53**, 15-16, Experimental autecological studies of the growth

of *Impatiens parviflora* in woodlands were carried out in order to elucidate the relations between plant distribution in space and time and the physical environment, and to test the validity of various measurements of the light climate.—[D.H.K.]

COUTEAUX, M., 1954-55, Contribution à l'étude de la végétation et de la flore du district Lorrain. 2. Aspect varié du paysage botanique, *Bull. Soc. Roy. Bot. Belge*, **86**, 255-263. The varied aspect of the vegetational pattern in the district of Lorraine is due to the presence of six different botanical landscapes; these are defined and described and their various plant associations are given: 4. La végétation comensable des cultures, *op. cit.*, **87**, 241-255. The associations found on cultivated land are described and discussed. A map shows the areas studied and six tables analyse the distribution of the species (mostly also found in Britain) concerned.—[E.B.B.]

DIZERBO, A. H., 1955, Observations sur la flore phanérogamique de la presqu'île de Crozon (Finistère), *Bull. Soc. Sci. Bret.*, **29**, 59-63. Notes on 12 phanerogamic and 4 cryptogamic species occurring in the Crozon peninsula (nearly all occur in the British Isles).—[E.B.B.]

DUPONT, P., 1955, La végétation des marais de la Vilaine maritime, *Bull. Soc. Sci. Bret.*, **29**, 65-104. An ecological study of the marshes of the maritime section of the river Vilaine (Morbihan). One, that of Fégréac, is dealt with in detail, associations of successive zones being listed and analysed. The other marshes are treated together. Some suggestions are made for extending some types of terrain and reclaiming others. Maps and tables illustrate the work.—[E.B.B.]

GORHAM, E., 1956, The ionic composition of some bog and fen waters in the English Lake District, *J. Ecol.*, **44**, 142-152.

GORHAM, E. & PEARSALL, W. H., 1956, Acidity, specific conductivity and calcium content of some bog and fen waters in northern Britain, *J. Ecol.*, **44**, 129-141.

GUINOCHET, M., 1954, Sur les fondements statistiques de la phytosociologie et quelques unes de leurs conséquences, *Veroff. Geobot. Inst. Rübel Zurich*, **29**, 41-67. A method of applying statistical analyses to the study of plant associations is described. Various mathematical formulae are evolved from the tables and histograms which illustrate the text.—[E.B.B.]

HOBBS, R. F., 1955, Some notes on the ecology of the chalk downs, *Rep. Eton College N.H.S.*, **11**, 26-28.

HOPKINS, B., 1955, The species-area relations of plant communities, *J. Ecol.*, **43**, 409-426.

JEFFREE, E. P., 1955, Temperature ranges and distributions of some vascular plants. *Nature*, **176**, 703-704. Attempts to fit isotherms to certain limits of areas of plant distributions in the "Biological Flora" and other works are discussed and analysed. A new method of representing the limits of a plant's area of distribution by a combination of upper and lower limits respectively both for January and July (with January and July limits transposed for the southern hemisphere) is tabled.

Forty-one distributions have so far been plotted by this method, including the twenty-areas given by J. R. Matthews in his *Origin and Distribution of the British Flora* (1955), seven from the "Biological Flora" and fourteen from other sources. In this survey, thirty gave real approximations to the given distributions, whereas in ten there were discrepancies which seemed of greater importance, and in one (*Lloydia serotina*) the fit was not satisfactory with the approximate and not very detailed isotherms which have so far been used. The possible reasons for this are discussed. Maps are given showing distributions of *Ranunculus lenormandi*, *Pica excelsa* (*P. abies*) and *Ilex aquifolium* by various authors and by the present writer's method.—[D.H.K.]

KELLETT, E. G., 1955, How to begin the study of plant ecology, *Country-side* (N.S.), **17**, 182-191.

LEBRUN, J., NOIRFALISE, A. & SOUGNEZ, N., 1955, Sur la flore et la végétation du territoire de la Basse-Meuse. 1. *Bull. Soc. Roy. Bot. Belge*, **87**, 157-194.

MCNEILL, W. M., 1955, Studies of surface vegetation and natural regeneration in a mature Scots Pine wood in Aberdeenshire, *Forestry*, **28**, 49-65. Observations and data are recorded regarding the changes which take place in the composition and pattern of the surface vegetation immediately following regeneration fellings in a 75 to 85 year old plantation composed principally of Scots Pine (*Pinus sylvestris*). The study covers a period of five years, 1946 to 1950. During the same period all natural regeneration of tree species was charted and counted and the results are given. The wood selected for the study was one where it was known that natural regeneration was difficult to obtain. The soil and site factors in the area examined are similar to those in many artificially formed coniferous plantations in the north-east of Scotland.—[Author's summary.]

NEWBOULD, P. J. & GORHAM, E., 1956, Acidity and specific conductivity measurements in some plant communities of the New Forest valley bogs, *J. Ecol.*, **44**, 118-128.

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FIELD MEETINGS, 1954

APRIL 15th, 1954. EPPING FOREST

Leader: Miss H. FRANKS

A party of 40 met at Loughton station for the first Junior Field Meeting of the Society. A study was made of the types of trees in Epping Forest and of the effects of pollarding to which many of them had been subjected. Methods of identifying the trees in the absence of their leaves were described.

Golding's Ponds showed an interesting willow community in the lower pond and a young growth of horsetails, water crowfoot and water lily in the upper pond.

A visit was made to the East Ham Field Centre at Debden House for lunch and to view the house and gardens.

A walk through varied woodland, via Jack's Hill where *Salix repens* was found in a swamp, brought the party to Amberley Mounds. Here many un-pollarded trees were found for comparison.

The return to Loughton was made by way of Epping Thicks with its hollies and hawthorns in contrast to the forest trees, and Theydon Bois where a stop was made for tea.

Included in the party were 30 Sixth Form students from 12 of the London Grammar Schools and a French student from the Rouen Technical College.—A. W. WESTRUP.

JUNE 25th to 28th, 1954. THE WILTSHIRE CHALK

Leader: Dr. D. E. COOMBE

The object of this meeting was "to study the flora of typical Wiltshire chalk-grassland and of woodlands on the chalk." Some sixty members and friends took part. The usual Friday evening meeting was held at the Cathedral Hotel at Salisbury, and on Saturday morning the party went to Pepperbox Hill, a fine example of chalk downland with *Senecio integrifolius* and many orchid species, including *Orchis ustulata*, a thicket of juniper and beech plantations. The afternoon was spent to the south of Salisbury. The first stop was near Rockbourne in Hampshire where, in a calcareous marsh, *Orchis praetermissa*, *O. fuchsii* and hybrids, *Carex paniculata*, *C. echinata* and *C. disticha* were also seen with *Catabrosa aquatica*. A short visit was paid to Breamore Common on the alluvium of the river Avon, and *Limosella aquatica* and *Blysmus compressus* were found. The party then returned to Wiltshire, passing through Downton to Redlynch to see *Asarum europaeum* in the lane

where it has been known for 130 years. Two small areas of chalk grassland near by were visited; one short turf with *Ophrys apifera*, *Anacamptis pyramidalis* and *Gymnadenia conopsea*, the second (a disused golf course) showing tall *Bromus erectus* overwhelming the small herbs. In the evening B.S.B.I. Maps Scheme cards were filled in and Dr. Coombe described the geology, topography and ecology of the area to be visited on the following day.

On Sunday, June 27th, the coach and several cars took the party westward to Stockton Wood (Nat. Grid Ref. 31/9635) where the roadsides carry a typical chalk flora. Short forays into the southern edge of the wood (which is on a plateau near the 650 ft. contour) showed it to have developed on the "clay-with-flints" which covers the high ground of this ridge. Oak is frequent with some ash and beech. *Aquilegia vulgaris*, *Polygonatum multiflorum* and *Platanthera chlorantha* were seen. South of the road on Chilmark Down are patches of scrub and *Genista tinctoria*, *Alchemilla vestita*, *Calluna vulgaris* and *Pteridium aquilinum* grow where deeper clay or leached soil occurs. *Carex pallescens* and *Geum* × *intermedium* were found in the scrub. Then the convoy moved off through Fonthill Bishop, Tisbury in the Nadder Valley and Ansty, to cross the Salisbury to Shaftesbury road and climb the escarpment of "Middle Chalk" to the south of it. The steepness of the ascent daunted the coach driver, and after some delay a shuttle service of cars conveyed the party to the summit (700 ft.) where lunch was enjoyed. In an old beechwood abundant *Oxalis acetosella* was growing with *Mycelis muralis*. Beyond a cornfield, a footpath east of the road led round the top of a deep narrow south-facing combe which had been left as a rabbit-warren. Much *Sambucus nigra* was seen in the disturbed ground at the head of the combe and little besides *Sedum acre* at the bottom; but on the rim was short, well-grazed turf with *Polygala vulgaris*, *P. oxyptera*, *Hippocrepis comosa*, *Gentianella anglica* and *Coeloglossum viride*, with *Carex humilis* locally dominant. The visit to Hambledon Hill was omitted and the party drove via Shaftesbury and Blandford to the Pitt-Rivers Museum at Farnham, where tea was taken on the lawn and the museum inspected. Some who knew the Museum would have preferred to visit Great Yews or look at the ashwood on the chalk near the county boundary. On Sunday evening there was no meeting, so two members went to Bullford and re-found *Bunias orientalis* (Wilts. A. & N.H. Mag., 54, 76, 1951) and *Astragalus danicus*, but much of the latter had been overgrown by *Bromus erectus*. *Minuartia tenuifolia*, abundant *Filipendula vulgaris*, *Senecio integrifolius* and *Serratula tinctoria* were noted.

On Monday, June 28th, the first stop was made about three miles north-west of Salisbury, at Camp Down, where *Thesium humifusum* was found on a chalky bank; the next was near Durnford where an abundance of *Orobanche elatior*, parasitic on *Centaurea scabiosa*, was seen in a lane; one striking specimen was bright yellow. Ancient trackways nearby had a good chalk flora with orchids, *Polygala calcarea* and the native form of *Onobrychis vicifolia*. Stonehenge was visited, and after lunch Old Sarum and the river Avon with *Oenanthe fluviatilis* and

Crane Bridge with its Maidenhair ferns which have survived for over thirty years. In the evening the City rubbish dump at the Butts was visited and *Bromus carinatus*, first noticed here in 1948, was seen in great quantity.

On Tuesday the contrasting flora on the Tertiary beds a few miles out of Salisbury on the Southampton Road was shown to a few members, and the survival of *Pinguicula lusitanica* and other bog plants was checked.

In addition to Dr. Coombe's knowledge of ecology, the party had had the benefit of Miss E. H. Stevenson's many years' experience of botanising from Salisbury and the combination gave a most satisfying week-end, though not entirely on the chalk, and some members would have preferred more botany and less archaeology.

JULY 30th to AUGUST 3rd, 1954. THE DERBYSHIRE LIMESTONE

Leader: F. W. ADAMS

By kind permission of the Registrar and of the Professor, the Botany Department of the University of Sheffield was our headquarters, and most of the party (which numbered 28) stayed at the Stephenson Hall of Residence. On Friday evening Prof. A. R. Clapham gave a welcome and a talk, and on Saturday a lantern lecture, and he came in for an informal chat on Monday evening, all of which were much appreciated by members of the party.

The object of the meeting was to list all plants seen, both for the revision of Linton's *Flora of Derbyshire* and for the B.S.B.I. Maps Scheme. The special recording cards used by Sheffield University were available, but most preferred to use the familiar B.S.B.I. cards. On Friday evening Professor Clapham talked about the Maps Scheme and gave an outline of the geology of the area. Sheffield stands upon Coal Measures with Carboniferous Limestone to the west, and Magnesian Limestone (Permian) to the east. The latter is now mostly arable on the characteristic red soil, but was formerly floristically rich and wooded; the best relics now occur in gorges and small grassy areas which show a close resemblance to southern chalk and limestone, probably because the Magnesian Limestone is lowland, whereas the Carboniferous Limestone is highland.

Saturday, 31st July, was spent on the Magnesian Limestone S.E. of Sheffield. The coach was taken to the centre of Whitwell Wood (43/5277) where an officer of the Forestry Commission met us and explained the plan of planting such conifers and hardwood trees as would tolerate the smoke-laden atmosphere. The wide grassy rides show a semi-natural vegetation, and a base-rich marsh has *Epipactis palustris*, *Parnassia palustris*, *Pinguicula vulgaris*, *Carex lepidocarpa* and *C. dioica*. Along the rides *Aquilegia vulgaris*, *Cornus sanguinea*, *Melica nutans* and *Hordelymus europaeus* were seen. After lunch the party moved to Markland Grips (43/5074), a little gorge with wall-like

sides supporting trees of *Taxus*, *Fraxinus*, *Ulmus glabra* and *Tilia cordata*, all natives, and *Tilia platyphyllos* perhaps not native. *Campanula latifolia*, *Agropyron caninum* and *Hordelymus europaeus* were also noted. At the upper end of the valley is a small area of calcareous grassland with *Carex montana*, *C. ericetorum* and *Bromus erectus*, a typical grass of Magnesian Limestone as of chalk. On Saturday evening Professor Clapham talked about the Millstone Grit and its characteristic scenery and plants, and the Carboniferous Limestone Dales and the various "elements" in their flora, the Steppe and Arctic-alpine elements and the relics from Late Glacial times.

Sunday, August 1st, was spent on the Carboniferous Limestone. The coach took us past a lovely abundance of *Geranium pratense*, through Tideswell to Monk's Dale House (43/1375). On sunny south-facing rocks in Peter Dale we listed many plants familiar on southern chalk, including *Rhamnus catharticus* and *Geranium columbinum*, but also *G. sanguineum*, *Silene nutans* and *Dianthus deltoides*. Then we walked down Monk's Dale, past damp, shaded, north-east-facing rocks with *Trollius europaeus*, *Sanguisorba officinalis*, *Pimpinella major*, *Cirsium heterophyllum* and ferns, and south-west-facing steep rocky grassland with *Hypericum montanum*, *Potentilla tabernaemontani* and *Helictotrichon pratense*. On the opposite slope *Gymnadenia conopsea* was seen. Further down the valley, in damp woodland with much *Fraxinus*, *Aquilegia vulgaris*, *Cardamine impatiens*, *Rubus saxatilis*, *Saxifraga hypnoides* and *Melica nutans* were noted. Beyond the southern end of the wood, the flora by the stream was very interesting, with *Parnassia palustris*, *Pinguicula vulgaris*, *Blysmus compressus*, *Carex lepidocarpa* and, though the water is alkaline, *C. demissa*. On a grassy cliff *Carlina vulgaris*, and on near by scree *Thelypteris robertiana* were seen. Then, as the rain began, we reached Millers Dale, where tea and the coach awaited us.

On Monday, August 2nd, the party went again to the Carboniferous Limestone, to Cressbrook Dale with its very rich and well-known flora. The coach took us past Monsal Viaduct and some fine *Vicia sylvatica* on a steep roadside, through Litton to Wardlow. A short walk brought us above the northern (upper) end of the dale (43/1774): here on the hummocky ground of old lead workings *Minuartia verna*, *Galium pumilum* and *Thymus drucei* were seen. The east side of the Dale has patches of scrub of *Corylus avellana* and *Crataegus monogyna* and areas of grassland with serees and rocky outcrops. On the west side abundant *Filipendula vulgaris* was seen on a steep grassy slope, but this side is largely planted with beech and sycamore, and the ground layer is brambles. On the roadside in Millers Dale, *Symphytum x uplandicum* was collected, and further south, near the old Cotton Mill, some explored the steep ashwood east of the stream and some rested in the coach, while others visited Monsal Dale where *Sambucus ebulus* and *Hornungia petraea* were seen. On the return journey a stop was made at The Winnats, a steep limestone slope, to see *Polemonium*

caeruleum, *Cochlearia alpina* and *Draba incana* which, Professor Clapham had told us, in his opinion represent survivals from the Late Glacial Period over ten thousand years ago.

On Tuesday, August 3rd, we set off again for the Carboniferous Limestone, making a short stop at the upper end of Brook Bottom (43/1477), north-west of Tideswell, where our leader had found an interesting juxta-position of calcicoles and calcifuges. Between the brook and the cliff was a little lawn of *Deschampsia flexuosa* with *Agrostis tenuis*, *Holcus mollis*, *Molinia caerulea*, *Nardus stricta*, *Potentilla erecta* and *Galium hercynicum*. On the small vertical limestone cliff were *Galium pumilum*, *Briza media*, *Koeleria gracilis*, *Asplenium viride* and *Cystopteris fragilis*, while on the flat ground above were *Calluna vulgaris* and *Vaccinium myrtillus*. By the brook *Rorippa* × *sterilis* was noted. Then the coach went through Tideswell to the southern side of Chee Dale (43/1273). High above a hairpin bend of the river Wye is a small limestone cliff with a rich flora, but the old record of *Hippocrepis comosa* was not confirmed.

After lunch the rain began and the afternoon's botanising was done during brief sorties from the coach. *Polemonium caeruleum* was seen by the roadside in Taddington Dale, *Paris quadrifolia* and *Dipsacus pilosus* by the Via Gellia (where we also noticed an inn called "The Lilies"), and the Lovers' Walk at Matlock Bath was visited for *Festuca altissima*. When we reached the Millstone Grit, the coach slowed down for the party to see *Rumex alpinus* near a farm, but we stopped and scaled a wall on Beeley Moor to examine a clump of the hybrid *Vaccinium* × *intermedium*, a clone which may well be 300 years old. We had a glimpse of Ladybower Reservoir and returned to Sheffield in time for members to catch trains home.

It had been a richly satisfying week-end to which the enthusiasm of Mr. Adams and the kindness of Professor Clapham, and the local knowledge of both, had greatly contributed.—B. WELCH.

FIELD MEETINGS, 1955

APRIL 20th, 1955. CASSIOBURY PARK AND WHIPPENDELL WOOD

Leader: E. B. BANGERTER

This Junior meeting, well attended by over 50 scholars from 8 schools, was intended for the study of the spring flora in mixed woodland. Unfortunately the backwardness of the season allowed only a few species to be seen in flower, but the weather was by no means as dull as the botany and welcome hours of sunshine were enjoyed by all.

Before setting off to look at the riverside flora in Cassiobury Park, near Watford, a brief explanation of the Maps Scheme was given. Subsequently members of the party assisted the leader in marking a card for Whippendell Wood to supplement records made at a later season in previous years. Species seen in flower were identified together with many in a vegetative state; among the latter the most interesting was *Alchemilla vestita*, an uncommon plant in the London area.

Thanks are due to Miss H. Franks for generous help in organising and instructing the party.—E. B. BANGERTER.

MAY 27th to 30th, 1955. DOVER

Leader: Dr. FRANCIS ROSE

This Whitsun week-end was attended by 35 members and guests. At the Friday evening meeting at Biggin Hall the two objects of the meeting were explained as (1) exploring little-known chalk country near Dover to help the leader's 'Flora of Kent' (now in preparation) and (2) listing (especially of common plants) for the 10 km. grid squares for the Maps Scheme.

On Saturday the party left by coach in steady rain and, after a brief stop at Kearsney to inspect *Orobanchë caryophyllacea* by the main road, the morning was spent working the magnificent stretch of open downs between Woodville Park, Temple Ewell and Lydden. *Valerianella carinata* was seen on the old flint wall of Woodville Park. On the downs the abundant *Polygala calcarea* included both light-blue and white-flowered forms. There is a gap of some 18 miles between those on the North Downs and these populations, which show unusual features. *Brachypodium pinnatum* is locally a curse, but in the shorter turf *Ophrys sphegodes* was found in plenty, and a fine colony of *Orchis ustulata* confirmed a pre-war record. *Galium pumilum*, *Hippocrepis comosa* and *Genista tinctoria* were seen, the last being a fine and characteristic feature of many downs about Dover. On the 'clay-with-flints' plateau to the north, a small oak-hazel wood was visited near Coldred and an

old record of *Helleborus viridis* confirmed. After lunch, Eastling Wood, Waldershare, proved interesting, and provided a new locality for *Orchis purpurea*. On Sutton Downs, now chalk scrub and coppice, last year's stems of *Monotropa* were seen, with *Neottia nidus-avis* and *Platanthera chlorantha*. Allotment and wayside weeds were listed at St. Margaret's-at-Cliffe. Free Downs to the north yielded a rich chalk-grassland flora in a few spots with orchids and plentiful *Filipendula vulgaris*, and a small area of chalk-heath on leached soil showed *Ulex europaeus* dominant, with *Calluna vulgaris*, *Potentilla erecta*, *Succisa pratensis* and *Rumex acetosa*; this seems to be the first true chalk-heath to be observed in Kent. At Langdon Bay *Orchis ustulata* was seen again, and *Silene nutans* subsp. *smithiana* and heavily wind-trimmed *Juniperus communis* were seen on the cliff edge.

Sunday was warm and sunny. At Coombe Farm, in a dry valley in the chalk just west of Dover, *Calamintha ascendens* (rare in E. Kent) was seen by the road. The party divided to work both sides of the beautiful Coombe-to-Poulton valley. The hanging woods of the steep valley sides about Dover are unlike those in other parts of Kent in that beech is very rare or even absent, and the dominant trees are *Fraxinus excelsior*, *Quercus robur* and *Acer campestre*, with coppiced *Corylus* and *Carpinus*. On the steep north-facing slope of this valley a very damp wood showed *Orchis purpurea*, *Ophrys insectifera*, *Paris quadrifolia*, *Adoxa moschatellina*, *Luzula sylvatica* and many ferns, including *Dryopteris borrieri*, *Polystichum setiferum* and *P. lobatum*, and bryophytes were very luxuriant. The downs in Coombe Vale yielded *Galium pumilum* (a rare Kent plant which proved to be frequent about Dover), *Linum bienne* and fine *Hippocrepis comosa*. The two parties met for lunch near Poulton Farm at the valley head and then passed over the ridge into Elms Vale, the next dry valley southwards. Elms Wood was visited while the second party examined cornfields and hedgebanks in the valley floor, finding a new locality for *Orobanche caryophyllacea* and listing for grid square 61/23 on the way to Hougham, where *Ceterach* was seen on a wall. After tea, the downs and cliffs from Lydden Spout to Shakespeare's Cliff were visited, and *Genista tinctoria* and *Ophrys sphegodes* in vast quantity, *Matthiola incana*, *Brassica oleracea* and *Limonium binervosum* were seen.

On Monday, another fine day, the coach took the party to Lydden village, five miles inland, from whence they walked through a wild and beautiful valley to Swingfield, examining downs, scrub and ashwoods on the way. *Polygala calcarea* was seen near Lydden and numerous *Orchis morio* and *O. mascula* in the chalk pastures. In the ashwoods *Orchis purpurea* was seen in quantity, with albinos, and *Lathraea squamaria* was discovered, parasitic on hazel. At Swingfield Church *Ceterach officinarum* and *Asplenium ruta-muraria* were found. After lunch the coach took the party to South Alkham. From here one party worked the south side of the Alkham valley eastwards, while the other party went on to Alkham village to work the northern side. The first party found little beyond the common downland and scrub plants, except for *Ophioglossum vulgatum*, but useful lists were obtained from

'unknown' country. The second party found *Polygala oxyptera* above Alkham, and quantities of *Orchis purpurea*, *Helleborus viridis*, *Campanula trachelium*, *Paris quadrifolia*, *Angelica sylvestris* and *Ophrys insectifera* in Sladden Wood. The acid plateau of Ewell Minnis is bracken-covered and added few new species. The meeting closed at teatime and, thanks to members with private cars, the difficulties of getting home in the rail strike were mitigated.

The meeting produced no new county records, but extremely valuable species-lists for a number of habitats were obtained, and the records for the B.S.B.I. Maps Scheme were greatly augmented. In square 61/24, 127 additional species were recorded, making the total 460; in square 61/34, 63 new species, making the total 420; and in square 61/23, 107 new species, making the total 382. These totals may not seem high but the Dover countryside, though of extreme interest, consists entirely of chalk with a clay capping on the plateau, and there is very little water.—F. ROSE.

JUNE 25th to JULY 2nd, 1955. GALLOWAY.

The main party of seven met at their headquarters, the Galloway Arms Hotel, Newton Stewart, for breakfast on Saturday morning. The Halls, who had arrived the previous day, had already completed a Maps Scheme record card sent hopefully in advance. This was presented over the marmalade and the tone of the meeting was set. Two cars were available and the pattern of the first day was followed throughout most of the week. Three groups worked independently taking one 10 kilometre square each day. The Howitts transported the Halls with great elegance, leaving them in one square whilst taking a more distant one themselves. Miss de Vesian took Miss Biggar and me in her car. Later in the week Miss North joined us for three days and she worked with the latter party. On the Thursday it gave us great pleasure to be joined by Dr. Milne-Redhead. Most of the party met at Physgill on the coast near Whithorn and spurred on by Dr. Milne-Redhead's enthusiasm spent a most valuable afternoon, which produced a new county record for *Vicia bithynica* and the first plant of *Bromus sterilis* of the week. The weather over the period was not unkind, there was rarely sun at Newton Stewart but it always looked better in the south. We waited in vain for what became mythically known as a 'Glen Trool Day'. It did not arrive. Plans were laid for a route march round Merrick on the last Friday, but it poured until mid-day. Everyone visited Glen Trool, a situation of calm delight unexpected outside the Highlands, but excursions were made only to the *Cryptogramma crispera* zone: this was sufficient to bring in *Pinguicula lusitanica*.

The area round Newton Stewart does not vary much geologically, being mainly made up of Silurian shales with an intrusion of granite in the area to the north-east of Newton Stewart. However, what it lacks in range of parent materials is compensated for by the large range of topography and climate. The area to the south and west of Newton Stewart is low lying, rarely exceeding 500 ft. above sea level: it consists

of lochs, ponds, streams and raised bogs, with intervening patches of arable and rough pasture where the drainage is more free. The amount of land of economic value increases rapidly as one goes south and around Whithorn one can perhaps understand Druce's reference to botany in Galloway reminding him of a walk in a Midland Shire. To the north and east of Newton Stewart the land rises rapidly—up to 2,784' on the Merrick some 12 miles due north and to 2,331' on Cairnsmore of Fleet about 6 miles to the east. Here are large areas of acid moorland with a very restricted flora, but the monotony is relieved by upland lochs, old quarries and waterfalls. Besides these two areas of obvious contrast there are the fascinating marshes of the river Cree with their rich variety of sedges, and the whole of the coastline. This coastline has examples of all the main maritime habitats, cliff, shingle beach, salt marsh and sand dune, besides some fine oak woods which sweep down to the beach, some sheltered wooded gullies to which many of the plants of the area are confined and finally some relatively base-rich coastal marshes. The rainfall in the area varies from about 30" on the coast at Whithorn to about 60" per annum in the hills.

Besides the interest aroused by the distribution of species many individual records were made. Altogether 24 new vice-county records were made, 7 for Kirkcudbright and 17 for Wigtown. The most exciting for Kirkcudbright were perhaps *Epilobium pedunculare*, *Hieracium diaphanoides* and *Euphrasia rostkoviana* whilst in Wigtown *Carex limosa*, *Erodium glutinosum*, *Vicia bithynica*, *Sagina ciliata* and *Barbarea intermedia* were amongst those made. Other species it was a pleasure to re-record included *Astragalus danicus*, *Blasmus rufus*, *Centunculus minimus*, *Cirsium heterophyllum*, *Lathyrus sylvestris*, *Pyrola minor*, *Valeriana pyrenaica*, *Hippophae rhamnoides*, *Vicia lutea*, and on account of its rarity most fascinating of all *Hierochloe odorata*, discovered quite by chance on the Kirkcudbright shore. None of the party who found it knew the grass, as how few would? We had an unknown grass in our hands; we were in Kirkcudbright. Half joking, "Holy Grass" passed our lips. If it was that then, we mused vaguely, should it not smell of coumarin like *Anthoxanthum*? So late in the season for this, one of the earliest flowering British grasses, few green leaves remained, but some were found and crushed doubtfully between the fingers—Goodness, it does smell like new mown hay!—Could it be? Surely not—but then the smell. Well, there was Hubbard in the car (not in person, only his distillation) and over plastic cups of tea satisfaction was given, the rough edge to the leaf was reassuring under the little finger, and the thin wiry, slightly wavy branches of the panicle were unmistakable. There was nothing left to do that day but go straight back to the Hotel.

As well as the rare and local plants we did see, our final lists show that there were a lot of common species which we did not. Among the most startling absentees were *Aethusa cynapium*, *Alliaria petiolata*, *Armoracia rusticana*, *Arum maculatum*, *Atriplex patula*, *Chelidonium majus*, *Convolvulus arvensis*, *Coronopus squamatus*, *Dipsacus fullonum*,

Glyceria maxima, *Hordeum murinum*, *Leontodon hispidus*, *Papaver rhoeas*, *Salix fragilis*, *Stachys arvensis* and *Tragopogon pratensis*. The list would have been considerably longer had we not had one or two bad days towards the end when several plants we had been trying to avoid were unkind enough to appear. However, it is certainly true that *Lemna minor*, *Medicago lupulina*, *Lamium album*, *Melandrium album* and *Bromus sterilis* are all scarce.

Appended to this report is a full list of common species which we did not see and a list of species which are undoubtedly rare. In the first list many of the species have been recorded previously from vice-counties 73 and 74 but, in the generally available literature (Scot-Elliot's *Flora* and the McCandlish List), no localities are given. If these species were as rare in Surrey or Sussex, for example, as they are in Wigtown and Kirkcudbright, the localities would be well known and recorded. I therefore include this list in the hope that those who have records for these species in these counties will be persuaded to publish them.

An apology is due for the Southern bias of this report. It has been prepared by one who has not had the pleasure of botanising in Scotland extensively before, and I have undoubtedly made many points which are common knowledge to the indigenous Scot or the frequent visitor. I must thank Dr. Milne-Redhead for his advice which was always most productive when followed; Miss Biggar for being the indigenous but never indignant Scot who saved us from recording *Carum verticillatum* as *Myriophyllum spicatum*; the rest of the party for working so furiously and fruitfully; and finally Kirkcudbright and Wigtown for providing such a variety of scenery and botany; I hope it will not be many years before another party visits these undeservedly underworked counties.

SPECIES NOT FOUND

o = Recorded for v.c. 74 as natives in *A list of Wigtownshire plants* by A. C. McCandlish, 1931, *Galloway Gazette*.

* = Recorded for v.c. 73 as natives in *Flora of Dumfries*, Scot-Elliot, 1896.

/ = Recorded for v.c. 74 as natives in *Flora of Dumfries*, Scot-Elliot, 1896.

/* *Acer campestre*
 /* *Aethusa cynapium*
 /* *Agrostis canina* (overlooked?)
 /* *Alliaria petiolata*
 Anthemis cotula
 /* *Arabisidopsis thaliana* (over?)
 * *Arctium lappa*
 Armoracia rusticana
 Arum maculatum
 /* *Atriplex patula*
 Ballota nigra
 * *Bidens* spp.
 Bryonia dioica
 Cardaria draba
 Carduus nutans

* *Carex riparia*
 Centaurea scabiosa
 /* *Chelidonium majus*
 * *Cochlearia danica*
 Oenothera arvensis
 Coronopus didymus
 /* *Coronopus squamatus*
 Cynoglossum officinale
 /* *Dipsacus fullonum*
 Echium vulgare
 Elodea canadensis
 /* *Euphorbia exigua*
 /* *Fillago germanica*
 o * *Gallium mollugo*
 Geranium pusillum

* <i>Glyceria maxima</i>	<i>Ranunculus arvensis</i>
<i>Hordeum murinum</i>	/ * <i>Ranunculus auricomus</i>
o <i>Hypericum dubium</i>	/ * <i>Rhynchospora alba</i>
* <i>Hypericum hirsutum</i>	o <i>Rumex conglomeratus</i>
<i>Kickxia elatine</i>	* <i>Salix fragilis</i>
<i>Kickxia spuria</i>	<i>Saxifraga tridactylites</i>
/ * <i>Knaulia arvensis</i>	<i>Scabiosa columbaria</i>
<i>Lemna trisulca</i>	o <i>Scandix pecten-veneris</i>
* <i>Leontodon hispidus</i>	<i>Senecio erucifolius</i>
/ * <i>Lysimachia nummularia</i>	* <i>Serratula tinctoria</i>
<i>Matricaria chamomilla</i>	/ * <i>Stachys arvensis</i>
<i>Melilotus</i> spp.	/ * <i>Stellaria palustris</i>
o * <i>Milium effusum</i>	/ * <i>Tanacetum vulgare</i>
/ * <i>Odontites verna</i>	/ * <i>Thalictrum flavum</i>
/ * <i>Ononis spinosa</i>	* <i>Tragopogon pratensis</i>
o <i>Origanum vulgare</i>	/ * <i>Ulex gallii</i>
* <i>Papaver rhoeas</i>	o <i>Umbilicus rupestris</i>
* <i>Parietaria diffusa</i>	<i>Verbena officinalis</i>
* <i>Plantago media</i>	/ * <i>Veronica hederifolia</i>
* <i>Poterium sanguisorba</i>	* <i>Viola hirta</i>
/ * <i>Primula veris</i>	

RARE SPECIES

Figures in brackets refer to number of records

<i>Lemna minor</i>	(2)	<i>Bromus sterilis</i>	(1)
<i>Medicago lupulina</i>	(2)	<i>Arabis hirsuta</i>	(1)
<i>Leontodon leysseri</i>	(1)	<i>Artemisia vulgaris</i>	(2)
<i>Lamium album</i>	(2)	<i>Euphorbia peplus</i>	(1) (Too early?)
<i>Melandrium album</i>	(1)	<i>Festuca arundinacea</i>	(3) (Coastal only)
<i>Chaerophyllum temulum</i>	(3)	<i>Juncus inflexus</i>	(2)
<i>Agrimonia eupatoria</i>	(3)	<i>Juncus subnodulosus</i>	(1)

F. H. PERRING.

JULY 8th to 11th, 1955. DURHAM

On the evening of Friday, July 8th, the party of 16 met at St. Mary's College, where most of the members coming from a distance were staying, to discuss plans for the week-end.

Saturday morning was devoted to a study of the plants at Cassop, situated on the Magnesian Limestone, about 4 miles south-east of Durham City. Among these were *Helianthemum chamaecistus*, *Orchis fuchsii*, *Gymnadenia conopsea*, *Coeloglossum viride*, *Sesleria caerulea* subsp. *calcareae* and *Selaginella selaginoides*.

The party then went on to Butterby Ponds, some 2 miles south of the City, for a picnic lunch followed by an investigation of the vegetation in and surrounding the ponds. The latter looked very attractive with a large number of plants of *Nuphar lutea* on both ponds, with the addition of *Nymphaea alba* on the larger one. A few flowers of *Iris pseudacorus* still remained and the patch of *Acorus calamus*, which has been known there for a long time and which appears to have increased in extent during the past 10 years, was examined with interest, although, as usual, it showed no signs of flowering. A number of *Carex* were observed, including *Carex flacca*, *C. rostrata*, *C. acutiformis*, *C. disticha*, *C. vesicaria*, *C. remota* and *C. otrubae*. *Rumex hydro-*

lapathum and *Epipactis helleborine* were also seen. After tea at the Bridge Inn, Croxdale, some enthusiasts returned to the ponds for further work.

Sunday, July 10th, was spent in Weardale, where stops were made at a quarry near Stanhope to look at the plants colonising the area and also those in an adjacent meadow. Later, on the road from Eastgate to Rookhope, a halt was made near a stream, for lunch and a survey of the plant life nearby. Here, as well as in other places, was a great profusion of *Geranium pratense* and many plants of *Cirsium heterophyllum* bordering the roadsides.

In the Rookhope neighbourhood, our last stop was made near some disused lead-mine workings, where the usual plants that flourish in such habitats were seen. After tea at the Phoenix Hotel at Stanhope Dr. Young kindly expressed the party's thanks to Mrs. Gibby. The return to Durham was made via Tow Law, one of the highest points in the county.

The lists of plants noted in Weardale were being collected for the Maps Scheme by Miss Bradshaw and Mr. Morgan, to both of whom very grateful thanks are due for coming so readily to give much help in the absence of a leader.

Throughout the week-end the weather was perfect, if rather on the hot side, and the unusually brilliant sunshine enabled the visitors to see Durham, especially the Cathedral in its magnificent setting, at its best.—A. N. GIBBY.

AUGUST 24th to 31st, 1955. FLATFORD MILL FIELD CENTRE

We met on Wednesday, 24th August, at Flatford Mill. After dinner the Warden, Mr. F. J. Bingley, gave a talk on this part of East Anglia, outlined the work to be done and told us the history of the mill and its connection with John Constable. The party consisted of Douglas W. and Peter J. Cross, John H. and Heather Field, Peter J. S. Furneaux, John Horsman, Roy Maycock, Beverley Miles and Maureen A. Turner. Mr. and Mrs. Buckle were with us for the first two days.

On Thursday morning we set out by coach to Wicken Fen, making three short stops on the way. *Dipsacus pilosus* was seen growing on a shaded bank by the road, and on the Breckland edge *Silene otites* was seen with a second crop of flowers, and *Medicago falcata* in flower with its convincingly curved fruits. On Risby Common we explored a small area of Breckland grassland around a disused chalkpit, finding many plants which most of us had not seen before, such as *Thesium humifusum* and *Euphrasia pseudokernerii*.

Wicken Fen is too well known to need much description here, though it was "new" to all of us. The effect of cutting the *Cladium mariscus* which enables other plants to enter the sedge fen was most striking and we felt the denseness of the almost impenetrable developing carr. A number of aquatics, particularly in the Main (Wicken) Lode we found of interest; these included *Alisma plantago-aquatica* and *A. lanceolatum* and various seedlings which led to speculation upon their

identification. In the brick pits there was a fine show of the yellow flowers of *Utricularia vulgaris*.

On Friday Mr. Bingley decided that some ecological work would be good for us, so we set out with suitable gear to the near by brackish marsh, the vegetation of which we listed and mapped in various ways.

On Saturday we visited Stour Wood, stopping at Wrabness to examine *Zostera nana* and *Z. hornemanniana*, the latter being more tolerant of exposure at low tide. Stour Wood is coppiced *Castanea sativa* with standards; the coppicing is on a fourteen year cycle which means that the ground flora is also cyclic, light being one of the obvious factors. Differences in the vegetation of the cart ruts through the wood due to the substratum, which is either clay or gravel, were also examined.

For Sunday there was no set programme, so while some of us spent it around the mill trying to absorb some of the things we had been told, shown, and seen, Beverley Miles and Peter Furneaux cycled the twenty or so miles to Colne Point (near St. Osyth) to collect *Spartina maritima* and *Frankenia laevis*; Roy Maycock and John Horsman motored to an area about seven miles from Saxmundham, at East Bridge, where they examined the aquatic flora of the brackish dykes and at Eastern Broad where they examined the flora of the northern sandy end. In the evening Mr. Bingley lectured on Shingle Street, telling us much of interest about the succession of shingle ridges and salt marsh to the west of Orford Haven.

On Monday we shared a coach with a party of freshwater biologists and some artists to Shingle Street. We examined the vegetation of the shingle, noting how the oldest and most inland ridges had the richest flora. Several plants unexpected on shingle such as *Eryngium maritimum*, *Honkenya peploides* and *Crithmum maritimum* were shown to us and duly theorised upon. *Crambe maritima*, rare in this area, was also seen. In the salt marsh at the back of the shingle the zonation of plants was well marked and the comparatively distinctive *Salicornia dolichostachya* was demonstrated to us, as was the effect of draining a pan with a subsequent colonisation by *Salicornia* spp.

On Tuesday we studied aquatic plants in several reaches of the rivers Stour and Brett. We listed plants which, being on a vice-comital as well as a grid basis, proved complicated, as the rivers are vice-county boundaries.

We returned to an orgy of sorting out, clearing up, and the making of composite lists of the plants seen; these lists were left with Mr. Bingley who is going to mark Distribution Maps Scheme cards and the card index kept at the field centre. The artists arranged an exhibition of their work, so we took the opportunity to see how others had spent the week.

On Wednesday we had to depart, having indeed been fortunate with the weather and our surroundings, for this field centre of the Field Studies Council combines picturesque buildings set in a lovely country with a library, a laboratory, and stimulating company. We should like to thank the Society and all those who helped us during this week

and give particular thanks to Messrs. Bingley and Buckle.—MAUREEN A. TURNER.

AUGUST 27th, 1955. DAY MEETING to study *Salix*

Leader: R. D. MEIKLE

As there had been too few applications to justify booking a coach, the itinerary was altered and the 11 members who met at Kew Bridge walked from there downstream on the Surrey bank of the Thames to Chiswick Bridge, which they crossed to continue on the Middlesex side to Barnes Railway Bridge. Then they travelled by bus to Ham Common and walked from Teddington Lock along the towpath towards Richmond.

In the first section the willows noted included *Salix* × *hippophaëfolia* Thuill. (*S. triandra* × *viminalis* (or *alba*), formerly called *S. lanceolata* Sm. and *S. undulata* Ehrh., and large trees of one of the *S. fragilis* group, with leaves having unusually coarse serrations, referred to *S. russelliana* Sm. by Mr. Meikle who suggested that it is not a hybrid but a mutation propagated vegetatively. Fine trees of *S. alba* × *fragilis* and *S. babylonica* × *fragilis* (*S.* × *blanda* Anderss.) were seen by Chiswick Bridge. On the Middlesex bank *S. viminalis* and *S. atrocineria* were observed and planted groups include two decorative segregates of *S. fragilis* named *S. basfordiana* and *S. sanguinea*, and the handsome *S. daphnoides* and *S. acutifolia*, both with very pruinose twigs.

Near Teddington Lock *S.* × *hippophaëfolia*, *S. babylonica* × *fragilis* and two *S. fragilis* segregates were seen again, and a fine tree of "nearly *alba*" and one of *S. alba* × *fragilis* with very finely-toothed leaves, and the osier *S. purpurea* × *viminalis* f. *forbyana*, were pointed out. Visitors to the London area were also pleased to see *Artemisia verlotorum* and *Scilla autumnalis*.—B. WELCH.

AUGUST 27th and 28th, 1955. WEST SUFFOLK

A party of 11 met at the headquarters, the Suffolk Hotel, Bury St. Edmunds, on the evening of Friday, 26th August. One group had by that time already investigated part of the Breckland to the north west and compiled an impressive list. Plans were laid for the following day. Four groups were organised, each of which would patrol one of the surrounding 10 kilometre grid squares. Roughly speaking Bury lies at the junction of two distinct types of country. To the north lies the Breckland, with its many sandy heaths which have chalk at varying depths from the surface, giving rise to vegetation which changes from something similar to chalk grassland rich in species to a very acid species-poor vegetation dominated by *Calluna*. The area is dissected by valleys many of which have large tracts of base-rich fen still undrained bearing a rich and interesting flora. Much of the area is covered in Forestry Commission plantations, but there are also some semi-natural woodlands with a rather poor ground flora. To the south the chalk is buried under many feet of boulder clay much of which has

incorporated chalk lumps. The majority of this area is under the plough and only scattered woodlands bear witness to the type of vegetation which must have covered the area extensively in pre-Saxon times. These woodlands are, however, extremely rich in their ground flora and contrast markedly with those to the north of Bury.

As there were only two full days available for mapping it was arranged that each party visited each of the two main types of country as described above. In all seven 10 kilometre squares were fairly thoroughly worked and short lists were made in two others. About 2,000 records were made, an average of nearly 225 per square.

Some of the most interesting species seen in the two areas were:—

A. BRECKLAND.

1. HEATH. *Dianthus deltooides*, *Genista anglica*, *Inula conyza*, *Medicago falcata*, *M. minima*, *M. × varia*, *Minuartia tenuifolia*, *Potentilla argentea*, *Quercus petraea*, *Rumex pulcher*, *Sagina ciliata*, *Thesium humifusum*, *Thymus serpyllum*, *Turritis glabra*, *Viola canina*, *V. curtisii*.
2. WOOD AND SCRUB. *Agrimonia odorata*, *Hypericum androsaemum*, *Lysimachia nemorum*, *Peplis portula*, *Ulmus coritana*.
3. FEN. *Carex paniculata*, *C. pseudocyperus*, *C. vesicaria*, *Cladium mariscus*, *Epipactis palustris*, *Scirpus setaceus*, *Oenanthe lachenalii*, *Parnassia palustris*, *Schoenus nigricans*, *Stellaria alsine*.
4. RUDERAL AND ARABLE. *Agrostis gigantea*, *Ammi majus*, *×Festulolium loliaceum*, *Lepidium campestre*, *Polygonum nodosum*, *Solanum sarrachoides*, *Stachys arvensis*, *Symphytum orientale*, *S. ×uplandicum*.

B. BOULDER CLAY

1. WOODS. *Primula elatior*, *Rosa tomentosa*, *Veronica montana*.
2. RUDERAL AND ARABLE. *Carex polyphylla*, *Dipsacus pilosus*, *Orobanche minor* (fields of red clover).

On behalf of the Maps Scheme I would like to thank all those who took part and made such a valuable contribution to the collection of records.—F. H. PERRING.

SEPTEMBER 10th, 1955. HAYLING ISLAND, HAMPSHIRE

Leader: D. H. DALBY

This meeting was held for the study of *Salicornia*, and the party of 18 met at North Hayling Halt, conveniently situated beside the shore, and the leader made some introductory remarks about the distribution of *Salicornia* spp. on Hayling Island, and the types of plant present. As most of the shoreline is artificially banked to prevent marine incursions over the low-lying fields, glassworts are now restricted to a number of separate localities, with sterile stretches between. Many distinct forms were encountered, and the expedition was fortunate in having the company of Mr. N. D. Simpson, whose help in their recognition was much appreciated.

The first locality visited was a field near the Halt, where saltwater penetrates a sluice at high tide, and also soaks through the railway embankment which acts as a seawall in places. Dense colonies of

ramosissima-type plants occur here, often passing into the *gracillima*-modification as a result of crowding. Seedlings in this field have reached the remarkable density of 290 per square inch. Typical bushy specimens of *S. disarticulata* were also encountered. After walking up the railway the party next visited some rich colonies of glassworts, including *S. perennis*, growing in and beside semi-permanent pools which gave the impression of being relict upper saltmarsh pans. The vegetation round these pools showed very marked zonation.

The party next crossed an expanse of *Agropyron pungens* to reach an exposed stony shore where *S. cf. stricta* and *S. cf. ramosissima* grow together. The *ramosissima*-type in this colony is undoubtedly different from that occurring in the other localities visited, being more extreme in its morphology, having more stereids in the flowering segments and an earlier flowering period. Some of the party visited the outer bank of the old oyster beds, but were unable to find any specimens of the very typical form of *S. cf. dolichostachya*, although it has occurred there each year previously. This served to demonstrate the temporary nature of so many *Salicornia* colonies, which fluctuate in response to changing environment.

Another colony was visited growing on shallow mud overlying chalk and flint rubble beside the railway embankment. It is not easy to name the plants here with confidence, their numerous flowering segments, lack of anthocyanin and general growth habit suggesting *S. cf. stricta*, but the shape of these segments suggesting *S. cf. ramosissima*. In a saline cow-inhabited field near by a colony of small reddish *ramosissima*-type plants was examined, a comparison being made between them and specimens of *Suaeda maritima* growing in the same place.

The last glasswort locality visited was Northney saltmarsh, where several species occur, being limited however to upper marsh depressions and to pans with sufficient drainage to prevent water standing after spring tides. The artificial blocking of the exit to one of these pans caused the rapid rotting and death of young plants growing in it. *S. disarticulata*, *S. cf. ramosissima* and *S. cf. stricta* grow in the pans, the latter possibly hybridising in one place. The evidence for hybridisation lies in reduced pollen fertility and the presence of tetraploids in both types of plant. On the upper marsh *S. disarticulata* and *S. cf. ramosissima* occur, both usually in the simple competition-induced forms. Puzzling specimens with flowers in threes below but solitary above may perhaps be hybrids, but more satisfactory evidence is required.

Just before the party separated specimens of the native cordgrass, *Spartina maritima*, were examined. On these marshes the species is mostly restricted to pans of soft mud at a relatively low level, rather than being a constituent of the general saltmarsh community as it is for instance on some of the Essex and Suffolk marshes.—D. H. DALBY.

REVIEW

Collins Pocket Guide to Wild Flowers including Trees, Shrubs, Ferns, Grasses and Sedges. By DAVID McCLINTOCK and R. S. R. FITTER. Pp. 340, 64 colour plates, 76 black-and-white drawings. Collins, 1956. Price 25s.

When I first looked at this companion volume to R. S. R. Fitter's admirable *Pocket Guide to British Birds*, up rose all my snobbish botanical prejudices against imprecise measurements, "English" names and classification by colour. I did not like it and I decided not to buy it. I mention this so that B.S.B.I. members may learn by my mistake, for, being sent a copy to review and thus being obliged to read it thoroughly, I have become an enthusiastic convert.

The authors' aim is to provide a ready means of naming, without frighteningly scientific language or methods, every flower and fern "likely to be found looking wild" in the British Isles. To this end almost all are illustrated in colour, or, if they do not bear coloured flowers, in black-and-white plates or line drawings. Similar plants are all illustrated together on the same page with a daisy head on each page to give the scale, and the whole set is grouped together on successive pages; so that these pictures, in which the seven artists have achieved a very high standard of "recognisability", do provide a ready and rapid means of provisional identification. "But", the authors firmly instruct us, "never rely on the plates alone". Each figure refers us to a text where, in an average of about six lines and with ingenious avoidance of repetition or unnecessary detail, but at the same time without ugly and discouraging abbreviations, the essential distinguishing features are given. In addition Mr. Fitter has provided a number of interesting and original keys, including a scent key, which wisely make no attempt to be dichotomous and collectively exhaustive, but pick on important salient features. Moreover many fine details (e.g. *Carex* fruits) are illustrated by line drawings in the text by Francis Rose.

Chiefly, perhaps, this book is an ideal present for the beginner of any age, the amateur who wants to make himself familiar with the greatest possible number of wild plants. To avoid what in Bentham and Hooker he is bound to find frustrating, the authors have sensibly excluded extinct or virtually extinct plants, such as *Asplenium fontanum*, the famous Senecios and *Spiranthes aestivalis*, and have replaced *Xanthium strumarium* by *X. spinosum*. They have excluded certain "splits", such as the forms of *Limonium binervosum*. Contrariwise they have added *Mahonia aquifolium*, *Galinsoga quadriradiata* and other plants more likely to be found in the field than in books. Indeed for the more experienced botanist the chief value of the book above its pleasure-giving originality lies in its comprehensive up-to-dateness.

There are immediately identifiable pictures of *Diapensia lapponica* and of "Iceland Purslane" (this latter an unusually well-grown specimen, more than half an inch long).

What about these "English" names? Provided they are necessary at all, it must be confessed that, with the help of Miss C. M. Rob, the vocabulary has been established with care and authority. Readers will have recognised the plant last mentioned; and a few other inventions, such as "Rannoch Rush" and "Shaggy Soldier", are equally happy. But it seems fussy to substitute "St. Olaf's Candlestick" for an English name which most readers of this review would recognise, though few have been able to apply it in the field. And it must be remembered that common English families have gardens and do use Latin names in common speech—"Viper's Grass" conceals the name of a well-known vegetable and, after finding a *Spiraea* disguised as Bridewort and a *Cotoneaster* disguised as "Khasia Berry" ("Great Orme Berry" was easier to spot!), I hurriedly turned up *Fuchsia* fearing it would have become "Connemara Hedgewort".

Reviewers are supposed to look for mistakes; but here one is up against the knowledge and efficiency of Mr. David McClintock who seems, moreover, to enjoy that rare gift, control over the printers. "Childling Pink" appears more than once, so cannot be a misprint; it is surely a mistake for "Childing", the word used by Shakespeare with the same meaning as *prolifera*. The description of *Carex atrofusca* (not illustrated) does not bring out how much more nodding its fruits are than those of its allies, a useful field character. In contrast to *Dactylorchis fuchsii*, *D. maculata* (*Orchis ericetorum*) is said to bloom only till July and not in August. But on the Scottish moors, which are perhaps its chief habitat, it is always to be found well into the school holidays. In the illustrations, the leaf of *Allium paradoxum* seems too narrow (half the width of the Snowdrop's on the same page) and so does that of *Hypochaeris maculata*. Contrariwise the authors gain over the *Flora of the British Isles* in placing *Mibora minima* in Dorset instead of Hampshire, for its well-known station is in fact half a mile on the Dorset side of the county boundary.

A most attractive feature to the amateur is the fact that species are given 0, 1, 2, or 3 stars denoting degree of rarity. This must, of course, be a matter of opinion, but I was astonished to find how little I felt able to disagree with the opinions expressed. I should have given *Carex ericetorum* and *Galium parisiense* three stars, not two like *G. boreale*. I should have given *Botrychium lunaria* two, not one like *Ophioglossum vulgatum*. I should have given no star to *Trifolium medium*. But such argument is all part of the pleasure added by this novel feature.

There are attractive end-papers in the form of outline maps of the British Isles inscribed with names to make the botanical mouth water, like Roundstone, Altnaharra, and "Phyllack Towans". It is a pity the artists were not able instead, as in the bird book, to cover these maps with unlabelled sketches of the appropriate species as a sort of quiz for the reader.

In conclusion I commend the ownership of this book to amateur naturalists at all stages. Joint authorship must have its difficulties; but in this case the cross between an ornithologist and a botanist has led to an offspring showing a large number of new characters and a remarkable hybrid vigour. It should stand every chance of becoming established in the appropriate habitats.—J. OUNSTED.

OBITUARIES

JOHANNA CHARLOTTE DAVY (1865-1955).—Lady Davy, who died on December 28th, 1955, was one of the outstanding personalities of this Society in the years between the two World Wars.

She was born in London in February 1865, but before she was three years old the family moved to Roehampton, "to the country near London" was her description of the place. From childhood she loved flowers; her earliest recollection was of sitting on the lawn picking daisies. While a young girl she started painting and in a lesser degree pressing wild flowers found on holidays in Switzerland, but her interest in British field botany came much later when she was over 30. In 1886 she married James Stewart Davy, and went north to Settle, in Yorkshire, a place she hated; her joy was unbounded when, after a few months, they moved to Sussex, to Hamsey, and in 1893 to Copyhold near Cuckfield. It was while at Copyhold she began her work on the British flora, and in 1899 she joined the Wild Flower Society, which added to her interest. Whatever Joan Davy did she did thoroughly: she had an instinct for where to look for plants, an instinct which developed into a knowledge of plant ecology which was quite remarkable.

In 1900 she met Dr. G. C. Druce on a visit to Oxford. This meeting was the beginning of a friendship which lasted until Druce's death. He was a frequent visitor to Copyhold, and together they explored the Sussex countryside; the many entries in the *Sussex Flora* are proof of the valuable work done in that county. Similar work was done in Surrey after the Davys moved to Pyrford in 1909, where *Pyrola minor* grew in the grounds of their house, hence its name 'Wintergreen'.

Sir James died in 1915, and shortly after, in 1922, Lady Davy moved to West Byfleet. Here she kept open house for botanists of all ages, helping the beginner and assisting the experienced. There are many who remember days spent in the Byfleet-Woking area with gratitude.

When travel became possible again after the 1914 war Lady Davy began a series of trips in search of British plants, often in the company of Dr. Druce, T. J. Foggitt and other botanist friends.

She visited all the well-known localities and many that are to-day well known but which 30 years ago were still pastures new. She published a short account of one such trip under the title "From John o' Groats to Lands End" in *Rep. Bot. Soc. d. E.C.*, 7, 939-944 (1926). This was but one of several and before long she became a recognised expert on the distribution of the British flora. One cannot help feeling how she would have enjoyed the Distribution Maps scheme, and what an asset her knowledge and experience would have been.

In 1923 she went to Scotland with Mrs. Foggitt (then Miss Gertrude Bacon) and together they added *Carex microglochin* to the British flora, a discovery of sufficient importance to warrant an interim report of the Society. It is typical of Lady Davy that while not a little proud of having found the plant she was even more pleased that she had been able to identify it correctly. She kept a collection of specimens of the more interesting plants she found and these are now incorporated in the herbarium of Mr. J. E. Lousley.

She had a flair for identification, aided by a wonderful eye for detail and a good memory, often declaring she was "plumb certain" before even opening a flora. Even so, she always checked her spot diagnosis.

A talented artist, she did a fine series of water colours of British Orchids which are now in the British Museum (Natural History), S. Kensington. She had strong views on many things, and never tried to hide them. She could strike terror into the heart of some of the younger botanists, a terror which quickly turned to admiration and affection when the first awe wore off. Joan Davy was one of the kindest and most generous of women, and she was always ready to encourage those who showed real interest in any subject that appealed to her.

She was a member of the advisory committee formed to administer the Society when Dr. Druce died in 1932, and remained a member of Council until 1947. She was a keen and tireless worker for the Society and led several excursions, in particular one to the Channel Islands in 1936. In recognition of her services to the B.S.B.I. she was elected an Honorary Member in 1950.

There will be many who remember Joan Davy's kindness with affection and gratitude, her readiness to help, her constructive advice, her delightful comments and her sense of humour. We could do with more of her sort, but there will never be another; she was unique.

I am grateful to her daughter Lady Richmond for much valuable help in compiling this appreciation.—C. M. ROB.

To those who were privileged to know Lady Davy well, a botanical outing meant first-rate field work and a good deal of delightful humour. A brilliant field botanist, with an eye that missed nothing, she had a really remarkable knowledge of any plant encountered, so that to the writer—a schoolboy at the time—she was a most instructive and, since she always liked to encourage, a most painstakingly helpful companion. Her experience was extremely wide, and by the Second World War she had seen in wild *situ* nearly all the species figured in Bentham & Hooker that had existed during her forty-odd years of concentrated study and searching. She was one of the last to see *Pinguicula alpina* at Avoch, and *Orchis militaris* at Goring. Wherever she lived the neighbourhood seemed to abound with rare or interesting plants as a result of her continuous and careful examination of the local flora. Even the Roman Nettle turned up once in her garden, in (I believe) a pot of imported roses.

Always ready for a good laugh, she also dispensed humour in ways which were perhaps not intended. Those who witnessed them will be unlikely and unwilling to forget the withering shafts directed through her car window at careless users of the public highways who were unfortunate enough to perform in her immediate presence. She had, too, confirmed dislikes of certain sections of the community which, if not always strictly fair, were sheer delight to listen to. But such idiosyncrasies as she had seemed all the more to enhance her great personality, and, grand person that she was, she will be remembered in terms of immense gratitude and affection by those for whom—like the writer—she did so much and in such a kind way.—R. A. GRAHAM.

PROFESSOR JAMES SMALL (1889-1955) died on the 28th November 1955 at the comparatively early age of 66, fourteen months after his retirement from the chair of botany at The Queen's University of Belfast. He was born at Brechin in Forfarshire and educated at the High School there, where he early showed his botanical leanings by winning the first prize for a very complete collection of local plants. This collection was intact when the Professor retired and still occupies a corner of the Herbarium in the University. It was probably his early interest in plants that led Small to embark on a pharmaceutical training, specialising in pharmacognosy, which finally led to an honours degree at London University. His post-graduate career was interrupted by the First World War, in which he was badly wounded, being invalided out of the army in 1916. Later that year he was appointed lecturer at Bedford College, London University. While he was still a student in London he had spent all his spare time in Chelsea Physic Garden, and it was then that he began his studies of the pollination mechanisms of the *Compositae* and the collection of material for the monograph on the "Origin and Development of the Compositae", for which he was awarded the degree of D.Sc. in 1919. As a specialist in this family he assisted in the classification of material from Kingdon Ward's expeditions and was the author of the genus *Wardaster*.

In 1920 Small was appointed Professor of Botany in Belfast, and a year later his *Textbook of Botany* was published. This book was to his students an epitome of the man himself, revealing the wide range of knowledge and the delight in small things—the *multum in parvo*.

To the academic world Small's name is mainly associated with his exhaustive series of papers on "Quantitative Evolution", so that his quite considerable contributions in the fields of physiology and systematics are often overlooked, and his pioneer work on ecology in Ireland almost forgotten. Early in the 1920s he directed the attention of his students to this branch of field botany, which was then only in the earliest stages of development. Among other studies he organised a survey of the peat lands around Lough Neagh, which he was the first to identify as fen, drawing attention to the "zonal dominants" exhibited in the flora. A need for a simple method of acidity determination arose both in these habitat studies and in physiological research, and this led Small to

devise the "range indicator" method for pH determination, which was used in his research on stomatal movements. Small published a monograph on the pH of plant cells in 1929, and followed this with two books summarising modern research on pH in 1947 and 1953.

Photography early became his principal hobby, and he perfected a camera capable of taking pictures of "pocket-lens" magnification. With it he produced a wonderful collection of studies of plant and animal structure, made both in the laboratory and out of doors during his caravan holidays. In 1938 he was admitted to the fellowship of the Royal Photographic Society, a professional honour which he had long coveted, and which he treasured as highly as the gold medal awarded to him by the Royal Society of Edinburgh in 1951 in recognition of his published research work.

Small delighted in improvisation and invention, and many of his "makeshifts" far excelled the expensively manufactured article. He also encouraged originality in his students, and his teaching courses were planned to set a premium on initiative. His advanced students followed a programme of individual assignments rather than set classes, a practice far in advance of the period when it was initiated, but which is now becoming more common. An innate dogged perseverance enabled him to circumvent any difficulties of organisation that arose, and each move was worked out in meticulous detail before any project was set on foot. This led to a natural deliberation of manner, which, added to the formidably gruff façade he exhibited to the general public, masked his deep interest in all his students, his pawky sense of humour and his generous loyalty. It was only those who worked with him closely who came to a full appreciation of the man.—M. P. H. KERTLAND.

PERSONALIA AND NOTICES TO MEMBERS

ARENARIA SERPYLLIFOLIA L. agg.

Mr. F. W. Adams, 141 Sandygate Road, Sheffield, 10, would be glad to receive living and herbarium material, and seed of *Arenaria serpyllifolia* L. agg.

PLANTAGO

Mr. G. R. Sagar, Dept. of Agriculture, Parks Road, Oxford, is working on the ecology of the five common British species of *Plantago*. He would be grateful for seed samples of any of the species together with short notes on the habitats of the parent populations.

HIPPOPHAE RHAMNOIDES L.

Mr. E. W. Groves, Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, is interested in the distribution in Britain of the Sea-buckthorn (*Hippophae rhamnoides*). It is regarded as being native along our shores from Yorkshire to East Sussex where it occurs locally on dune scrub. Elsewhere it has been planted either as a sand-binder, or where growing inland as an ornamental. Some maritime stations have been known for many years but so far the plant has not spread inland to colonise the alluvial gravels as it has done on the Continent.

Most of the herbarium material examined has consisted of gatherings made fifty or more years ago, while records in published Floras are not much more recent. Up-to-date information is required as in some stations the plant may no longer exist, while in others it may be diminished through coastal erosion. Records kindly supplied by Dr. S. M. Walters from returns received under the B.S.B.I. Maps Scheme have been a help, but many of the older recorded localities need recent confirmation and suitable sand dune areas need searching for new ones.

Ideal would be specimens collected and well documented with precise localities so that their limits of occurrence could be plotted later on a map. Such material would be deposited in the National Collection at the British Museum (Natural History) for future reference as material represented in the Herbarium is at present somewhat meagre. Records of material in members' own herbaria or from their field note books would also be of assistance. Ornithological friends, too, may be able to help as winter feeding flocks of birds along the coast are known to frequent bushes of Sea-buckthorn wherever it grows. Positive observations as to the bird species involved, particularly if seen eating the berries, would be most valuable as it is probable that they play a part in the spread of the plant where new colonies arise some distance away from those already well established. Inland the Sea-buckthorn has

within recent years been planted in several places as a road beautifier. Information of this kind with dates of planting, if known, would be appreciated.

Hippophae is dioecious so that where male and female plants occur in close proximity fertile fruit is set. It is when the glistening orange berries are in the branches, often in great profusion, that the shrubs really become conspicuous. They remain on the twigs throughout the winter, so it is during this period more than at any other time of the year that the presence of the Sea-buckthorn in a new locality is most likely to be noticed.

PERMITS FOR VISITING NATURE RESERVES

For details of the Nature Reserves declared by the Nature Conservancy and procedure for obtaining permits to visit them see *Proceedings B.S.B.I.*, 1, 565 (1955).

NEWBOROUGH WARREN, ANGLESEY

The Air Ministry have established a range at Newborough Warren but, following representations made at a Public Local Inquiry by this Society and others, have agreed to make advance notices of firing practices available to research workers and students. These notices will be sent to our Local Secretary, Prof. P. W. Richards, Coed Menai, Upper Bangor, Caernarvonshire, and members wishing to visit the Warren are advised to make arrangements with him well in advance of the time of their visits.

THREATS TO BRITISH FLORA

Members are urged to report to Mr. J. E. Lousley, 7 Penistone Road, London, S.W.16, any threats to the British flora. The Council has appointed a Conservation Committee to deal with such matters and every effort will be made "to promote in every way possible the conservation of the British flora".

TOXIC SPRAYS

The Society is collecting information about the effect on native vegetation of toxic chemicals used for spraying crops. The increasing use of weed-killing chemicals on arable land implies a threat to neighbouring uncultivated land or woods since the spray can be carried a considerable distance under suitable conditions. Members who observe damage from this cause are asked to send full details to Mr. J. E. Lousley, 7 Penistone Road, London, S.W.16.

SYSTEMATICS ASSOCIATION

A card index of autecological and/or cytogenetic-taxonomic researches that are being carried out on British flowering plants is maintained by the Association. Copies of the index may be consulted at the Royal Botanic Gardens, Kew, or at the Royal Botanic Garden, Edinburgh. Its purpose is to obviate overlapping between different

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Editor : D. H. KENT



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Continued on inside of back cover

VERONICA FILIFORMIS SM. IN THE BRITISH ISLES

By E. B. BANGERTER and D. H. KENT

INTRODUCTION

Turrill (1948) has stressed the need for recording the spread of *Veronica filiformis*, a well known rock-garden plant which has escaped and become established in many parts of Britain. In this paper we have attempted to outline its history and spread in the British Isles and elsewhere. A full list of all the British records known to us is also appended.

DESCRIPTION OF VERONICA FILIFORMIS

Smith (1791) in describing *Veronica filiformis* stated—"This plant is very like *V. hederifolia* in many respects, but is sufficiently distinguished from that species by its leaves being crenate and not five-lobed, the segments of its calyx lanceolate, not ovate, and by the very long filiform footstalks of its flowers". In fact the alleged similarity is not at all close, and *V. filiformis* is much more closely related to *V. persica* Poir., even Smith himself confusing the two species in his herbarium. Further complications are that the nomenclature of the two species has been much confused (see Lacaita, 1917, & Williams, 1904), and that *V. filiformis* DC. is a synonym of *V. persica*, while Don (1838) confuses *V. filiformis* Sm. with *V. polita* Fr.

V. filiformis differs from *V. persica* in the following characters:

	V. FILIFORMIS	V. PERSICA
<i>habit</i>	creeping slender perennial	straggling stouter annual
<i>stems</i>	shortly pubescent	pilose
<i>pedicels</i>	slender, up to 6-8 times longer than leaves	up to twice as long as leaves
<i>leaves</i>	broadly ovate, or almost reniform - orbicular, crenate, 5-10 mm. broad	triangular - ovate to oval, coarsely serrate, 10-30 mm. broad
<i>calyx lobes</i>	oblong obtuse, green	ovate, accrescent, becoming brown; strongly nerved
<i>corolla</i>	pale blue	bright blue
<i>capsule</i>	suborbicular with a long style	of 2 divaricate lobes compressed upwards and sharply keeled

	V. FILIFORMIS	V. PERSICA
<i>seed</i>	pale yellowish - brown, 1.5 × .9 mm. (rarely produced)	medium brown, 2.1 × 1.5 mm. (freely pro- duced)
<i>habitat</i>	streamsides, roadside banks, lawns and other grassy places	cultivated ground
<i>flowering period</i>	April-June	March-November

NATIVE HOME OF *V. FILIFORMIS*

V. filiformis is a rare plant with a very restricted range in the mountain areas of the Caucasus and Asia Minor, where it grows in woods, fields and pastures. Maps showing the known distribution of the species are given by Wulff (1914), Lehmann (1942 & 1954) and Thaler (1953).

METHODS OF REPRODUCTION

Lehmann (1944) records that even in its native habitats *V. filiformis* produces very little seed and spreads vegetatively. Beauverd (1927) writing on the plant in Switzerland states—"the flowering stem has alternate leaves and a solitary flower but becomes too heavy for the filiform main stem with opposite leaves; the latter is thus bent and where the nodes touch the soil it roots and gives off branches. After flowering the floriferous stem produces opposite leaves and becoming too heavy in its turn, trails the ground and gives off rootlets and branchlets. Thus the plant perennates. During the former operation the flowering stem straightens by heliotropism, and about 12-15 (rarely 29) flowers are developed, one per day. Although spreading by this sympodial method plants also produced fertile fruits (2-4 on each 12-20 flowers per inflorescence) and showed themselves capable of reproducing by seed". Warburg (1952) says "fruit not known in Britain", but we have seen material with capsules containing seed from Hampshire (coll. F. E. W. Venning) and W. Kent (coll. J. F. & P. C. Hall), now both in Hb. Mus. Brit. The proportion of fructiferous to non-fructiferous flowers was small. A solitary seed was also produced by material from E. Kent (coll. D. Long), also in Hb. Mus. Brit.

We have not seen *V. filiformis* seedlings in Britain, nor have we received reports of any: the spread in fact appears to be entirely vegetative. Lehmann (1944) writing on the plant in western Europe refers to its two characteristic features—extensive reproduction through runners and almost total lack of reproduction through seed. He mentions also that some authors have attributed the scarceness of seed formation to the plant's new environment and points out that this assumption is incorrect since even in its native habitat the plant forms few seeds. He

attributes this rare formation of seed to some connection between the plant's self-sterility and its rapid and extensive reproduction by runners, and gives details of experiments conducted with different clones of the species. These showed that when self-pollinated a plant formed no seed but when cross-pollinated many seeds were produced. The statement by Wolley-Dod (1937) that the "species spreads rapidly from seed in gardens . . ." cannot be accepted as accurate. Hansen (1955), however, reports capsules and seedlings from Denmark.

Thaler (1951) writes at length on the morphology of the species and makes a comparison with *V. persica*.

EUROPEAN RECORDS

Much has been written on *V. filiformis* in Europe since its discovery in France in 1893 until the present time. It is a pernicious weed in many parts of France, Switzerland, Germany and Austria, and in the interests of space these records have been condensed and are summarised below.

FRANCE. First recorded in 1893 at St-Menet and Camp-Major, Aubagne (Bouches-du-Rhône) under the wrong name—*V. acinifolia* L. (Roux, 1893; Thellung, 1912; Marnac & Reynier, 1910). Rouet, Marseilles, 1904 (Marnac & Reynier, 1910). Mayenne, 1923 (Touton & Courcelle, 1937). Abundant and spreading in Bouches-du-Rhône and Marseilles, 1924 (Blanc, 1924). Chapelle-au-Grain (Rocher, 1930). Samoens (Haute-Savoie), abundant, 1936; Rennes; Tours; Laval (Touton & Courcelle, 1937A). Many additional stations are given by Lehmann (1942) and Thaler (1953).

BELGIUM. Spreading with great rapidity in the suburbs of Brussels (Matagne, 1938).

NETHERLANDS. Amsterdam; Limburg (Kloos, 1938).

GERMANY. First recorded from Munich in 1929 under the wrong name—*V. cymbalaria* Bod., apparently as an escape from the Botanic Garden. It spread rapidly in the area between 1931 and 1934, and in the years preceding and during the Second World War it was found in many other localities. Bornmüller (1941) and Lehmann (1942) give numerous stations, including Hamburg, Bonn, Darmstadt, Coburg, Tübingen, Jena, Dresden and Chemnitz.

AUSTRIA. Reported first as a garden pest in Graz in 1923, and in meadows in Carinthia in 1945. It has now spread and is a troublesome weed in many parts of the country (Thaler, 1953 and Widder, 1947).

POLAND. Detected as an adventive, new to the Polish flora, in the East Carpathians in 1952 (Kornás & Kuc, 1954).

SWITZERLAND. First noted as an established escape at Berne in 1913 (Lehmann, 1942). In 1927 it was discovered growing abundantly on the embankment of a newly made road at Geneva, and was erroneously claimed as a plant new to Europe (Beauverd, 1927). It

has since been found in many other places and numerous localities are given by Becherer (1938-56).

ITALY. Reported, as new to Italy, at Lecco near Neguccio in 1954 (Viola, 1954).

DENMARK. A pest in the garden belonging to the Royal Veterinary and Agricultural College in Copenhagen since at least 1917, and in Copenhagen Botanic Garden since 1920. Known as an "escape" from about 1947 and now established in about 100 localities (Hansen, 1955).

SWEDEN. Found at Södermanland Rönninge in 1931 (Thaler, 1953) and as a garden weed in the province of Västergötland in 1939 (Thaler, 1953). Marstrand-Island, 1944 (Fries, 1945).

NORWAY. Nordhagen (1940) records the plant as a garden escape at Bergen, while Lid (1950) reports it as a pest in lawns in the old park at Store Milde, Fana, first noticed in 1941. Lid (1952) gives Vardal, 1944, and Os, and Nordhagen (1954) reports it in a lawn in the park at Bogstad, Oslo, in 1951.

AMERICAN RECORDS

UNITED STATES. Muenscher (1949) records that in central New York the plant has overrun many lawns and presents a difficult control problem, and later (1955) reports that it is well established locally in the north eastern states.

THE INTRODUCTION OF VERONICA FILIFORMIS INTO BRITAIN

Paxton (1840) gives the date of the introduction of *V. filiformis* into Britain as 1780, but this possibly refers to *V. persica*. The earliest certain evidence of the cultivation of the plant in a British garden is to be found in *A Catalogue of the plants in the Royal Botanic Garden at Liverpool* (1808), p. 51, which briefly states that *V. filiformis*, 'long-stalked speedwell' is cultivated in that garden. Aiton (1810) makes no mention of the species, but Donn (1845) records it as growing in the Botanic Garden at Cambridge. The *Hand List of Herbaceous Plants cultivated in the Royal Botanic Gardens, Kew*, ed. 2 (1902) fails to mention the plant but it is given in the *Hand List of Rock Garden Plants cultivated in the Royal Botanic Gardens, Kew* (1925).

Although it will be seen that *V. filiformis* was firmly entrenched in various botanic gardens by the outbreak of the First World War, it had yet to become popular among rock garden enthusiasts. Farrer (1919) does not include it in his comprehensive work, but a correspondent writing in *Gardeners' Chronicle*, 65, 297 (1919) states "Most books of reference and catalogues are silent on the subject of *V. filiformis*; a pretty speedwell which comes from Asia Minor which I grew first some fourteen or fifteen years ago . . . *V. filiformis* is apparently quite hardy and will last for years with fair treatment but it must not be checked or overrun by other and stronger growing subjects". The miscon-

ception that the plant was easily overrun was revealed by Downes (1931) who wrote "For rapidly covering a rough bank or wall and for positions on the rock garden where it can be allowed to run *V. filiformis* is a dainty subject. Flowering in May and June, the small, pale blue flowers spread thickly over the dense mats of light green leaves, making a charming picture . . . Its one fault, if it be a fault in so charming a subject is its rampant growth, the slender creeping stems spreading themselves over a large area in a single season and rooting freely to form new colonies". This provoked some correspondence in horticultural literature and began to reveal the true nature of the species, for Milne-Redhead (1932) stated—"This beautiful but rampant carpeter from Asia Minor has begun to play an annoying rôle in my garden here (Cheltenham). During 1928 I noticed two patches established in the turf of the lawn; these I pulled out and those that have appeared since have been treated similarly. In the mown turf it is a very close and firm creeper and is as hard to remove as the native *V. serpyllifolia*. This spring I see that it has increased and there are several small colonies all over the lawn. The "disease" is evidently very infectious and spreads rapidly in congenial surroundings. The subsoil here is Lower Lias". A further warning was given by "L.B.C." (1932) who wrote—"There are many keen gardeners who do not relish the appearance in their gardens of this little speedwell. Certainly *V. filiformis* should be ruthlessly attacked if seedlings appear in close proximity to some treasured alpine for the *Veronica* will sweep over everything in its path". Further confirmation of the danger of introducing the plant into the rock garden was afforded by Elliott (1935) who stated—"Veronica filiformis has got me into more trouble than any plant I have ever distributed. As far as I can remember I have always stated quite frankly, that it is a rampant trailer, or a lovely wandering weed . . . and yet folk will go and plant it in the scree, or among their *Jankaeas*".

V. FILIFORMIS AS A BRITISH ADVENTIVE

The earliest evidence of the occurrence of *V. filiformis* as an established garden escape appears to be a specimen collected by the river Ayr near Ayr in 1927. Two years later it was gathered on waste ground in Jersey, Channel Islands. Wolley-Dod (1937) states that "it was first observed as an escape in Sussex about 1930", while in 1932 it was found on waste ground at Jethou, Channel Islands. During the same year it was collected from Edinburgh, and was reported to be established near Freshwater, Isle of Wight. In 1933 it was noted as naturalised near gardens in Jersey, Guernsey and Sark, and on a roadside bank at Exmouth, S. Devon and Ockham, Surrey. It was reported also from Sidcot and Street, N. Somerset and Ballina, W. Mayo, the first evidence for Ireland. In 1935 it was seen at

Wicklow, and was becoming established as an escape from cultivation in Cardigan, Wales. It was gathered also from Kingsley Common, N. Hants. In 1936 it was found by the roadside at Mold, Flint and at Lymington, S. Hants, and in 1937 on waste ground at Oxford, and on a grassy bank between Sligo and Ben Bulbin. Evidence that the plant was spreading in Sussex was given by Wolley-Dod (1937) who listed seven known stations in the county.

During 1938 it was recorded from Painswick, E. Gloucester, banks of river Severn near Holt Fleet, Worcester, and Greencastle, E. Donegal. A second Oxford locality was noted in 1939, and in 1940 the plant was reported to be colonising lanesides at Farn-don, Nottingham; it was noted also from waste ground at Bridge of Weir, Renfrew and in a woodland strip at Helensburgh, Dunbarton. In 1941 it was found far from houses between Winterbourne-Stoke and Yarnbury, S. Wilts, and on a roadside at High Wray, Westmorland. During 1942 it was seen on a grassy wayside at Gressingham, Lime Valley, W. Lancs and in a meadow at Ockley, Surrey. Further localities were also reported from S. Devon and Oxford. In 1944 it was found to be well established on the banks of the river Wye, both in W. Gloucester and Monmouth, and was also reported from waste ground at Perth.

During 1945 it was noted from the banks of the river Arun near Houghton Bridge, W. Sussex, Sketty Green and Limeslade, Glamorgan, and Barnstaple, N. Devon. In 1946 it was recorded in a stubble field at Colchester, N. Essex, colonising a newly-made road at Colwall, Hereford, on sand dunes at Strandhill, Sligo, on a river bank near Catton, N.E. York, near Reeth, Upper Swaledale, N.W. York, by a roadside at Rockcliffe, Kirkcudbright and by a streamside at Drumnadrochit, Easternness. New localities were also reported from E. Gloucester, Glamorgan and Ayr. During 1947 it was found established by a roadside at Tillbrook, Bedford, and near Craigs of Lundie, Forfar. Further localities were also recorded from S. Somerset, E. Gloucester, Glamorgan and Wicklow. In 1948 it was noted at Powerstock, Dorset, and Glen Mona, Isle of Man. During 1949 it was discovered on the banks of the river Pont near Ponteland, S. Northumberland, and on the golf-links at Howth, Dublin, and in 1950 was noticed on a footpath near Bembridge, Isle of Wight, on a grassy bank at Tunbridge Wells, W. Kent, in lanes about Llawhaden and Tenby, Pembroke, banks of the river Dibbin, Bromborough, Chester and river bank above Tanfield, N.W. York. Additional stations were also reported from Surrey, Oxford and E. Gloucester.

From 1951 records have come in from all parts of the British Isles in ever increasing numbers and it is clear that *V. filiformis* is now widely established and locally abundant in a variety of natural and artificial habitats. It is perhaps most widely naturalised on river and stream banks, but it is also widely



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Fig. 1. Distribution of *Veronica filiformis* Sm. as an established escape in the British Isles.

Outline by courtesy of Messrs. George Philip & Son Ltd.

established on lawns and in churchyards. In England it is probably most frequent in Gloucester, where Sprague (1948) and Salisbury (1953) have described its dominance over native vegetation, Monmouth, Worcester, Hereford, S. Devon and Sussex. In the London area it is, as yet uncommon, but is slowly spreading. In Wales it is locally common in Glamorgan and Cardigan, while in southern Scotland it also appears to be locally plentiful. In Ireland, Prof. D. A. Webb informs us that it is a very common lawn weed in gardens but is very slow to spread extensively elsewhere, usually being found on roadside banks near houses and on rubbish-heaps. It is as yet barely naturalised although admittedly so in many centres.

The known British and Irish vice-comital distribution of *V. filiformis* as an established escape (see Fig. 1) should read: 1-25, 27-30, 33-52, 54, 56, 58-79, 81-84, 88-90, 92-101, 104, 107, 109, 112. H.5, 7, 8, 16, 20, 21, 27, 28, 33-35, 38-40. S.

BRITISH AND IRISH RECORDS

The following list gives all the records known to us, including details from herbarium specimens examined.* The following abbreviations are used:—Hb. British Museum (BM), Hb. University Cambridge (CGE), Hb. Royal Botanic Garden, Edinburgh (E), Hb. Mus. Leicester (LTR), Hb. Univ. Leicester (LEI), Hb. National Museum of Wales, Cardiff (NMW), Hb. Univ. Oxford (OXF), Hb. South London Botanical Institute (SLBI), Hb. Trinity Coll., Dublin (TCD).

CHANNEL ISLES:

GUERNSEY: naturalised near gardens, *Chevalier*, 1933.

JERSEY: bank at La Haule, 1929, *L. Arsène* (oxf). St Heliers, 1929, *L. Arsène* (oxf). Naturalised near gardens, *Chevalier*, 1933.

JETHOU: waste ground, Jethou, 1932, *R. Meinertzhagen*, det. *E. B. Bangarter* (BM).

SARK: naturalised near gardens, *Chevalier*, 1933.

V.c. 1. W. CORNWALL: established in a waste corner of Perranzabuloe Churchyard and lane outside, 1945, *F. Rilstone* (NMW). Garden weed, Lambourne Hill, 1945, *F. Rilstone* (Hb. E. C. Wallace). Hedgebank, Tremethick Cross, near Penzance, 1954, *R. C. L. Howitt*. Perranuthnoe Churchyard; Gulval Churchyard, abundant, 1955, *K. E. Bull*.

1b. ISLES OF SCILLY: on a bank near a house, St. Mary's, 1955, *Mr. & Mrs. R. C. L. Howitt*.

2. E. CORNWALL: wet field by river, Chapel Amble, near Wadebridge, 1954; old slate quarry 4 miles from Tintagel on the road to Camelford, 1955, *R. I. Swarder*.

*Additional records (and specimens) would be much appreciated, and should be sent to either of the authors.

3. S. DEVON: roadside bank, Exmouth, 1933, *H. S. Thompson* (Hb. Lousley). Torquay, 1944, *Rev. T. Stephenson, Rep. Bot. Soc. & E.C.*, **13**, 305. Hedgerows, Yelverton, 1944, *C. West* (Hb. Lousley). Gidleigh, spreading on roadside banks, *W. Keble Martin, Rep. & Trans. Devon. Assocn.*, **83**, 485. Weed in Jenny Wren's Tea Garden, Knowle, 1953, *J. Nesbit* (BM). Abundant on grass verge and roadside by Paignton goods station; not far from Berry Head Hotel, Brixham; Ashburton Churchyard; outskirts of Galmpton, *K. E. Bull, Proc. B.S.B.I.*, **1**, 176. Lane side near Loughwood Farm, Kilmington, 1954, *J. P. M. Brenan* (κ). Near Kingsbridge, in hedgerows and by roadsides, 1955, *S. M. Walters*. Membury and Stockland districts, spreading along sides of streams into places remote from habitation, 1955, *T. J. Wahan*.
4. N. DEVON: Barnstaple, two stations, *F. A. Brokenshire*, det. at *Kew, Rep. & Trans. Devon. Assocn.*, **77**, 58. Belstone and South Tawton Quarries, *O. Greig, Rep. & Trans. Devon. Assocn.* **84**, 257. Gooseford and Paynes Bridge, *O. Greig, Rep. & Trans. Devon. Assocn.*, **85**, 181. Parracombe, 1950, *T. G. Collett*. Among rubble field corner above Pixie Lane, Braunton, 1954, *K. E. Bull*.
5. S. SOMERSET: weed in kitchen garden, Newton Farm, Bicknoller, 1932, *T. A. Sprague* (κ). Hedgebank, Edgcott, 1947, *C. T. Amherst*, det. *A. J. Wilmott* (BM). Verge of lane at edge of wood, Angersleigh, 1955, *O. M. Hallam*. Grassy bank at roadside, opposite houses, N. of Dunkery Beacon, 1956, *Mr. & Mrs. Hallam, J. F. & P. C. Hall*. Fivehead; West Sedgemoor, 1956, *Miss D. E. de Vesian*.
6. N. SOMERSET: Sidcot, 1933, *H. S. Thompson* (κ). Friends' Burial Ground, Street, 1933, *H. S. Thompson* (κ). Wootton, near Street, 1946, *V. S. Summerhayes* (κ). Abundant weed in nurseries, Baltensborough, 1948, *J. Markham* (κ). Roadside, Priston, *Mrs. E. M. Bell*; Glastonbury Abbey ruins, *C. I. & N. Y. Sandwith, Proc. Bristol Nats. Soc.*, **28**, 172. Main Bristol to Bridgwater road at Axbridge, 1954; *R. C. L. Howitt*. On uncut grass strip in front of Drewa's House, Saltford, near Bath; banks of Kennet-Avon Canal at Bathwick, and below Limpley Stoke, 1956; in a ditch at Bathampton since 1946, *Miss A. L. Miller*, teste *D. McClintock*. Bank of Kennet-Avon Canal, near Limpley Stoke, 1956, *Miss J. D. Miller*, comm. *D. McClintock*.
7. N. WILTS: in grassland near Great Chalfield, in great quantity; meadow S. of Corsham; roadside near Neston, in fair quantity, 1951, *Wilts. Arch. & N.H. Mag.*, **54**, 341. Chippenham, *T. G. Collett, Wilts. Arch. & N.H. Mag.*, **55**, 62. Garden weed, Melksham; roadside bank, Bow-

- den, 1950, *T. G. Collett*. Stream bank near Rowde, in quantity; roadside near Liddington; river bank near Ramsbury, in good quantity, *J. D. Grose*.
8. S. WILTS: between Winterbourne Stoke and Yarnbury, far from houses, 1941, *B. Welch* (BM). Grassy lane near Clyffe Hall, 1950, *Wilts. Arch. & N.H. Mag.*, **53**, 77. Little Cheverell, *Mrs. M. E. Nurse*, *Wilts. Arch. & N.H. Mag.*, **55**, 62. Devizes, *R. Sandell*, *Wilts. Arch. & N.H. Mag.*, **55**, 62. Roadside N. of Dinton, in great quantity, 1954, *Mrs. I. M. Grose*, *Wilts. Arch. & N.H. Mag.*, **57**, 37. Roadside, Widbrook; roadside by Round Wood, one small patch; Upavon; river bank, Upton Lovell, in good quantity; river bank, Boyton, in fair quantity; *J. D. Grose*. Lane verge near Salisbury, 1954; *R. W. David*.
 9. DORSET: garden escape, Powerstock, 1948, *C. D. Chase*, *Proc. Dorset. N.H. & Antiq. F.C.*, **75**, 161. Roadside bank, Wimborne, 1954, *R. A. Graham* (Hb. Graham).
 10. ISLE OF WIGHT: Middleton, near Freshwater, 1932, *E. & H. Drabble* (BM). Footpath near Bembridge, *J. Ounsted*, *Watsonia*, **2**, 48.
 11. S. HANTS: near Lymington, 1936, *S. A. Taylor* (LTR). Garden weed, Butts Ash, near Hythe, 1953, *F. E. W. Venning* (BM). Thoroughly established, and in fine flower on Pennington Common, 1954, *J. E. Lousley* (BM, Hb. Lousley). Garden pest, New Milton, 1954, *T. G. Collett*. Garden pest, Southsea, 1956, *Miss D. W. Fawdry*. Denmead; Hambleton, 1950, *A. W. Westrup*.
 12. N. HANTS: garden outcast, edge of Kingsley Common, 1935, *P. M. Hall*, *N. D. Simpson & E. C. Wallace* (BM, SLBI, Hb. Lousley & Hb. Wallace).
 13. W. SUSSEX: bank of river Arun near Houghton Bridge. *N. Y. Sandwith*, *Rep. Bot. Soc. & E.C.*, **13**, 63. Abundant by the river Arun near Houghton towards Arundel Park. *E. C. Wallace*, *Watsonia* **1**, 255. Near Amberley, bank near river Arun, S. of Houghton, 1953, *B. Welch* (BM). Streamside near Poynings Church, for 100 yards or more, and large patches in nearby meadows; covering most of East Preston Churchyard, 1953, *K. E. Bull*. Waste ground, Bosham, 1953, *T. G. Collett*. Waste ground W. of river Adur, Shoreham; footpath, W. side of river Arun, North Stoke; roadside E. of Lancing College, 1956, *D. Philcox*. Roadsides and turfy slopes to lake, Chatergrove, near Bolney, 1956, *R. C. Palmer*.
 14. E. SUSSEX: near Fairwarp, *E. D. Morgan*; under a wall at Ratton, *Mrs. Horrill*; in three places near Mayfield; Crowborough; Blackham, *E. D. Morgan* (*Wolley-Dod*

- 1937). Lewes, *Miss K. Pickard, Rep. Bot. Soc. & E.C.*, **10**, 28. In three places about Alfriston, 1938, *J. E. Lousley* (BM, Hb. Lousley & Hb. Wallace). Railway embankment near Robertsbridge; East Dene Churchyard; St Leonards, 1949, *R. Doggett* in litt. to *Kew*. Kingston-by-Lewes Churchyard, 1951; Horselunges, Hellingly, roadside and lawns, 1953; Iford Churchyard, below Lewes, covering nearly all the available turf, 1951; roadside for some distance near Tanyard Farm, Buxted; by stream, Cuttinglye Wood, East Grinstead, 1953; by New Place, Willingdon, and in Jordans Lane, Willingdon, 1954; Hellingly station yard, 1954; Buckhurst Lane, Wadhurst, 1955; St Peter's Churchyard, Eastbourne, 1955, *K. E. Bull*. Haywards Heath, 1953, *Miss M. Songhurst* (BM). Hawkenbury Cemetery, Tunbridge Wells, *K. E. Bull, Proc. B.S.B.I.*, **1**, 59. Stream side, Maresfield, 1956, *D. E. Allen & D. P. Young*.
15. E. KENT: garden weed, Denton, near Canterbury, 1953, *Miss D. Long* (BM). Among bushes on grassy road verge, Seabrook, 1955, *F. Rose, J. F. & P. C. Hall*.
16. W. KENT: grassy bank, Bishop's Down, Tunbridge Wells, 1950-53; abundant in turf, St Paul's Churchyard, Rusthall, 1950-53; Bull's Hollow, Rusthall, 1951, *K. E. Bull, Proc. B.S.B.I.*, **1**, 176. Otford, 1953, *N. L. Kimmins* (BM). Holt Wood, Aylesford, 1953, *C. West* (Hb. Lousley). Hildenborough, 1956, *D. McClintock*. Grassy roadside at edge of Boarzell Wood, S. of Flimwell, 1956, *J. F. & P. C. Hall* (BM).
17. SURREY: roadside bank, Ockham, 1933, *A. H. Carter* (Hb. Lousley). Meadow by stream S. of Ockley, 1942, *N. Y. Sandwith & E. C. Wallace* (Hb. Wallace). Headley, 1947, *E. F. Warburg* (LEI). Meadow by backwater of river Wey near Ockham Court, Ripley, 1949, *J. P. M. Brenan & N. Y. Sandwith* (κ). Banks of river Wey, Elstead, 1950, *O. V. Polunin* (BM). Reigate Heath, 1952, *R. A. Boniface*; 1953, *B. Welch* (BM). Bookham Common, 1953, *E. B. Bangerter* (BM). The Glade, Fetcham, 1953, *A. H. Norkett* (BM). By River Mole, Norbury Park, 1953, *J. F. & P. C. Hall* (BM). Rubbish-tip, Leatherhead, 1953, *London Natural History Society Excursion*. Roadside, Marden Park, 1954, *P. Greenfield*. Grassy patch near Chelsham bus garage, 1956, *London Natural History Society Excursion*. Rapidly increasing in Sanderstead New Churchyard, 1956, *D. P. Young*. Banks of river Wey below Tilford in quantity, 1954, *E. Milne-Redhead*. Garden pest, Ewshott, Farnham, 1956, *Miss V. M. Leather*.

18. ESSEX: Ramsden Heath, 1955, *S. T. Jermyn* (BM). Ditch banks, Margaretting, Ingatestone, 1955, *T. H. C. Bartrop*. Garden pest, Leigh, 1955-56, *S. T. Jermyn*.
19. N. ESSEX: in stubble fields near Mile End, Colchester, *J. A. Whellan*, *Rep. Bot. Soc. & E.C.*, **13**, 305. Pest of gardens and lawns, Harlow, 1951-56, *H. Mace*. Halstead area, 1950, *D. E. Allen*.
20. HERTS: waste ground, Welwyn Garden City, 1952, *Miss H. D. Garside* (BM). Near Tring railway station, 1953, *G. Rance* (BM). Abundant in a disused garden and spreading outside, Waterspace, near Ware, 1955; roadside, Kelshall, near Therfield, 1955; by gamekeeper's cottage in grass, Wain Wood, near Preston, Hitchin, 1956; *J. G. Dony*.
21. MIDDLESEX: weed on tennis courts, Hounslow, 1942, *H. Banks*. Garden pest, Harrow, *G. H. Lockett*, det. *N. Polunin* (OXF). Road bank, Northwood, 1952, *R. A. Graham*. Canal path near Jack's Lock, Harefield, 1955, *B. Welch*. Garden pest, Battle of Britain House, Northwood, 1955, *B. P. Pickess*. Garden and lawn pest, Ruislip, 1956, *F. E. Wrighton*.
22. BERKS: garden path, Kennington, 1943, *C. E. Hubbard* (κ). Windsor Great Park, 1950, *E. Milne-Redhead & R. A. Graham*. By the river Thames, Little Wittenham Wood, 1956, *R. C. Palmer*.
23. OXFORD: waste ground, Manor Road, Oxford, 1937; Jackdaw Lane, 1939, *J. P. M. Brennan*, *Rep. Bot. Soc. & E.C.*, **12**, 795. Garden weed, Yardley Lodge, Oxford, 1943, *C. E. Hubbard* (κ). Bank of river Thames, Binsey, 1944, *C. E. Hubbard* (κ). Persistent garden weed, St Margaret's Road, Oxford, 1948, *A. P. Conolly*, comm. *T. G. Tutin*, *Watsonia*, **2**, 48. Garden weed, Staverton Road, Oxford, 1954, *M. Fisher* (BM). Thames bank between Goring and Pangbourne, 1954, *P. C. Hall* (BM). Garden weed, Bampton, and in the cemetery, *Dr. Durey*, comm. *P. G. Beak*, *Proc. B.S.B.I.*, **2**, 110. Roadside bank, Burford, 1952-56; garden weed, Chinnor, 1954-56, *R. S. R. Fitter*.
24. BUCKS: garden pest, High Wycombe, 1955, *E. C. Badcock* (BM). Bank near Radnage Church, 1954, *R. S. R. Fitter*, *Middle-Thames Nat.*, **8**, 23. Pest of lawns, Beaconscot Village, Beaconsfield, 1956, *T. G. Collett*.
25. E. SUFFOLK: near Belstead Lodge and Gusford Hall, 1952, *Trans. Suffolk Nats. Soc.*, **8**, 191.
27. E. NORFOLK: near Bungay, Ditchingham, garden weed, 1953, *Miss M. Brown* (BM). Abundant at Calthorpe, near Stalham, 1956, *T. G. Tutin*.

28. W. NORFOLK: garden escape from High House, Westacre; in the paving of the cemetery at Upwell, 1955, *E. L. Swann*.
29. CAMBRIDGE: persistent garden weed, Storey's Way, Cambridge, 1948, *T. G. Tutin, Watsonia*, **2**, 48. Playing fields, St. John's College, Cambridge, 1952, *D. A. Hopwood & S. M. Walters* (CGE). Rough grass in grounds of Kirtling Towers, 1952, *S. M. Walters* (CGE).
30. BEDFORD: established by roadside, Tillbrook, 1947, *J. G. Dony* (BM). Garden pest, Luton Hoo, *Dony*, 1953.
33. E. GLOUCESTER: by roadside, Painswick, 1938, *E. R. Roberts* (CGE). Garden escape, well established in turf in 1941, and increasing, Lower Hilcot; Elkstone, *T. A. Sprague*; Cirencester; Rendcomb, *Airy Shaw*; village green, Hucclecote (*Riddelsdell, Hedley & Price*, 1948). Garden at "Royal William", Cranham, 1946, *I. Evans* (*Riddelsdell, Hedley & Price*, 1948). Cheltenham, *T. A. Sprague, Watsonia*, **1**, 255. Near Queen's Wood, Prestbury; sandpits, Sandy Lane, Leckhampton, 1947, *C. C. Townsend*, det. *A. J. Wilmott, Watsonia* **1**, 255. Meadow by lane leading to Dowdeswell Reservoir to Rossleigh Manor, *Watsonia*, **2**, 347. Allotments near Bourton-on-the-Water School; streamside near Cranham Church; Nethercote, Bourton-on-the-Water; Lower Slaughter Churchyard; near Hatherley Park, Cheltenham, 1950, *K. E. Bull*. Pest in lawn near Cranham, 1953, *M. J. Mulligan* (BM). Brimscombe, 1953, *C. C. Townsend, Chelt. & Dist. Nat. Soc. J.*, **1954**, 5.
34. W. GLOUCESTER: well established on banks of the Wye between Redbrook and Bigsweir; below rapids, Symonds Yat, 1944, *Charles* (*Riddelsdell, Hedley & Price*, 1948). Abundant all along the Wye banks from Symonds Yat station to the track to Braceland, *C. C. Townsend, Watsonia*, **2**, 347. Below Symonds Yat, on Gloucester side of the Wye, in masses in hedgebanks, 1953, *Mrs. D. Aston* (BM). Grassy slope near Arbutus Drive, Blaize Castle, Henbury, with *V. chamaedrrys*; completely covering a large lawn at Clifton House Hotel, Clifton, 1951, *K. E. Bull*. Hedgerow, Portway Lane, Old Sodbury, and cart track, Bangel Wood, Kilcot, *G. W. Garlick, Proc. Bristol Nats. Soc.*, **28**, 309. By the Frome at the foot of Bury Hill, Winterbourne, *G. W. Garlick, Proc. Bristol Nats. Soc.*, **29**, 104.
35. MONMOUTH: banks of river Wye, Hadnock near Monmouth, 1944, *R. Lewis* (BM, NMW). Bank of river Wye under Penallt, 1944, *R. Lewis* (NMW). Bank of river Wye between Bigsweir and Whitebrook, 1944, *S. G. Charles*

- (NMW). Along the Wye Valley on a disused road, 1953, *Mrs. D. Aston* (BM).
36. **HEREFORD**: new road, Colwall, becoming established as a weed, 1946, *F. M. Day* (BM). Banks of river Wye from Bredwardine Bridge to Farnhope, 1949; open wood, Longworth Hall, 1950; roadside, King's Acre, Hereford, 1950, *Mrs. L. E. Whitehead*. Roadside, Vowchurch, 1950, *H. Blundstone*. Roadside, Ridge Hill, 1951, *Mrs. L. E. Whitehead*. Bank of river Monnow, Pandy, 1951, *K. Johnston*. Roadside, Ewyas Harold, 1951, *M. Porter*. Roadside, Mordiford, 1952; old garden, Whitbourne, 1952, *I. Muller*. River bank and open wood, Downton Gorge, 1953, *Mrs. L. E. Whitehead*. Bearswood Common, 1953, *F. M. Day*. Nieuport House and roadside, Almeley, 1956, *A. Melderis*. Road bank near Leominster, *Miss C. M. Goodman*.
37. **WORCESTER**: naturalised on the banks of the river Severn north of Leachford Ferry near Holt Fleet, 1938, *W. H. Hardaker* (OXF). In quantity on the bank of the river Severn behind Shrawley Wood, near Droitwich, *C. E. Andrews & C. C. Townsend*, *Proc. B.S.B.I.*, **1**, 59. Kempsey; Ombersley Churchyard; Malvern; Malvern Wells, *Hardaker*, 1954. Grass verge of a rough unmade road leading to Castlemorton Common, 1955, *M. H. Cocke*, det. *R. C. L. Burges*. In profusion over at least 100 yards outside Birtsmorton Church, *C. C. Townsend*, *Watsonia*, **2**, 347.
38. **WARWICK**: Rough Hill Wood, near Studley, 1953, *C. C. Townsend*, *Proc. B.S.B.I.*, **1**, 176. Locally abundant on roadside, Turners Green, 1953; garden weed, Solihull, 1952; locally abundant as a garden weed, Knowle, and in an adjoining meadow, 1955, *R. C. Readett*. Roadside and banks, Haslor, near Alcester, *Miss C. M. Goodman*.
39. **STAFFORD**: canal side near Sutton. Forton, 1955, *E. S. Edees*.
40. **SALOP**: garden weed, Church Stretton, 1941, *M. Gepp*. Garden pest, Shrewsbury, 1956, *T. G. Collett*. Ludlow, 1955, *Miss C. M. Goodman*.
41. **GLAMORGAN**: grassy verge by Sketty Green, 1945, *J. A. Webb* (NMW). Caswell, Gower, 1954, *J. A. Webb* (NMW). Over the cliffs at Limeslade, Gower, 1945, *J. A. Webb* (NMW). Roadside, Nottage, 1947, *E. M. Thomas* (NMW). Mumbles Cemetery, *J. A. Webb*: an increasing garden weed, Cogan, etc., *E. Vacheň*, *Rep. Bot. Soc. & E.C.*, **13**, 305. Bank of river Ely, St. Georges; pest of lawns, Cardiff, 1955, *A. E. Wade*. Streamside, Ilston Cwm, abundant, 1956, *J. A. Webb* (NMW). Southgate, 1956, *J. A. Webb* (NMW).

42. BRECON: laneside near house, Abergwesyn, 1956, *P. C. & J. F. Hall*. Llangammarch Wells, 1956, *Mr. & Mrs. R. C. L. Howitt*. Abundant by streamside near Three Cocks Inn, near Talgarth, 1956, *R. A. Graham & R. M. Harley*.
43. RADNOR: bank of river Wye near Boughrood, 1956, *P. C. & J. F. Hall*. Pen-y-bont, 1956, *Mr. & Mrs. R. C. L. Howitt*.
44. CARMARTHEN: Rhandirmwyn, 1952, *I. M. Vaughan* (NMW).
45. PEMBROKE: lanes about Llawhaden; Narberth Road, Tenby, *Rees*, 1950.
46. CARDIGAN: becoming established rather frequently as an escape from cultivation, 1935, *Wade*, 1952.
47. MONTGOMERY: near Meifod, 1955, *Cambridge Bot. School Exped.* Roadside near Congregational Chapel, Carno, 1956, *I. A. Williams* (BM).
48. MERIONETH: Barmouth, 1951, *R. Lumley-Jones* (BM). Road-sides near Bron Meiron, Arthog, 1951, *P. M. Benoit* (NMW). Path on south bank of river Sgethin just below Talybont Bridge; grassy places near the end of the road to the sea from Llanddwywe Church; rubbish-tip between Llanbedr village and Talwrnbâch Halt; Dolgelly, 1955, *P. M. Benoit*.
49. CAERNARVON: Capel Curig, 1950, *Miss D. E. de Vesian*.
50. DENBIGH: rapidly spreading in the county . . . and in places becoming dominant, *Savidge*, 1954.
51. FLINT: by roadside, Llanferres, near Mold, 1936, *J. A. Whelan* (κ). Rapidly spreading in the county . . . and in places becoming dominant, *Savidge*, 1954. Extensive patches at Loggerheads and near Nant Alyn, *J. P. Savidge, Proc. Liverpool Nats. F.C., 1955, 5*.
52. ANGLESEY: Menai Bridge area, 1950, *ex. B.S.B.I. Maps Scheme*.
53. S. LINCOLN: garden weed, Old Hall, Stragglethorpe, 1954, *R. C. L. Howitt*.
54. N. LINCOLN: pest in lawn, Boston, 1951; roadside, Reverly Bridge, near Boston, 1956; pest of lawns, Willoughton, 1956; Tealby, near Market Drayton, 1956, *Miss E. J. Gibbons*.
56. NOTTINGHAM: garden weed and colonising lanesides, Farndon, 1940; Orston, 1953, *R. C. L. Howitt*.
58. CHESTER: banks of river Dibbin, Bromborough, *Savidge*, 1954.
59. S. LANCASTER: pathsides and grassland, Downham, 1951, *M. R. Tomlinson*.
60. W. LANCASTER: grassy wayside in lane near Gressingham, Lime Valley, 1942, *J. N. Frankland, Rep. Bot. Soc. & E.C., 12, 498*. Grassland on edge of Haugh Wood, near Ribchester, 1953, *M. R. Tomlinson*.

61. S.E. YORK: Riplingham Road, Hull, Mrs. Grewe, per Miss F. E. Crackles, *The Nat.*, 1957, 28.
62. N.E. YORK: river bank about a mile below Catton village, 1946, C. M. Rob (NMW & OXF). Lavingham, H. B. Willoughby Smith, *Rep. Bot. Soc. & E.C.*, 13, 305. Hackness, 1947, H. Rowntree (*Walsh & Rimington*, 1953).
63. S.W. YORK: grassland, edge of stream, Waddington, 1956, M. R. Tomlinson.
64. MID W. YORK: river bank above Tanfield, C. M. Rob, *The Nat.*, 1955, 28.
65. N.W. YORK: well established near Reeth in Upper Swaledale, C. M. Rob, *Rep. Bot. Soc. & E.C.*, 13, 365.
66. DURHAM: in a dense mat along the Wear near Eastgate, J. W. Heslop-Harrison, *The Vasculum (Substitute)*, 39, 18.
67. S. NORTHUMBERLAND: banks of the Pont near Ponteland, J. W. Heslop-Harrison, *Watsonia*, 2, 48. Near Haltwhistle; Riding Mill; Wylam, J. W. Heslop-Harrison, *The Vasculum (Substitute)*, 38, 24. Holywell Dene, L. Hunt, *The Vasculum (Substitute)*, 39, 10. A large patch along the roadside between Apperley Dene Farm and Wheelbirks, J. W. Heslop-Harrison, *The Vasculum (Substitute)*, 36, 16. Roadside, Stocksfield, 1955, W. B. H. Sowerby (BM).
68. CHEVIOTLAND: Rothbury, J. W. Heslop-Harrison, *The Vasculum (Substitute)*, 38, 24. Alnwick, 1955, W. S. Craster.
69. WESTMORLAND: roadside in High Wray village, 1951—had increased somewhat by 1948, T. G. Tutin, *Watsonia*, 1, 255. Near Appleby, 1953, Mrs. J. Dalton (BM). Levens, near Kendal, 1955, Miss E. Bradshaw (BM).
70. CUMBERLAND: garden and roadside weed. Holmrook, 1953, Miss P. Bewlay (BM). Near Salkeld, 1953, Mrs. J. Dalton.
71. ISLE OF MAN: plentiful by the entrance to Glen Mona, 1948. J. A. Whellan, *Rep. Bot. Soc. & E.C.*, 13, 305.
72. DUMFRIES: plentiful on river bank, Tarron Lodge, Langholm. 1955, G. Watt. Moffat area, 1950, ex B.S.B.I. Maps Scheme.
73. KIRKCUDBRIGHT: roadside, Rockcliffe, 1946, R. Mackechnie (BM, Hb. Lousley & Hb. Wallace).
74. WIGTOWN: near Newton Stewart, 1955, Miss D. E. de Vesian (BM). Garliestown, 1955, R. C. L. Howitt.
75. AYR: waste ground by river Ayr. 1927, R. Mackechnie (Hb. Wallace). Roadside, West Kilbride, 1946, R. Mackechnie (Hb. Lousley & Hb. Wallace). Sunny places on roadsides, becoming frequent. Lee, 1953.
76. RENFREW: among building rubbish. Bridge of Weir. 1940. W. Rennie (K).
77. LANARK: sunny places on roadsides, becoming frequent. Lee, 1953.

- *78. PEEBLES: grassy bank near houses, West Linton, *Miss E. P. Beattie*.
- *79. SELKIRK: grassy bank, Yair, *Miss E. P. Beattie*.
- *81. BERWICK: Cambridge, *Mrs. M. L. Murray*.
- *82. HADDINGTON: grassy bank, near Saltoun; grassy bank, Tynninghame, *Miss E. P. Beattie*.
83. EDINBURGH: Edinburgh, 1932, *H. A. Webber* (BM). Roadside, Fettes Avenue, Edinburgh, 1952, *P. S. Green* (E); since eradicated by Corporation weeding operations, *B. L. Burtt*. Grassy verge outside church, Crichton Castle, 1956, *D. McClintock*. W. Calder & Roslin areas, 1950, *ex B.S.B.I. Maps Scheme*.
- *84. LINLITHGOW: grassy bank, Bathgate, *Miss E. P. Beattie*.
88. MID PERTH.: waste ground, Perth, 1944, *M. S. Campbell & A. J. Wilmott* (BM). Roadside, Killin, 1945, *R. Mackechnie* (Hb. Lousley & Hb. Wallace). Cemetery at St. Kattan's Chapel, Aberuthven; S. bank of river Tay near Elcho Castle, *A. W. Robson, Proc. B.S.B.I., 1, 59*.
- *89. E. PERTH: grassy bank, Blairgowrie, *Miss E. P. Beattie*.
90. FORFAR: Ardgarter Farm, near Craigs of Lundie, 1947, *A. H. G. Alston* (BM).
91. KINCARDINE: abundant garden weed, Glenbervie, 1953, *J. C. Gardiner*.
92. S. ABERDEEN: Braemar area, 1950, *ex B.S.B.I. Maps Scheme*.
93. N. ABERDEEN: Inverkeithny area, *Miss M. McCallum Webster*.
94. BANFF: wet ground by a drain mouth, Tomintoul, opposite Woodhill, 1954, *W. J. Hopkins*. Bridgend, Drummur Castle and Portknockie areas, *Miss M. McCallum Webster*.
95. ELGIN: Dunphail, Forres, Findhorn, Dallas, Burghead, Rothes and Fochabers areas, *Miss M. McCallum Webster*.
96. EASTERNESS: streamside, Drumnadrochit, S.W. of Inverness, 1946, *A. J. Wilmott & M. S. Campbell*.
- *97. WESTERNESS: meadow, Morar, 1957, *Miss M. McCallum Webster*.
98. ARGYLL: roadside in Kilchrenan village, 1952, *E. C. Wallace & K. N. G. MacLeay* (Hb. Wallace). Portnacroish and Invercreran areas, 1950, *ex B.S.B.I. Maps Scheme*.
99. DUNBARTON: woodland strip, Helensburgh, 1940, *W. Rennie* (K).
100. CLYDE ISLES: grassy verge near the pier, Brodick, Arran, 1954, *G. C. Lewarne*.
101. KINTYRE: sunny places on roadside, becoming frequent, *Lee*, 1953. Kilkerran Quarry, near Campbelltown, 1956; banks of Killean burn, W. Kintyre, 1956, *M. H. Cunningham*, det. *E. C. Wallace*.

104. N. EBUDS: rough ground outside the kirkyard, Uig, Skye, 1954, *Miss M. McCallum Webster* (BM).
107. E. SUTHERLAND: Helmsdale area, *Miss M. McCallum Webster*.
109. CAITHNESS: roadside, Dunbeath, 1956, *Miss M. McCallum Webster* (BM).
112. ZETLAND: naturalised by Tingwall Churchyard, 1956, *W. Scott*, det. *J. E. Lousley*.
- H.5. E. CORK: Foaty Island and Belvelly near Cork, 1955, *Miss C. E. Longfield*. Abundant in a pasture along the bank of the river Blackwater about a mile E. of Fermoy, 1956, *D. A. Webb*.
- H.7. S. TIPPERARY: Thurles, *D. A. Webb*.
- H.8. LIMERICK: Pallaskenry, *D. A. Webb*.
- H.16. W. GALWAY: field at Gorteen Bay, W. of Roundstone (near a house), *J. Ounsted, Watsonia*, 2, 203. Naturalised alongside the road to the pier, Oughterard, 1952, *R. B. Drummond* (κ). East end of Ballynahinch Lough, 1956, *D. A. Webb*.
- H.20. WICKLOW: garden pest at the rectory, Wicklow, spreading into grazing land, 1935; margin of a hayfield between Rathsaltagh and the Greese river, near Colbinstown, 1947, *Brunker*, 1950. Grange Con; Woodenbridge; Rathnew, *J. P. Brunker*.
- H.21. DUBLIN: near the club-house, St. Finian's golf-links, Howth, *S. M. Sockett Foster*, det. *E. F. Warburg* (oxf). Shady roadside bank, Monkstown, *D. A. Webb* (rcd).
- H.22. MEATH: garden pest, Pilton House, Drogheda, 1956; The Grove, Balroth, 1956, *D. McClintock*.
- H.27. W. MAYO: roadside bank, Ballina, 1933, *C. Pearson* (rcd). Westport, *R. L. Praeger*.
- H.28. SLIGO: grassy bank between Sligo and Ben Bulbin. 1937. *W. H. Hardaker* (oxf). Sand dunes, Strandhill, *Faris* (*Praeger*, 1946).
- H.31. LOUTH: garden pest at Killiney House, Drogheda and Red House, Ardee, 1956, *D. McClintock*.
- H.33. FERMANAGH: Laragh Ballinamallard, escaped garden weed, 1953, *Mrs. G. Burkitt & S. M. Walters* (cge). Lisnarrick; Aghalane, *R. D. Meikle, E. N. Carrothers & J. McK. Moon*. Wayside near Inver Lough, 1956, *J. McK. Moon*.
- H.34. E. DONEGAL: field by the Fort, Greencastle. *Brenan & Simpson*, 1938.
- H.35. W. DONEGAL: shore of Lough Kinney, 1955, *B.S.B.I. Field Meeting*.
- H.36. TYRONE: garden weed, Tynan Abbey, 1956, *D. McClintock*.

- H.38. DOWN: hedgebanks and waste ground near the shore, Rostrevor, 1952, *J. McK. Moon*. Weed in Slieve Donard Nurseries, Newcastle, 1956; Ards Airport, 1956, *D. McClintock*.
- H.39. ANTRIM: ditches and golf course, Carrickfergus, 1940; ditches and golf courses at Greenisland, Portrush and Antrim, 1956; waste ground and meadows, Belfast, 1956, *J. McK. Moon*. Basaltic pavements by shore of Lough Neagh, Shane's Castle, 1956, *J. McK. Moon & D. McClintock*. Garden weed, Rathmore, Green Island and Red Hall, Ballycarry, 1956, *D. McClintock*.
- H.40. DERRY: waste ground near shore and golf links, Castlerock; sand dunes, Magilligan, 1956, *J. McK. Moon*.

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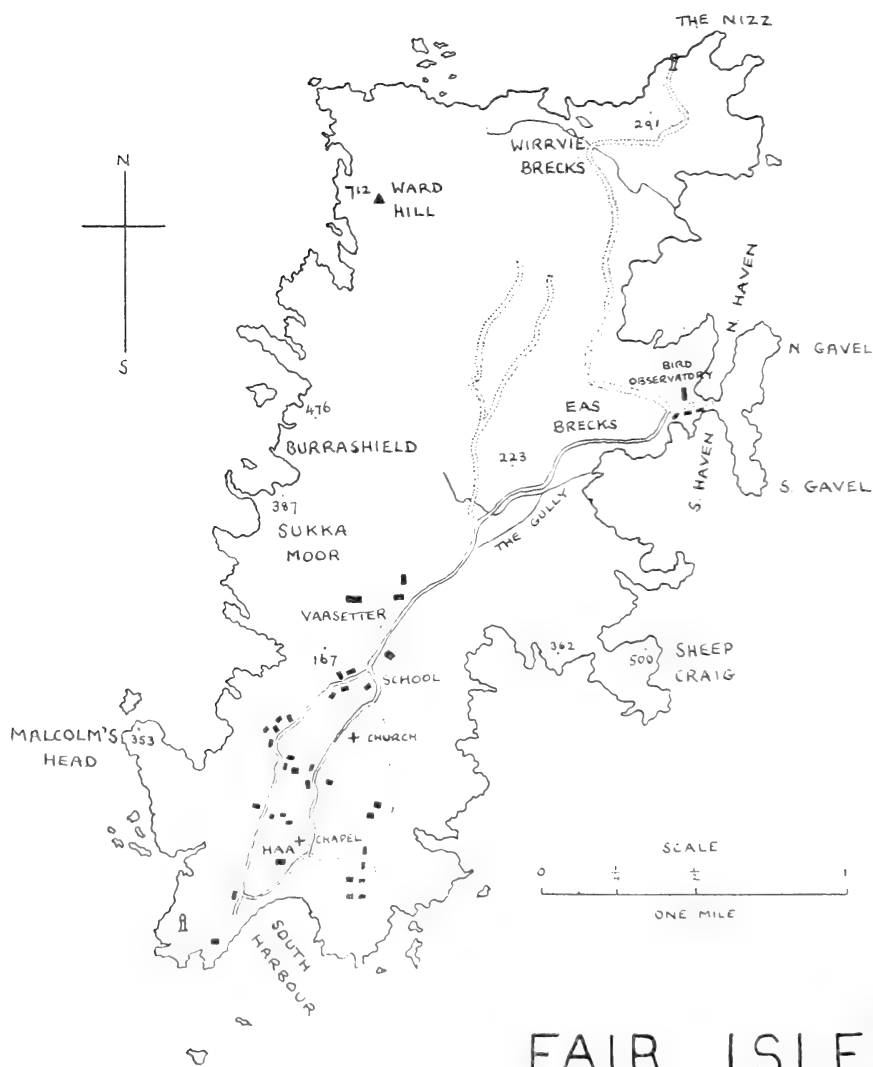
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NOTES ON THE FLORA OF FAIR ISLE

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During August 1956 I spent a week on Fair Isle. No record of the plants of the Island has appeared since that of Trail in 1906, and it seems worth while putting on record some of the observations made there last year.

Fair Isle lies midway between Sumburgh Head on the mainland of Shetland and the Island of North Ronaldshay in Orkney. It forms part of Vice-County 112, Zetland, and its relationships are with that group of islands rather than with Orkney. The island is about 3 miles long and from 1 to 1½ miles wide. Except in the extreme south, the coastline is formed almost entirely by high cliffs, in some places rising as high as 600 feet. Ward Hill (712 feet), the highest part of the island, lies in the north west, and it is balanced in the south east by Sheep Craig, about 500 feet high. The whole island is composed of Old Red Sandstone, which appears more closely related to that of Shetland than to the Orkney rocks. This suggests an absence of basic soils of any sort, and while no soil samples were taken the plant lists confirm this. The range of habitats is extremely limited, a small number of plants being abundant more or less throughout the island. This limitation is reflected in the list.

A summary of the different habitats follows.

(1) The northern two-thirds of the island is completely covered by a fairly dry, thin peat, with a few streams and one or two more or less barren tarns. Over this area the vegetation consists almost entirely of a mixture of *Calluna vulgaris*, *Erica cinerea*, *Empetrum nigrum* and *Juniperus communis* subsp. *nana*. The Juniper is far more abundant on Fair Isle than on the mainland of Shetland. Among these are patches of *Agrostis* spp., *Scirpus cespitosus*, *Festuca* spp. and various *Carex* spp. The streams, as elsewhere on the island, contain *Hydrocotyle vulgaris*, *Ranunculus flammula*, *Potamogeton natans* and *P. polygonifolius*.

(2) The south-western part of this area is rather wetter, and the vegetation consists mainly of *Juncus articulatus*, *J. acutiflorus*, *Schoenus nigricans* and *Molinia caerulea*.

(3) At intervals round the high cliffs are more or less sheltered ravines running down to the sea, the richest of which is that known as the Gully. In these ravines are found many of the grasses and ferns, and such relatively rare species as *Primula vulgaris* and *Hypericum pulchrum*.

(4) The tops of the cliffs themselves are largely eroded by wind, but as on Sheep Craig, Malcolm's Head and the North and South Gavels they form the greater part of the sheep-grazing on the island. Here there is a close turf of *Festuca* spp., *Carex flacca*, *Luzula multiflora*, *Armeria maritima* and *Plantago maritima*.

(5) The cliff faces are largely occupied by the nests of fulmars, but on ledges occur *Armeria*, *Plantago maritima*, *P. coronopus*, *Sedum rosea* and *Ligusticum scoticum*.

(6) There is a little coarse sand and shingle in the South Harbour and in North and South Havens, but this bears little except a few plants of *Atriplex* spp., *Potentilla anserina* and *Galium aparine*.

(7) In the southern third of the island the peaty ground is replaced by rocky turf, consisting chiefly of *Festuca ovina*, *Armeria* and *Plantago maritima*, with such plants as *Leontodon autumnalis* (also common elsewhere), *Euphrasia confusa*, *Gentianella campestris* and *Jasione montana*.

(8) In the southern part also, in the village, is all the arable land found on the island. Here there are a considerable number of weeds, of which the commonest are *Myosotis arvensis*, *Lycopsis arvensis*, *Spergula arvensis*, *Agropyron repens* and *Polygonum aviculare* agg.

In the list of vascular plants which follows, those recorded by Trail (1906) are marked with a + sign. When the + sign is placed in parentheses, this indicates that Trail recorded an aggregate which now includes the species, e.g. he recorded *Carex flava* but not *C. demissa*. Where no indication of habitat is given, I did not see the plant myself. These indications are not intended to be exclusive, but they give an idea of frequency and also show where the plants seem most typically to occur. The plants collected may be seen in the Druce Herbarium in Oxford.

I should like to record my thanks to my wife for assisting in the collection of specimens and for drawing the map.

My thanks are also due to Mr. Kenneth Williamson, Director of the Fair Isle Bird Observatory, for his hospitality and encouragement.

LIST OF VASCULAR PLANTS

LYCOPODIUM SELAGO L.	+	
SELAGINELLA SELAGINOIDES (L.)		
Link		Frequent in damp grassland
ISOETES LACUSTRIS L.		In ponds near Ward Hill
EQUISETUM PALUSTRE L.	+	Streams near Bird Observatory
E. ARVENSE L.	+	
PTERIDIUM AQUILINUM (L.) Kuhn	+	Drier patches, N. of Island

BLECHNUM SPICANT (L.) Roth	+ Rocks in the Gully
ASPLENIUM MARINUM L.	+ Ledges in cave, N. Haven
ATHYRIUM FILIX-FEMINA (L.) Roth	+
DRYOPTERIS DILATATA (Hoffm.) A. Gray	+ Rocks in the Gully
JUNIPERUS COMMUNIS subsp. NANA (Willd.) Syme	+ Abundant in N. of Island
CALTHA PALUSTRIS L.	+ Frequent in streams
RANUNCULUS ACRIS L.	+ Streamside in the Gully
R. REPENS L.	Old garden, Vaasetter
R. FLAMMULA L.	+ Frequent in wet places
R. HEDERACEUS L.	+ Stream in the village
CAPSELLA BURSA-PASTORIS (L.) Medic.	+ Waste ground in the village
COCHLEARIA OFFICINALIS L.	+ Sea cliffs, N. Haven
C. SCOTICA Druce	+
C. DANICA L.	+ Sea cliffs, N. Haven
CARDAMINE PRATENSIS L.	+ Fields in the village
VIOLA RIVINIANA Rehb.	+
V. CANINA L.	Grassland in N. of Island
V. PALUSTRIS L.	+ Frequent in N. of Island
POLYGALA SERPYLLIFOLIA Hose	+ Damp grass above the Gully
HYPERICUM PULCHRUM L.	+ Rock cleft below Wirrvie Brecks
SILENE MARITIMA With.	+ Frequent on sea cliffs
MELANDRIUM DIOICUM (L.) Coss. & Germ.	+ Sea cliffs, Burrashield
LYCHNIS FLOS-CUCULI L.	+ Frequent in wet places
CERASTIUM HOLOSTEODES Fr.	+ Common in waste places and on cliffs
C. ATROVIRENS Bab.	+ In the Gully
STELLARIA MEDIA (L.) Vill.	+ Frequent near buildings
SAGINA MARITIMA Sm.	Sea cliffs, N. Haven
S. PROCUMBENS L.	+ By the Observatory
HONCKENYA PEPLOIDES (L.) Ehrh.	Sand in S. Haven
SPERGULA ARVENSIS L.	+ Common in arable land
MONTIA FONTANA subsp. FONTANA	(+) By the Observatory
ATRIPLEX PATULA L.	Shingle in S. Harbour
A. HASTATA L.	Shingle in N. Haven
A. GLABRIUSCULA var. BABINGTONII (Woods) Druce	+
TRIFOLIUM PRATENSE L.	Arable land. ? Escape
T. REPENS L.	+ Frequent in arable land and throughout the Island
ANTHYLLIS VULNERARIA L.	+ Roadsides in the village
LOTUS CORNICULATUS L.	+ Frequent in grassland
VICIA CRACCA L.	+ Frequent in arable ground
FILIPENDULA ULMARIA (L.) Maxim.	+

POTENTILLA ANSERINA L.	+ Frequent near buildings and on shingle
P. ERECTA (L.) Rausch.	+ Common throughout Island
SEDUM ROSEA (L.) Scop.	+ Cliffs, Malcolm's Head
EPILOBIUM OBSCURUM Schreb.	+ [Not rec. for v.cc. 111 or 112]
E. PALUSTRE L.	+ Frequent in damp places
MYRIOPHYLLUM ALTERNIFLORUM DC.	+ Stream near Observatory
CALLITRICHE STAGNALIS Scop.	Frequent in streams
C. INTERMEDIA G. F. Hoffm.	+ Stream on Wirrvie Brecks
HYDROCOTYLE VULGARIS L.	+ Common in wet places
LIGUSTICUM SCOTICUM L.	+ Occasional on sea cliffs
HERACLEUM SPHONDYLIIUM L.	Waste ground near school
ANGELICA SYLVESTRIS L.	+ Frequent on sea cliffs
EUPHORBIA HELIOSCOPIA L.	+
POLYGONUM AVICULARE L. agg.	+ In fields, on shingle, &c.
P. AMPHIBIUM L.	+ Wet patch near the school
RUMEX ACETOSELLA L.	+ Common in arable land
R. ACETOSA L.	+ By stream in the Gully
R. LONGIFOLIUS DC.	+
R. CRISPUS L.	+ On sea cliffs, N. Haven
URTICA DIOICA L.	+ Occasional near buildings
BETULA PUBESCENS Ehrh.	Planted in the Gully
SALIX ATROCINEREA Brot.	Sea cliffs below the Gully
S. REPENS L.	+ Near the school
S. HERBACEA L.	+
CALLUNA VULGARIS (L.) Hull	+ Abundant throughout Island
ERICA CINEREA L.	+ Abundant in N. of Island
EMPETRUM NIGRUM L.	+ Abundant in N. of Island
ARMERIA MARITIMA (Mill.) Willd.	+ Abundant on sea cliffs
PRIMULA VULGARIS Huds.	Streamside below Wirrvie Brecks
ANAGALLIS TENELLA (L.) L.	Streamside, Eas Brecks
GENTIANELLA CAMPESTRIS (L.) Börner	+ Near the Methodist Chapel
LYCOPSIS ARVENSIS L.	+ Frequent in arable land
MYOSOTIS SCORPIOIDES L.	Streams in village
M. CAESPITOSA K. F. Schultz	+ Frequent in streams
M. ARVENSIS (L.) Hill	+ Common in arable land
PEDICULARIS PALUSTRIS L.	Common on Sukka Moor
P. SYLVATICA L.	+
RHINANTHUS STENOPHYLLUS (Schur) Druce	(+) Roadsides in the village
EUPHRASIA CONFUSA Pugsl. (det. E. F. Warburg)	Sea cliffs, N. Haven
E. SCOTICA Wettst.	+
E. FOULAENSIS Towns. ex Wettst.	+
E. BOREALIS Wettst.	+
PINGUICULA VULGARIS L.	+ Occasional by streams

- MENTHA AQUATICA L. + Wet patch near the school
 THYMUS DRUCEI Ronn. (+) Common throughout Island
 PRUNELLA VULGARIS L. + Common throughout Island
 LAMIUM MOLUCCCELLIFOLIUM Fr. Occasional in arable land
 L. PURPUREUM L. + Frequent in arable land
 GALEOPSIS BIFIDA Boenn. (+) Frequent in arable land
 PLANTAGO MAJOR L. + Occasional in village
 P. LANCEOLATA L. + Frequent in grassland
 P. MARITIMA L. + Common throughout Island
 P. CORONOPUS L. + Frequent on sea cliffs
 JASIONE MONTANA L. + Frequent in rocky places
 GALIUM SAXATILE L. + Common in N. of Island
 G. PALUSTRE L. + Streamside above the Gully
 G. APARINE L. + Shingle in S. Harbour
 SUCCISA PRATENSIS Moench + Common in S. of Island
 SENECIO JACOBAEA L. +
 S. AQUATICUS Hill + Common in S. of Island
 S. VULGARIS L. + Occasional in arable land
 GNAPHALIUM ULIGINOSUM L. +
 ANTENNARIA DIOICA (L.) Gaertn. +
 BELLIS PERENNIS L. + Frequent in rocky places
 ACHILLEA MILLEFOLIUM L. + Common in the village
 A. PTARMICA L. +
 MATRICARIA MARITIMA L. subsp. +
 MARITIMA + Common in arable land
 M. MARITIMA L. subsp. INODORA + (A plant approximating to this
 (L.) Clapham subspecies but having pale
 yellow ray florets was found
 in arable land in the village.
 No record of such a form
 appears in the literature, and
 further material would be
 valuable)
 M. MATRICARIOIDES (Less.) Porter + Frequent in arable land
 TANACETUM VULGARE L. +
 ARTEMISIA VULGARIS L. +
 CIRSIUM ARVENSE (L.) Scop. Occasional near buildings
 C. VULGARE (Savi) Ten. + Occasional throughout Island
 HYPOCHOERIS RADICATA L. Roadsides in village
 LEONTODON AUTUMNALIS L. + Common in grassy places
 SONCHUS ARVENSIS L. + Garden near the Haa
 S. OLERACEUS L. + Occasional in arable land
 S. ASPER (L.) Hill +
 TRIGLOCHIN PALUSTRIS L. Occasional on Sukka Moor
 POTAMOGETON NATANS L. Stream on Wirrvie Brecks
 P. POLYGONIFOLIUS Pourr. + Stream on Wirrvie Brecks
 NARTHECIUM OSSIFRAGUM (L.) +
 Huds. Wirrvie Brecks

SCILLA VERNA Huds.	+ Scattered on sea cliffs and rocks
JUNCUS SQUARROSUS L.	Common in N. of Island
J. GERARDII Lois.	Pools on N. Gavel
J. BUFONIUS L.	+ Occasional in the Gully
J. CONGLOMERATUS L.	Two plants above the Gully
J. ACUTIFLORUS Hoffm.	Frequent in wet places
J. ARTICULATUS L.	+ Common in wet places
J. BULBOSUS L.	+ Common in wet places & streams
J. KOCHII F. W. Schultz	Occasional in the Gully
LUZULA SYLVATICA (Huds.) Gaudin	+ Ward Hill and in the Gully
L. CAMPESTRIS (L.) DC.	+
L. MULTIFLORA (Retz.) Lejeune	Frequent in grassy places
IRIS PSEUDACORUS L.	Streams in the village
COELOGLOSSUM VIRIDE (L.) Hartm.	+
ORCHIS ERICETORUM (E. S. Marshall) E. F. Linton	Grassy places, S. of Island
O. INCARNATA L.	+
SPARGANIUM ERECTUM subsp. ERECTUM	+
ERIPHORUM ANGUSTIFOLIUM Honck.	+ Occasional in N. of Island
SCIRPUS CESPITOSUS L.	Frequent around Ward Hill
S. FLUITANS L.	Frequent in N. of Island
ELEOCHARIS PALUSTRIS (L.) R. Br.	Streams on Sukka Moor
SCHOENUS NIGRICANS L.	Frequent on Sukka Moor
CAREX BINERVIS Sm.	+ Frequent in N. of Island
C. DEMISSA Hornem.	(+) Frequent by streamsides
C. SEROTINA Mérat	+
C. PANICEA L.	+ Occasional in bogs
C. FLACCA Schreb.	+ Occasional in grassland
C. NIGRA (L.) Reichard	+ Occasional in N. of Island
C. BIGELOWII Schwein.	+
C. ECHINATA Murr.	+ Frequent in N. of Island
C. PULICARIS L.	Frequent on Sukka Moor
MOLINIA CAERULEA (L.) Moench	+ Common on Sukka Moor
SIEGLINGIA DECUMBENS (L.) Bernh.	Frequent in damp places
GLYCERIA FLUITANS (L.) R. Br.	+ Ditches in the village
FESTUCA RUBRA L.	+ Occasional in S. of Island
F. OVINA L.	+ ?Occasional in grassland
F. VIVIPARA (L.) Sm.	+ Frequent in N. of Island
LOLIUM PERENNE L.	+ Frequent in arable land
POA ANNUA L.	+ Frequent round buildings
P. PRATENSIS L.	Occasional in arable land
P. TRIVIALIS L.	Frequent round buildings
DACTYLIS GLOMERATA L.	Occasional in arable land
CYNOSURUS CRISTATUS L.	In grassland in the village
AGROPYRON REPENS (L.) Beauv.	+ Frequent in arable land
HOLCUS LANATUS L.	+

H. MOLLIS L.	In the Gully
DESCHAMPSIA CESPITOSA (L.) Beauv. +	By the Observatory
D. FLEXUOSA (L.) Trin.	Occasional in the Gully
AIRA PRAECOX L.	+ Grassland above the Gully
AGROSTIS TENUIS Sibth.	Common in N. of Island
A. STOLONIFERA L.	Frequent on rocks and in village
ALOPECURUS GENICULATUS L.	Waste ground in village
ANTHOXANTHUM ODORATUM L.	Frequent throughout Island
PHALARIS ARUNDINACEA L.	+ Streams in the village
NARDUS STRICTA L.	Common in N. of Island

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THE STABILITY OF THE EPIPHYTIC FLORA OF POLLARDED WILLOWS

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INTRODUCTION

The rich epiphytic floras of some tropical regions have frequently been described, but few observations have been made on the sparser, but nevertheless interesting temperate epiphytic communities. In Great Britain relatively few trees support a permanent phanerogamic epiphytic flora; the Killarney Oak Woods in Ireland (Rübel, 1912) and Wistman's Wood on Dartmoor (Harris, 1921; Miller & Worth, 1922; Anderson, 1954) contain the best known examples. Willis and Burkill (1893) described the results of investigations of four thousand pollarded willow trees in the Cambridge district, which between them supported eighty species of vascular plants as epiphytes. In a letter to the editor of *Nature* in 1925, Thompson gave a general brief description of willow epiphytes in the Bath and Bristol areas. In 1904, Thomas had investigated the epiphytes of sixty willows at St. Dizier, France. Other continental workers were Loew (1892) and Bolle (1892), both dealing with willow epiphytes in Germany. To the best of our knowledge, these latter five papers are the only published contributions to our understanding of willow epiphytes. These works were mainly composed of descriptive lists of the species present, with statistics and notes on their relative frequencies. In all cases, only one series of observations was made, and few indications were given regarding the persistence of either the individual plants or the epiphytic communities which they formed. The object of the present study was to investigate further the epiphytic flora of pollarded willows, with particular reference to the stability and continuity of the communities.

In describing the extensive communities of epiphytes found in New Zealand, Oliver (1930) devised a general scheme for their biological classification, in which he recognised four categories. These are:—

TYPICAL. Habitual epiphytes not normally found in terrestrial habitats.

OCCASIONAL. Normally occur as terrestrial plants, but may mature successfully as epiphytes.

HEMI-EPIPHYTES. Germinate as epiphytes, then send down roots to the ground, thereby becoming independent.

EPHEMERALS. Plants unable to grow large enough as epiphytes to reproduce themselves (mostly tree seedlings).

It was thought that it might be possible to apply this classification to the very different plants growing as epiphytes in the British willows. Some useful information concerning the efficiency of the dispersal mechanisms of certain of the species investigated was obtained as an indirect result of the studies.

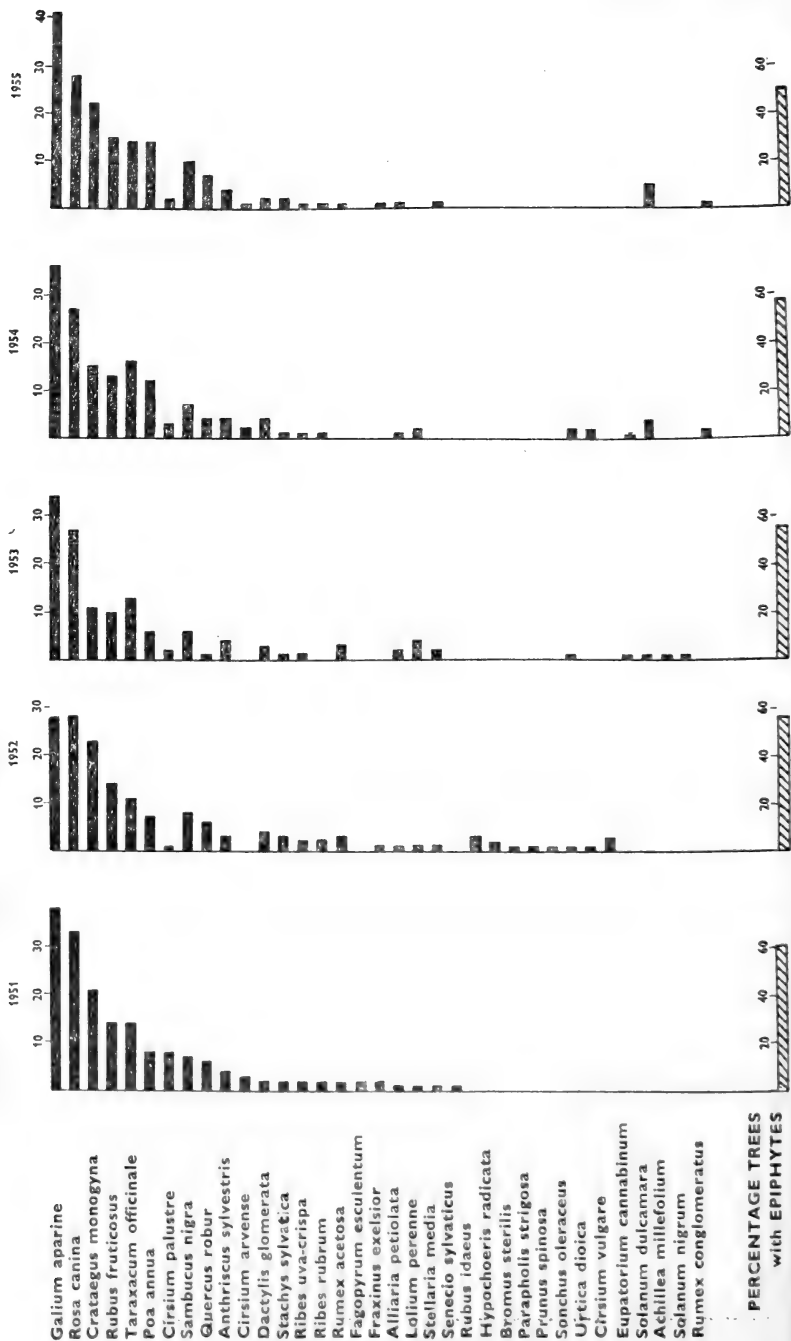
METHODS

For the purpose of assessing the stability of the willow epiphyte communities, one hundred trees were selected, the vast majority of which were pollarded. An annual survey of their epiphytic flora was carried out for five years. In recording the species present, the presence of one or more plants of any species in any one tree was taken to constitute one record for that species in that tree. The relative abundance of the species present in any one tree was not estimated, as this study was primarily concerned with the persistence of the flora as a whole, and the dispersive abilities of the species represented. It is generally impossible to tell whether any particular plant is an original coloniser, or the progeny of a coloniser. The results were expressed as the percentage of trees colonised by each species, and also the total number of trees colonised by any epiphytes. The trees examined are situated on the south bank of the river Stour, near Flatford Mill Field Study Centre, in Suffolk. The first hundred trees up stream, west of the footbridge near the mill, were chosen for the annual examination. The majority of the trees are *Salix fragilis*, the remainder being *S. alba*.

THE HABITAT

In the process of pollarding, the branches of the tree are cut right back to the top of the trunk, which is generally 2.5-3 m. above the ground. This is normally carried out at fairly regular intervals of about 20 years. The general effect of the process is to produce a saucer-like depression at the top of the trunk, surrounded by a ring of branches. This depression becomes filled with an accumulation of litter and wind-blown dust, which matures into a rich mould. This mould is mainly organic in origin, from the fallen leaves of the trees, but close examination provides evidence of a small amount of inorganic material. The mould is distinctly acidic, having an average pH of 5.0 (B.D.H. Capillator), which in our experience varies very little from tree to tree. The soil may reach a depth of about 30 cm., where it blends almost imperceptibly into the rotting centre of the trunk.

FIG 1 ANNUAL FREQUENCIES OF FLATFORD WILLOW EPIPHYTES



PERCENTAGE TREES with EPIPHYTES

Plants growing in this situation are subjected to deep shading by the dense leaf canopy of the willows during the summer months. Pollarding provides a greater surface suitable for the establishment of epiphytic plants than is available in a non-pollarded willow. The effect, however, is purely quantitative non-pollarded willows may sometimes support quite a rich flora. In this study the species of willow involved does not appear to affect the epiphytic flora developed thereon.

SPECIES RECORDED AND DISPERSAL DATA

During the five years of study a total of thirty-five species have been recorded (for a complete list see fig. 1) As may be seen from this chart, the number of trees in which epiphytes were found, varied from 61 to 50. This fall was largely due to a decrease in the number of trees available for colonisation, owing to a number being cut down or burnt. As the histograms show, the chief species present were remarkably constant in their relative frequencies. *Epilobium* species, particularly *E. hirsutum* which occurs abundantly in the immediate neighbourhood, are apparently ideally equipped for dispersal to an epiphytic habitat, but do not occur in the Flatford willows. The reason for their absence is obscure. Plants from similar terrestrial habitats and with similar dispersal mechanism, for example *Cirsium palustre* and *Eupatorium cannabinum* have been recorded. *Epilobium hirsutum* and *E. parviflorum* were recorded from the Cambridge willows by Willis and Burkill, thus demonstrating that this type of habitat is not outside their range of tolerance. In France, Thomas records *E. montanum* as his second most frequent species. *Hedera helix*, which often occurs very abundantly in the willow crowns, is not recorded in this study, as it nearly always appears to originate from strands growing up the trunks from the ground.

In fig. 2 a tabulation is given of dispersal data, for all the species which occur on the Flatford willows. This information was gained partly from our own observations, with the unpublished observations of local biologists, and partly from the literature, notably Ridley (1930). We have identified the following plants or fruits as components of birds' nests in the willows investigated:—*Galium aparine*, *Cirsium* spp., *Poa annua*, *Anthriscus sylvestris*, *Lolium perenne* and *Bromus sterilis*. All had seeds which were in an apparently viable condition. The fruit of many of the species of epiphytes found are known to be eaten by birds, in particular, berries and the small fruits of grasses and Composites. Sernander (1901) has described the probable dispersal of *Avena sativa* into *Salix caprea* in Scandinavia by the Nuthatch (*Sitta europaea*). Other species are most probably dispersed through the agency of wind, for example *Taraxacum* and *Cirsium*.

Fig. 2.

PROBABLE DISPERSAL METHODS OF FLATFORD WILLOW EPIPHYTES

	Birds: Food	Birds: Nests	Attached to Birds	Wind
<i>Galium aparine</i>	×	×	×	
<i>Rosa canina</i> agg.	×			
<i>Crataegus monogyna</i>	×			
<i>Rubus fruticosus</i>	×			
<i>Taraxacum officinale</i>	×			×
<i>Poa annua</i>	×	×		
<i>Cirsium palustre</i>	×	×		×
<i>Sambucus nigra</i>	×			
<i>Quercus robur</i>	×			
<i>Anthriscus sylvestris</i>		×	×	
<i>Cirsium arvense</i>	×			×
<i>Dactylis glomerata</i>	×	×		
<i>Stachys sylvatica</i>	×			
<i>Ribes uva-crispa</i>	×			
<i>Ribes rubrum</i>	×			
<i>Rumex acetosa</i>	×			×
<i>Fagopyrum esculentum</i>	×			
<i>Fraxinus excelsior</i>				×
<i>Alliaria petiolata</i>	×			
<i>Lolium perenne</i>	×	×		×
<i>Stellaria media</i>	×			
<i>Senecio sylvaticus</i>				×
<i>Rubus idaeus</i>	×			
<i>Hypochoeris radicata</i>				×
<i>Bromus sterilis</i>	×	×		×
<i>Parapholis strigosa</i>			× ₁	
<i>Prunus spinosa</i>	×			
<i>Sonchus oleraceus</i>	×			×
<i>Urtica dioica</i>	×			
<i>Cirsium vulgare</i>	×	×		×
<i>Eupatorium cannabinum</i>	×			×
<i>Solanum dulcamara</i>	×			
<i>Achillea millefolium</i>	×			×
<i>Solanum nigrum</i>	×			
<i>Rumex conglomeratus</i>	×			×

₁In mud on foot of bird:

Two cases of dispersal over known distances were recorded. *Fagopyrum esculentum* was grown, in 1950, in a field about half a mile from the willow in which it was found growing as an epiphyte in the following year. It was not grown in any other field in the district. It seems almost certain that it must have

been carried over that distance by a bird; wood pigeons and pheasants particularly relish these seeds, and they are known to frequent the willows. *Parapholis strigosa* occurs in the salt marshes, about half a mile away from the tree in which it was found as an epiphyte in 1952. This species does not occur in the intervening meadows, and it seems most likely to have been transported, in one stage, in mud on the foot of a bird.

Reference to fig. 1 shows that the main species which comprise the epiphytic flora of the Flatford willows are remarkably constant in their relative frequencies. The data obtained by other British workers, for example, Willis and Burkill (1893) show similar results. *Galium aparine* appears to be the most successful coloniser of pollarded willows in all cases. In addition to those species which occur in many of the colonised willows, there are several species, e.g. *Stachys sylvatica* and *Alliaria petiolata*, which have persisted in the same few trees throughout the period of investigation. Other species, e.g. *Fagopyrum esculentum* and *Achillea millefolium* have only occurred in the one year, without persisting. There are no species in the British flora which may be classified, after Oliver's groupings, as "Typical" epiphytes. The majority of the species occurring in the Flatford willows, fall into the "Occasional" class of epiphytes. Willis and Burkill observed a plant of *Sambucus nigra*, the roots of which had grown down through the trunk of the willow into the soil. This might be classed as a "hemi-epiphyte"; we have not observed this type of behaviour. A number of the epiphytes in the Flatford willows, such as *Quercus robur* and *Fraxinus excelsior*, may be placed in Oliver's "Ephemeral" class. We have only observed non-flowering rosettes of *Cirsium palustre*; it seems possible that this species is also unable to reach maturity in this epiphytic habitat.

CONTINUITY AND STABILITY OF THE EPIPHYTIC FLORA

Comparison of our list of species with those of other workers suggests that there are certain species which occur with great regularity as epiphytes in British willows. The most typical are:—*Galium aparine*, *Crataegus monogyna*, *Rosa canina*, *Rubus fruticosus* and *Taraxacum officinale*. All the plants which occur with considerable frequency as willow epiphytes are to be found in terrestrial habitats, close to areas where pollarded willows are maintained, for example, on lowland river banks and in damp hedgerows. Naturally the details of the community vary from place to place, depending on the plants locally available to act as colonisers. Thus Willis and Burkill record *Rhamnus catharticus* and *Polypodium vulgare* from the Cambridge willows, neither of which occur in the immediate vicinity of the Flatford

willows; likewise we have recorded *Parapholis strigosa*, which doubtless does not occur near Cambridge. Willis and Burkill state that in their experience willow epiphytes are not found more than two hundred yards from terrestrial plants of the same species. In our studies we have recorded two examples (*Fagopyrum* and *Parapholis*), where colonisation has apparently occurred from distances of about half a mile. Obviously, however, the density of species in the immediate neighbourhood must have a primary effect in determining the composition of the epiphytic flora. The willows were repollarded in the early spring of 1953, six months before the annual examination of that year. In the process of repollarding, all the willow branches were cut down, together with the larger epiphytes, for example *Rosa canina* and *Crataegus monogyna*. Reference to the histogram for 1953 in (fig. 1), shows that there was very little change in the epiphytic flora as a result of this violent disturbance. There was a notable decrease in the representation of *Crataegus*, but it was found to have almost regained its former abundance two years later. The decrease was very probably apparent rather than real, and was due to the great difficulty of observing the cut *Crataegus* stumps (which regenerated very slowly) in the especially dense leaf canopy developed by the mass of new shoots in the willow crown. Other shrubs such as *Rubus* and *Rosa* rapidly produce large new shoots and were recorded in scarcely diminished numbers. A remarkable example of the continuity of one plant and its progeny in an epiphytic habitat, is mentioned by Willis and Burkill who recorded that the annual species of *Mycelis muralis* survived over thirty-five years in one group of Cambridge willows.

Thus it may be seen that the Flatford willow epiphyte community has remained remarkably stable in relation to the time factor. In addition to its great stability in qualitative and quantitative composition, it has during the period of study suffered the great disturbance of the repollarding process and yet has been able to regenerate with an almost unchanged composition.

SUMMARY

1. Literature relating to the epiphytic flora of pollarded willows is briefly reviewed.
2. An account of methods of investigation of the epiphytic flora and the nature of the habitat is given.
3. Comments on the dispersal mechanisms involved are made, together with examples of dispersal over known distances.
4. The considerable stability of the Flatford willow epiphyte community in relation to the time factor is recorded, and the existence of a typical willow epiphyte community of south and central Britain is postulated.

We gratefully acknowledge the considerable encouragement we have received from Mr. F. J. Bingley, warden of Flatford Mill Field Study Centre, and also ornithological information from Miss J. M. Walker, assistant warden of the centre. Our thanks are also due to the Field Studies Council, for bursaries received during some of our studies at Flatford.

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**CEPHALANTHERA RUBRA (L.) RICHARD IN
BUCKINGHAMSHIRE**

By R. S. R. FITTER

In July 1955 Mrs. H. V. Hawkins was taken by a friend who lives in the Buckinghamshire Chilterns to see three flowering spikes of *Cephalanthera rubra*, which she had found in a small clearing in a beechwood. The plants answered so exactly to the descriptions in the books that Mrs. Hawkins, not realising the extreme unusualness of the occurrence, did not seek further confirmation of the record. She did, however, make an entry in her diary for the Wild Flower Society and not surprisingly had it scored through.

In 1956, as soon as her friend reported that the helleborines were in flower again, Mrs. Hawkins asked me to come and see them. On July 2, she and her friend were able to show my wife and myself nine flowering spikes of undoubted *C. rubra*. Unfortunately the finest spike had already disappeared, having possibly been picked by a passer-by the day before, which was a Sunday. On July 3, J. E. Lousley and D. McClintock also came to see the plants with my wife and myself. A careful search was made and it was estimated that there were ten extant flowering spikes in the open patch and no fewer than 64 non-flowering plants, some of them very small, either in the open patch itself or in fairly deep shade within 20-30 yards of it.

The open patch is only a few yards in extent, in almost pure beechwood. It faces south-west and is on a chalk subsoil. The other plants growing on the open patch included:—

* <i>Agrostis stolonifera</i>	<i>Crepis capillaris</i>
* <i>Arctium</i> sp.	<i>Deschampsia cespitosa</i>
<i>Arenaria serpyllifolia</i>	<i>Dryopteris filix-mas</i>
<i>Asperula odorata</i>	<i>Epilobium montanum</i>
<i>Brachypodium sylvaticum</i>	<i>Epipactis helleborine</i>
<i>Bromus ramosus</i>	<i>Euphorbia amygdaloides</i>
<i>Campanula rotundifolia</i>	<i>Festuca gigantea</i>
<i>C. trachelium</i>	* <i>F. ovina</i>
<i>Carex flacca</i>	<i>Fragaria vesca</i>
<i>C. remota</i>	<i>Fraxinus excelsior</i>
<i>C. sylvatica</i>	<i>Geranium robertianum</i>
<i>Cephalanthera damasonium</i>	<i>Geum urbanum</i>
<i>Chamaenerion angustifolium</i>	* <i>Holcus lanatus</i>
<i>Circaea lutetiana</i>	<i>Hypericum perforatum</i>
<i>Cirsium vulgare</i>	<i>Iberis amara</i>
<i>Cornus sanguinea</i>	<i>Leontodon hispidus</i>

<i>Ligustrum vulgare</i>	<i>Rumex sanguineus</i>
<i>Lonicera periclymenum</i>	<i>Salix caprea</i>
<i>Luzula pilosa</i>	<i>Sanicula europaea</i>
<i>Lysimachia nemorum</i>	<i>Scrophularia nodosa</i>
<i>Medicago lupulina</i>	<i>Sedum acre</i>
<i>Melica uniflora</i>	* <i>Silene vulgaris</i>
<i>Mercurialis perennis</i>	<i>Sonchus arvensis</i>
<i>Milium effusum</i>	<i>S. asper</i>
<i>Mycelis muralis</i>	<i>Stachys sylvatica</i>
<i>Oxalis acetosella</i>	<i>Stellaria holostea</i>
<i>Plantago major</i>	<i>Tussilago farfara</i>
<i>Poa nemoralis</i>	<i>Urtica dioica</i>
<i>Prunella vulgaris</i>	<i>Verbascum thapsus</i>
<i>Pteridium aquilinum</i>	<i>Veronica montana</i>
<i>Ranunculus repens</i>	<i>V. officinalis</i>
<i>Rosa arvensis</i>	<i>Viburnum lantana</i>
<i>Rubus fruticosus</i>	

A further visit was paid on August 13 to see if any of the flowering spikes had set seed, but no capsules remained on any of the spikes (it will be remembered that the finest spike had already disappeared on July 2).

There is no evidence that the small clearing where the orchid grows is a very recent one, or even that a great deal more light has been let into it within the past few years. There is thus every possibility that the colony has existed for several years, a tribute to the neglect of the Chilterns by botanists.

A remarkable feature of the discovery is that it is in an entirely new area, some seventy miles from the known Cotswold localities and at least as far from any of the places in Kent, Sussex and Somerset from which there are recent unconfirmed records of *C. rubra*. It is to be hoped that the discovery will stimulate renewed search in other suitable areas.

I am much indebted to J. E. Lousley for reading this note and for adding the starred plants to the list given above.

PLANT NOTES

3/1. *PULSATILLA VULGARIS* Mill. In *Proceedings B.S.B.I.*, 2, 134 (1956), I drew attention to the existence of *Pulsatilla vulgaris* in uncut grass in gardens at Tickhill, Doncaster, S.W. Yorks., and suggested that it may be a native survival. Dr. W. A. Sledge informs me, however, that Tickhill is not a district from which this species has previously been recorded, and that in his opinion it had been deliberately planted there. He further mentions that the areas in Yorkshire in which *P. vulgaris* did at one time grow, and where the last plant was seen about 80 years ago, are on the Magnesian Limestone some considerable distance from Tickhill, and that the present northern limit of the species in England is a locality near Scunthorpe, N. Lincs., where one or two plants still precariously survive.—D. H. KENT.

6/33e. *RANUNCULUS FICARIA* var. *aurantiacus* Turrill, 1954. *Curtis's Bot. Mag.*, 170, tab. 226—a planta typica (var. *ficaria*) petalis in pagina superiore aurantiacis differt. The following account is given by the author: "This var. shows the recessive character of having no tubercles in the axils of the cauline leaves. The leaves have diverging, not overlapping, basal lobes, and slight to moderate crenations at the margins, with blotched and mottled upper surfaces. The flowers are hermaphrodite and show normal development of the sepals, in contrast with the petaloid sepals of male plants. The petals are fully developed but are characterized by the orange (Cadmium Yellow) colour of their upper surface".

The variety has been found only once—in a field near Windsor, Berks., as a single plant growing with many ordinary yellow-flowered plants. It has been cultivated at Kew, and it was from here that it was described and figured.—D. H. KENT.

96/2B. *SILENE VULGARIS* subsp. *macrocarpa* Turrill, 1956. *Hook. Icon. Plant.*, 36, tab. 3551, 1-3. Under this new subspecies, described from material cultivated at Kew from seed obtained from Cyprus, the author places plants from the small population naturalised on Plymouth Hoe, S. Devon. These plants have the peculiar characters of subsp. *macrocarpa*, including subterranean stolons, greenish-yellow or purple petals (in some plants) and large flask-shaped capsules. The Plymouth plants were wrongly named *S. angustifolia* var. *carneiflora* (Ledrand) Pugsl. in *J. Bot.*, 78, 94-96 (1940). *S. angustifolia* Guss., non Poir. is a different plant with exceedingly narrow leaves and, moreover, the name is a later homonym and cannot be used under the International Code.

Subsp. *macrocarpa*, at present known only from Cyprus, may be found elsewhere in the Mediterranean region.—D. H. KENT.

112/12. *HYPERICUM MACULATUM* Crantz. Investigations which are not yet complete have revealed that both of the widespread subspecies of this species occur in Britain, and not only one of them as stated by Pugsley in *J. Bot.*, 78 (1940). The N.W. European plant, subsp. *obtusiusculum* (Tourlet) Hayek (= *H. quadrangulum* var. *erosum* Schinz) is much commoner here than the type, which has a predominantly eastern distribution in Europe. The type subspecies (subsp. *maculatum*) is diploid ($2n=16$), but subsp. *obtusiusculum* has proved to be tetraploid like the closely related *H. perforatum* ($2n=32$).

Subsp. *maculatum* has been found in several localities, mostly in the west of Scotland, but specimens from two places in the south of England also appear to belong to this subspecies. These, however, have not been examined cytologically.

Tutin (in Clapham, Tutin and Warburg, 1950) follows Pugsley in using the name *H. dubium* Leers for the British representatives of this group, but the correct application of this name is doubtful. Leers' type specimen is not available for comparison with the British material and his description is rather ambiguous, although it probably refers to the tetraploid. On the other hand, photographs of the type specimen of *H. maculatum* show that this name should be applied to the diploid plant. Thus, if the tetraploid is treated as a separate species, the correct name may be *H. dubium*; but the botanical evidence suggests that the two plants should be treated as subspecies of the same species, in which case the nomenclature used in the first paragraph is correct.

The two subspecies can be distinguished in the field by the following characters:—

Subsp. <i>maculatum</i>	Subsp. <i>obtusiusculum</i>
Plant more slender, less branched.	Plant stouter, more branched.
Inflorescence rather strict. Branches make an angle of ca. 30° with the stem.	Inflorescence more spreading. Branches make an angle of ca. 50° with the stem.
Leaves usually without pale glands; venation densely reticulate.	Leaves more often with pale glands; venation laxer.
Sepals broad, entire.	Sepals often narrower*, eroded.
Petals entire, marginal dark dots absent. Superficial dark glands mainly in the form of dots.	Petal margin sometimes crenate, one or two marginal dots sometimes present. Superficial dark glands mainly in the form of lines or dashes.

Although none of these differences is wholly reliable by itself, the combined characters of any one plant usually indicate clearly to which subspecies it belongs.

*Narrow sepals may be due to introgression from *H. perforatum*.

The writer would be very grateful for any opportunity to examine material of this species and of suspected hybrids with *H. perforatum*, especially from Ireland, Wales and western areas of Scotland.—N. K. B. ROBSON.

112/14(2). ***Hypericum canadense* L., 1753, *Sp. Plant.*, 785.** D. A. Webb (*Irish Nats. J.*, 12, 113-116) reports the occurrence of this species in boggy pools and on wet disturbed peat on the shore of Lough Mask, mainly in the townland of Gortmore (which is towards the southern end of the lough), W. Galway, and also near the extreme north-west corner, one mile south of Srah, W. Mayo. The status and ecology of the plant in Ireland are discussed, and the following description is given—A slender, stiffly erect plant, rarely over 8 ins. high, and often \pm , with something of the habit of a small *Linum* or *Epilobium*. Probably annual. Stem quadrangular and slightly winged; leaves narrow-oblong, about $\frac{1}{2}$ in. long, marked with pellucid dots; inflorescence is a regular, rather open cyme. Flowers golden-yellow, tinged with red in bud, about $\frac{1}{3}$ in. across; the petals are narrow, giving the flower a star-like appearance, but it remains closed in dull weather and also in the dry atmosphere of a room. Most of the plant is strongly suffused with a deep wine-red tint.

The author points out that "the combination of the erect, four-angled stem, the small narrow, glabrous leaves, and the absence of black glands serves, quite apart from its striking delicacy of habit, to distinguish it from any other Irish *Hypericum*". Prof. Webb is preparing a full account of the species for inclusion in a future issue of *Watsonia*.—D. H. KENT.

178/2(2)b. ***Lathyrus heterophyllus* var. *unijugus* Koch, 1843. *Syn. Flor. Germ. et Helv.*, Ed. 2, 224.** Some of the specimens collected by Mr. E. L. Swann at Burnham Overy Staithe (v.c. 28, W. Norfolk) appear to be *L. heterophyllus* var. *unijugus*. They agree with the original description of *L. heterophyllus* var. *unijugus* given by Koch and with the illustration in H. G. Reichenbach fil. & G. Beck de Managetta, *Icones Florae Germanicae et Helveticae*, 22, Tab. MMCLXI, Fig. I, II, 1, 2. In addition, they well match specimens from Sweden, deposited at the Herbarium of the British Museum (Natural History). This variety differs from the typical form of *L. heterophyllus* L. in having all leaves of one pair of leaflets only instead of two pairs as in the upper leaves of the typical form. In this character it approaches *L. sylvestris* L., a native species, and *L. latifolius* L., an alien from S. Europe, naturalised in some localities in this country. Both these species are closely allied to *L. heterophyllus*, which is distributed in S., C. and W. Europe, reaching C. Sweden in the north. Some continental authorities have treated *L. heterophyllus*, *L. latifolius* and *L. sylvestris* as microspecies of *L. sylvestris* agg., or the first two as varieties of *L. sylvestris*. For an interesting account dealing with these and allied species see A. Ginzberger, "Ueber einige *Lathyrus*-Arten aus der Sektion *Eulathyrus* und ihre geographische Verbreitung" (*Sitzungs-*

ber. Akad. Wissensch. Wien. Mathem.-naturw. Kl., 105, 281-352, 1896). 1896).

L. heterophyllus var. *unijugus* has not previously been recorded from Britain. According to H. Gams in G. Hegi's *Illustrierte Flora von Mittel-Europa*, 4/3, 1600 (1924), it is of rare occurrence and it has been found in Germany (Hartz, Mannheim), Austria (Tyrol) and Switzerland (Graubünden, Wallis). I have seen specimens also from Sweden Västergötland, Småland and Skåne). In general appearance, especially in the width of the leaflets, it resembles a broad-leaved form of *L. sylvestris* var. *latifolius* Peterm., from which it can be distinguished by larger and broader stipules, relatively shorter petioles, more obtuse leaflets and unequal teeth of the calyx, of which the lower one much exceeds the calyx-tube. From *L. latifolius* it differs mainly in having narrower wings of the stem and petioles, narrower stipules and smaller flowers.

The main distinctive characters of *L. sylvestris*, *L. heterophyllus* var. *unijugus* and *L. latifolius* are tabulated as follows:

L. SYLVESTRIS	L. HETEROPHYLLUS var. UNIUGUS	L. LATIFOLIUS
Petioles (incl. wings) narrower than the winged stem.	Petioles (incl. wings) narrower than the winged stem.	Petioles (incl. wings) equaling or broader than the winged stem.
Stipules narrowly semi-hastate, faintly nerved, $\frac{1}{3}$ - $\frac{1}{2}$ length of the petiole.	Stipules semi-hastate, distinctly reticulate-nerved, as long as or up to $\frac{1}{2}$ length of the petiole.	Stipules broadly semi-hastate, distinctly reticulate-nerved, as long as or up to $\frac{1}{2}$ length of the petiole.
Leaflets (except var. <i>latifolius</i>) lanceolate or linear, gradually tapering, usually 6-20 times longer than broad, with indistinct reticulate nervation.	Leaflets lanceolate to narrowly elliptic, abruptly tapering, 4-9 times longer than broad, distinctly reticulate-nerved.	Leaflets ovate, rounded at the apex or abruptly tapering, less than 4 times longer than broad.
Flowers 13-18 mm. long, paler and more greenish than in the two other species, the standard being rose-pink.	Flowers 15-20 mm. long, standard pale crimson-purplish-coloured.	Flowers 15-30 mm. long, the standard of a rich magenta colour.
Teeth of the calyx nearly equal, shorter than the tube.	Teeth of the calyx unequal, the lower much exceeding the tube.	Teeth of the calyx unequal, the lower much exceeding the tube.

Mr. Swann has observed the *Lathyrus* at Burnham Overy Staithe for several years and has found it growing in three or four vigorous colonies. According to him (in a letter): "As a result of the disastrous sea-floods of 1953 these colonies appreciably diminished but observations in 1956 showed not only that they were recovering but also that two distinct plants were present". The other plant proved to be *L. latifolius*. Both plants seem to be escapes, which have established themselves in

damp hollows on sand-dunes there. Mr. Swann writes: "According to the villagers there was at one time a row of huts near the Overy Staithe station and the introduction of the so-called 'Sea-pea' may be due to the efforts of an old lady hut-owner who was keen on gardening to the extent of growing plants in the sand round her hut".

A similar plant having broad and abruptly tapering leaflets and relatively short petioles has been collected at Swanscombe Wood (v.c 16. W. Kent). It has been known for a long time as a broad-leaved form of *L. sylvestris* (cf. D. H. Kent & J. E. Lousley, *A Hand List of the Plants of the London Area*, 70, 1952). It differs from var. *unijugus* in having narrower and shorter stipules and the nervation on its leaflets is indistinctly marked. According to Messrs. E. B. Bangarter and P. C. Hall, who have visited Swanscombe Wood recently, the population of this plant is very polymorphic there. As the specimens from that locality available for my study were not in flower, being either sterile or in fruit, I was unable to come to a definite conclusion. A specimen approaching the Norfolk plant in question has been collected also by Mr. A. J. Wilmott near Greenhithe, which is not far from Swanscombe Wood. This specimen differs from the Swanscombe Wood plant in having broader stipules and may be a variant of the same population. It would be desirable to pay further attention to this plant and I hope to investigate it *in situ*.—A. MELDERIS.

353/6(2). ***Bidens vulgata*** Greene, 1899, *Pittonia*, 4, 72. 17. Surrey: several plants at the side of a yard used for parking lorries, Croydon, 1956 (Herb. Young, no. 5919).

An erect annual, 30-150 cm. tall, with glabrous leaves and stem. Leaves 5-15 cm. long, on slender petioles, pinnate, 3- or 5-partite; leaflets lanceolate-acuminate, serrate. Capitula 15-28 mm. broad (excluding the outer bracts), 12-18 mm. high. Phyllaries strongly hispid: the exterior 10-16, unequal, linear-spatulate, 10-20 (-30) mm. long; the interior ones lanceolate-ovate, 7-9 mm. long. Flowers yellow; ray-florets inconspicuous, with an obovate ligule 25-35 mm. long. Achenes flat, obovate- or oblong-cuneate, brown or olive, often tuberculate, with a single rib on each face; the margins with forward-pointing bristles; crowned by two erect awns with backward-pointing barbs. Native of the whole of temperate N. America; a naturalised alien in Italy over a century ago. A "split" from *B. frondosa* L., from which it is distinguished by the more hispid and more numerous exterior bracts (5-8 in *B. frondosa*), the inner ones shorter than the disc, and larger achenes (body of outer ones 6.5-11.3 × 3.5-6.3 mm., against 5.3-7.0 × 3.0-4.0; awn of inner ones 4.0-9.5, against 2.5-5.0 mm.). Figured by Sherff, 1937, *The Genus Bidens*, Field Museum Publ., Bot. Series, 16, t. 58.—D. P. YOUNG.

422/2c. **LEONTODON AUTUMNALIS** var. **salinus** (Aspegren) Lange, 1851, *Haandb. Danske Fl.*, ed. 1, 462; *Apargia autumnalis* β *salina* Aspegren, 1823, *Blekingsk Fl.*, 57; *L. autumnalis* var. *integrifolius* Knuth, 1887,

Fl. Schlesw.-Holst., 424 (non var. *integrifolius* Uechtr., 1881, *Fl. Schlesien*, 248); *L. autumnalis* f. *salinus* (Aspegren) Neum., 1901, *Sver. Fl.*, 65. Plant graceful and slender. Scape simple, more or less erect, up to 15 cm., bearing a single flower. Involucre glabrous. Leaves rather thick and fleshy, glabrous, lanceolate, quite entire or with a few distant teeth (never pinnatifid). An ecotype of salt-marshes, tested in cultivation by Turesson (1922, *Hereditas*, 3, 236) and found to retain its characters, including leaves composed of very compact tissues and poor in air spaces.

A plant agreeing with this variety in every respect was collected in 1955 from a salt-marsh at Port Corna, Isle of Man, v.c. 71. It is probably widespread in such habitats round the British and Irish coasts.—D. E. ALLEN.

511. CALYSTEGIA. Walters and Webb (1956) have invited the publication of information regarding the reproductive biology of species of this genus in the British Isles. The following observations, made whilst on leave from the Gold Coast, are relevant.

In south-eastern England this summer (1956) the fruiting of both *Calystegia sylvestris* (Willd.) Roem. & Schult. and *C. sepium* (L.) R.Br. has been good in patches. *C. sylvestris*, as befits a species with greater powers of spread in northern regions, appears to have flowered more freely in the cold, wet weather. However, it is noticeable that, in each taxon, it is in the larger populations (which are likely to be made up of several distinct plants) that abundant full capsules have been formed. Small "populations" which, in extreme cases, may have been derived vegetatively from a single individual, have often remained barren. This suggests that seeding is possible where there is genetic diversity and not in its absence, indicating the existence of self-incompatibility.

Large populations with abundant seed-formation were observed at Preston Park (Brighton) and in several parts of north and north-east London. The Preston Park population of *C. sylvestris* contained plants with pink, white and striped corollas, respectively. None of these plants matched the description of *C. dahurica* given by Walters and Webb. Smaller populations which failed to set seed were studied in the London area, particularly in garden hedges within the boundaries of Epping Forest.

As an experiment, six flowers of *C. sylvestris* growing in a population in Wood Green and a similar number of *C. sepium* within the grounds of Alexandra Palace were self-pollinated as their stigmata became receptive and enclosed within cellophane bags until the withering of their corollas. The ovaries in these flowers failed to swell and no seeds were developed, although many fruits were forming from other flowers in the Alexandra Palace population. An examination of the pollen from flowers in both populations showed the grains to be generally well-filled and of normal, though somewhat variable in size. Although alternative explanations for these results cannot be ruled out entirely, it

seems likely that these two species are truly self-incompatible even though East (1940), in his survey of the known occurrence of self-incompatibility amongst flowering plants, comments on the Convolvulaceae:—"The general evidence, however, indicates that self-sterility is rare".

It is interesting that in both of the experimental populations, as elsewhere, flowers were being visited freely by a considerable number of insects all of which could be considered to be potential pollen vectors. Bumble bees, hive bees, Syrphids, Empids and a number of other Diptera (ranging from Bluebottles to small flies no more than a millimetre in length) were active and many photographs were easily taken. The bees applied themselves to nectar-collecting and, in their movements, made frequent contacts with anthers and stigmata. The visits of the Syrphids (particularly *Rhingia*) to individual flowers were more prolonged and they spent periods up to 10 minutes palpating the anthers from which they appeared to derive refreshment. An examination of stigmata in the evening showed frequent pollen grains upon the inner surfaces of the stigmatic lobes which in *C. sylvestris* stand consistently above the level of the anthers (although their position in *C. sepium* is more variable).

Such adequate pollination by diurnally flying insects, even in urban areas, raises strong doubts as to the truth of the assertion made many years ago that the fruiting of *Calystegia sepium* (which is apparently scentless) is dependent upon visits by hawkmoths, especially as the flowers often begin to close some time before dusk. They are, however, open in both species at dawn. I, personally, have seen no visits by moths and it is interesting that Hermann Muller (1883) makes the same remark although he gives second-hand accounts of crepuscular and nocturnal visitations on the Continent and even he regards the hawkmoths as the primary pollinators of *C. sepium*. This has been a poor season for Lepidoptera of all kinds, yet the *Calystegias* have fruited quite well.

The apparent direct correlation between the abundance of the Convolvulus Hawkmoth (*Sphinx convolvuli* L.) in any area and the fruiting of *Calystegia sepium* there seems to have been first commented upon by Buchanan White (1873) in a paper published both in England and America, although it has been repeated freely by subsequent authors, particularly those of popular works. Now, however, it is possible to put forward another explanation than that of cause and effect advanced by White.

If, as seems likely, climatic factors cause a thinning-out of *C. sepium* as one passes northward over the country, cross-pollination will become progressively more difficult as plants become more scattered. In such circumstances seed-setting will also become rarer. The Convolvulus Hawkmoth, according to Ford (1956), is truly native only in southern Europe, individuals which visit this country being adult strays, so that again more would be encountered in the south than in the north. But there need be no close connection between these phenomena.

An outbreeding system in both *C. sepium* and *C. sylvestris* would help to explain the occurrence of the apparently not infrequent intermediates between the species, for these may owe their existence to interspecific hybridisation. I know nothing of the breeding system of *C. dahurica*, but if this species should also prove to be self-incompatible and, in addition, should exist only as scattered plants in the British Isles derived from a single restricted introduction, plants with unlike incompatibility factors would occur near to each other only on very rare occasions and seed-setting would be (as it is reported to be) negligible. However, this does not rule out the further possibility of infertility resulting from a hybrid ancestry.

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—H. G. BAKER.

550/6 *OROBANCHE RETICULATA* Wallr. There is a record for this species for Brecon, v.c. 42, based on a specimen, now at the British Museum (Natural History), which was collected in 1905 by H. H. Knight from (what appears to read) Llandovey and identified by Beck, who monographed *Orobanche* and dealt with *Orobanchaceae* in *Das Pflanzenreich*—where this Welsh record for this species is mentioned, albeit erratically. The record has been taken up, variously as var. *pallidiflora* (Wimm. & Grab.) Beck or as subsp. *pallidiflora* (Wimm. & Grab.) Hegi var. *procera* (Koch) Beck, in 1934, Hyde and Wade, *Welsh Flowering Plants* and in 1952, Clapham, Tutin & Warburg, *Flora of the British Isles*, but owing to the isolation of the occurrence a further investigation seemed desirable.

This specimen, which is of an immature plant, is different from the Yorkshire *O. reticulata*, indeed it seems to be a totally different species—in fact, apparently *O. picridis* F. W. Schultz ex Koch, other British material of which it matches well. Dr. Melderis kindly examined it independently and arrived at the same conclusion. We have therefore renamed the specimen as the latter species—constituting as it happens a new v.c. record of this for Brecon.

Whether or not "*pallidiflora*" should be referred, even in part, to *O. picridis* is another matter on which pronouncement cannot at the moment be made. Dried broomrapes are difficult objects for investigation, but there is some similarity in the descriptions.—R. A. GRAHAM.

826/7 f. × 15. *Festuca rubra* var. *arenaria* × *Vulpia membranacea*. 3, S. Devon; Dawlish Warren, J. F. & P. C. Hall. This intergeneric hybrid has not been found before in Britain, or on the Continent. It differs from *F. rubra* × *Vulpia membranacea* in having slightly hairy lemmas.—A. MELDERIS.

862/1. *TRICHOMANES SPECIOSUM* Willd. The only plant of this extremely rare fern known to exist in Merioneth was, when visited on 1st June 1956, found to have been dislodged by an unknown agency from the rock crevice in which it grew. It was still alive and bore two small fronds, so it was firmly wedged back into position in the hope that it might survive. It is feared, however, that the plant will shortly be extinct.

Elsewhere in Wales the Killarney Fern is now known only in a single locality in Caernarvonshire.—*Nature in Wales*, **2**, 314 (1950).

PLANT RECORDS

Compiled by E. C. WALLACE

Records are for the year 1956 when no date is given.

The following signs are used:—

- § before the *B.P.L.* number: to indicate that the paragraph contains information necessitating a correction to an annotated copy of the *Comital Flora*.
- † before the *B.P.L.* number: to indicate that the plant is not a native species in the British Isles.
- † before the record: to indicate a species which, though native in some parts of the British Isles, is not so in the locality recorded.
- * before the record: to indicate a new vice-county record, not published previously to this issue of the *Proceedings*.
- ‡ before the record: to indicate a record additional to an annotated copy of *Comital Flora*, but published elsewhere prior to the issue of the *Proceedings* in which it appears.
- [] enclosing a record: to indicate doubt as to the validity of the record, either of identification or locality.

It will be useful if, in future, National Grid Co-ordinates, made as accurate as is thought advisable, are added to all records.

1/1. *CLEMATIS VITALBA* L. 56, Notts.; hedgerow, Trumpton, R. C. L. HOWITT.

6/4. *RANUNCULUS AURICOMUS* L. 94, Banff.; woods at Colleonard, 1939—still persisting, M. McCALLUM WEBSTER.

6/5. *RANUNCULUS BULBOSUS* L. 104, N. Ebudes; sand dunes, Kilmory, Isle of Rhum, G. HALLIDAY.

†10/1. *ERANTHIS HYEMALIS* (L.) Salisb. 56, Notts.; small plantation, Langar, 1952, R. C. L. HOWITT.

§15/1. *ACTAEA SPICATA* L. *†95, Elgin; garden weed, croft of Buniach, Kelles, Miss D. BROWN, det. B. L. BURTT, comm. M. McCALLUM WEBSTER.

§21/2. *PAPAVER RHOEAS* L. *106, E. Ross; railway siding, Muir-of-Ord, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

§22/1. *MECONOPSIS CAMBRICA* (L.) Vig. †72, Dumfries.; edge of fir wood, Rush Hill, Lockerbie, 1943, F. AMBROSE. *†106, E. Ross: near Lochluichart station, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

†23/2. *GLAUCIUM CORNICULATUM* (L.) Rudolph. 16, W. Kent; rubbish-tip, Edenbridge, D. P. YOUNG. 21, Middx.; railway yard, Kew Bridge, D. MURRAY, det. at KEW, comm. D. H. KENT.

§32/1. *FUMARIA CAPREOLATA* L. 60, W. Lancs.; railway embankment, Galgate, 1948, G. W. GARLICK, conf. N. Y. SANDWICH. 106, E. Ross; shores of Beaully Firth, North Kessock: *107, E. Sutherland; Helmsdale, 1952, M. McCALLUM WEBSTER.

§32/5. *FUMARIA BORAII* Jord. 60, W. Lancs.; by the mill at Galgate, in a cornfield, G. W. GARLICK. *106, E. Ross; Rosemarkie, B.S.B.I. FIELD MEETING, conf. N. Y. SANDWICH, comm. U. K. DUNCAN.

§32/9. *FUMARIA BASTARDII* Bor. 60, W. Lancs.; railway embankment, Galgate, 1948, G. W. GARLICK, conf. N. Y. SANDWICH. *108, W. Sutherland; potato field, Achmelvich, near Lochinver, R. A. GRAHAM and R. M. HARLEY, det. N. Y. SANDWICH.

§35/1(2). *RORIPPA MICROPHYLLA* (Boenn.) Hyland. *73, Kirkcudbr.: stream on shore, Southwick Merse, E. & H. MILNE-REDHEAD.

§35/1(2)×1. *RORIPPA MICROPHYLLA* × *NASTURTIUM-AQUATICUM*. †52, Anglesey; swamp, Newborough Warren, P. M. Benoit (1956, *Nature in Wales*, 2, 311).

§35/4. *RORIPPA ISLANDICA* (Oeder) Borbás. *96b, Nairn; shores of Loch Flemington, M. McCALLUM WEBSTER.

§36/5. *BARBAREA INTERMEDIA* Bor. *106, E. Ross; railway siding, Muir-of-Ord, B.S.B.I. FIELD MEETING, conf. J. E. LOUSLEY, comm. U. K. DUNCAN.

†42/6. *ALYSSUM ALYSSOIDES* (L.) L. 56, Notts.; railway bank, Stanford-on-Soar, R. C. L. HOWITT.

§43/2. *DRABA NORVEGICA* Gunn. *109, Caithness; near summit of Morven, R. RICHTER, comm. M. McCALLUM WEBSTER.

§44/1. *EROPHILA VERNA* (L.) Chevall. *106, E. Ross; near Lochluichart station, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

44/2. *EROPHILA SPATHULATA* Láng. 69, Westm.; limestone outcrops near Brough, A. M. STIRLING.

†47/2. *HESPERIS MATRONALIS* L. 60, W. Lancs.; near Burton Wood, Aughton, 1955, G. W. GARLICK.

§†49/3. *SISYMBRIUM ALTISSIMUM* L. *101, Kintyre; woodland, north of Campbeltown, M. CUNNINGHAM.

§+49/4. *SISYMBRIUM ORIENTALE* L. *94, Banff.; garden weed, Aberlour: *95, Elgin; rubbish-tip, Rothes; Forres station yard: *96, Easterness; near the docks, Inverness: *96b, Nairn; rough ground near the harbour, Nairn, M. McCALLUM WEBSTER. *101, Kintyre; seashore, Campbeltown, M. CUNNINGHAM.

49/6b. *SISYMBRIUM OFFICINALE* var. *LEIOCARPUM* DC. 27, E. Norfolk; Blakeney, plentiful, F. M. DAY. 82, Haddington; sandy banks on shore, North Berwick, growing with the typical plant, 1955, C. W. MUIRHEAD.

§50/1. *ERYSIMUM CHEIRANTHOIDES* L. ‡48, Mer.; one plant on a railway siding at Barmouth Junction, Mrs. K. M. Benoit (1956, *Nature in Wales*, 2, 353). 95, Elgin; edge of potato field, Avielochan, three miles north of Aviemore, 1955, J. MILNE.

§53/1. *SUBULARIA AQUATICA* L. ‡H.39, Antrim; north east shore of Lough Beg, 1955, last seen in Co. Antrim about 1870, M. P. H. Kertland (1956, *Irish Nats. J.*, 12, 511).

54/15. *SINAPIS ALBA* L. 112, Zetland; common on waste ground, Lerwick, R. C. PALMER and W. SCOTT.

+54/16. *BRASSICA JUNCEA* (L.) Coss. 29, Cambs.; roadside, Fordham, 1954, D. P. YOUNG.

§55/2. *DIPLTAXIS MURALIS* (L.) DC. *+108, W. Sutherland; one plant beside the steps of Achmelvich Youth Hostel, near Lochinver, J. DICKSON.

§+61/3. *CARDARIA DRABA* (L.) Desv. *111, Orkney; Lyness, North Walls, Hoy, J. SINCLAIR.

§+61/4. *LEPIDIUM RUDERALE* L. *71, Man; near Richmond Hill, 1874, T. ENTWISTLE (*Hb. Manx Mus.*), comm. D. E. ALLEN.

§61/7. *LEPIDIUM SMITHII* Hook. *107, E. Sutherland; railway embankment, Helmsdale, M. McCALLUM WEBSTER.

64/1. *THLASPI ARVENSE* L. 66, Durham; Heathery Cleugh, Upper Weardale, J. W. Heslop-Harrison (1956, *Vasc. (Subst.)*, 41, 66).

§65/1. *IBERIS AMARA* L. *+55, Leics.; railway bank between Scalford and Hose, in quantity, R. C. L. HOWITT.

§66/1. *TEESDALIA NUDICAULIS* (L.) R.Br. *71, Man; sandy heathland near Ballacooilly, Ballough, W. H. HARDAKER, comm. D. E. ALLEN. 96b, Nairn; abundant on gravelly bank south of Loch Flemington, M. McCALLUM WEBSTER.

†74/2. *BUNIAS ORIENTALIS* L. 55, Leics.; waste ground, Melton Road, Leicester, 1953, B. M. G. JONES.

§85/2. *RESEDA LUTEA* L. *†67, Northumb., S.; by roadside near Ridsdale, G. HALLIDAY. †95, Elgin; railway track, Carron: †96, Easternness; railway track near Inverness: †96b, Nairn; railway track between Auldearn and Nairn, M. McCALLUM WEBSTER.

§88/3. *VIOLA REICHENBACHIANA* Jord. ex Bor. *73, Kirkcudbr.; side of stream in damp wood, with *Gagea lutea*, The Grove, Terregles, H. MILNE-REDHEAD.

§95/1. *SAPONARIA OFFICINALIS* L. *†73, Kirkcudbr.; roadside, Loamingfoot, Kirkbean, H. MILNE-REDHEAD. *†94, Banff.; rough ground near Buckie: 95, Elgin; railway track near Elgin, 1953: *†106, E. Ross; near dwellings, Nigg and Kilmuir, M. McCALLUM WEBSTER.

98/3. *MELANDRIUM ALBUM* (Mill.) Garcke. 112, Zetland; waste ground, Lerwick, 1955, R. C. PALMER and W. SCOTT.

§100/2. *CERASTIUM ARVENSE* L. 32, Northants; abundant in sand-pit near Tiffeld, Towcester, A. S. HARRIS and D. E. ALLEN. 90, Angus; sandy river bank below the road bridge, near the hotel, Milton of Glenclova, R. A. GRAHAM and R. M. HARLEY. *106, E. Ross; near Fortrose, 1943, U. K. DUNCAN.

101/7. *STELLARIA GRAMINEA* L. 112, Zetland; hay-field near Easterhoull, Scalloway, W. SCOTT.

102/8. *MINUARTIA TENUIFOLIA* (L.) Hiern. †32, Northants.; railway track north of Salcey Forest, A. S. HARRIS and D. E. ALLEN, det. A. MELDERIS.

102/10. *MINUARTIA VERNA* (L.) Hiern. 94, Banff.; serpentine gorge, Blackwater Forest, near Cabrach, G. HALLIDAY.

103/2. *SAGINA SUBULATA* (Sw.) C. Presl. 112, Zetland; common along roadside between Hamnavoe and Grunasound, Burra Isle, 1955; near Loch Spiggie, R. C. PALMER.

§103/7(2). *SAGINA FILICAULIS* Jord. *16, W. Kent; footpath, Edenbridge station, D. P. YOUNG.

§103/10. *SAGINA MARITIMA* Don ex Sm. *106, E. Ross; Cromarty, B.S.B.I. FIELD MEETING, conf. J. E. LOUSLEY, comm. U. K. DUNCAN.

§105/3. *SPERGULARIA MARINA* (L.) Griseb. *73, Kirkcudbr.; flooded hollows in salt-marsh, Gillfoot Bay, H. MILNE-REDHEAD.

§†108/1. *CLAYTONIA ALSINOIDES* Sims. *95, Elgin; bank of Sluie near Forres: *109, Caithness; roadside, Dunbeath, M. McCALLUM WEBSTER.

‡108/2. *CLAYTONIA PERFOLIATA* Donn. ex Willd. 24, Bucks.; Part-ridge Hill, Great Brickhill, in quantity, T. G. and M. COLLETT, J. E. LOUSLEY and D. H. KENT *40, Salop; damp grass, under yew, near Severn, Bridgnorth, 1948, F. AMBROSE. *106, E. Ross; near North Kessock, 1943, U. K. DUNCAN.

‡112/11. *HYPERICUM TETRAPTERUM* Fr. *†111, Orkney; heathery, sandy roadside, by excavations from a tunnel, Wee Fea, above Lyness, North Walls, Hoy, J. SINCLAIR.

117/1. *MALVA MOSCHATA* L. †95, Elgin; side of Great North Road, four miles north of Aviemore, 1955, J. MILNE.

‡117/3. *MALVA NEGLECTA* Wallr. †71, Man; Knock-y-Doonee, Andreas, M. QUAYLE—only previous Manx record unlocalised, comm. D. E. ALLEN. *96, Easternness; rough ground, Ardesier, M. McCALLUM WEBSTER.

123/3. *TILIA CORDATA* Mill. 47, Montg.; wooded crags of Craig Rheiwarth, Llangynog, one tree only seen, but certainly not planted, A. M. STIRLING. *†106, E. Ross; near Evantown, B.S.B.I. FIELD MEETING, conf. J. E. LOUSLEY, comm. U. K. DUNCAN.

124/1. *RADIOLA LINOIDES* Roth. 112, Zetland; frequent on bare, gravelly ground, Hamnavoe, Burra Isle, 1955, W. SCOTT.

‡127/4. *GERANIUM PRATENSE* L. *†95, Elgin; near Cromdale, Rothes and Findhorn, garden escapes, M. McCALLUM WEBSTER.

‡†133/4. *IMPATIENS GLANDULIFERA* Royle. †H.3, W. Cork; tributary stream of river Lee, below Gougane Barra Lake, A. L. K. King: †H.29, Leitrim; mill dam at Drumshanbo, 1948, A. L. K. King: †H.31, Louth; Piperstown, near Drogheda, 1955, Miss M. Lyons (1956, *Irish Nats. J.*, 12, 71).

‡†145/1. *LUPINUS NOOTKATENSIS* Donn ex Sims. *94, Banff.; shingle of river Spey, Blecksboat to Aberlour: *95, Elgin; shingle of river Spey, Blecksboat to Garmouth; shingle of Findhorn river between Sluie and Greshop, M. McCALLUM WEBSTER.

147/1. *GENISTA ANGLICA* L. 95, Elgin; quite common on moorland south-east of Loch Vaa, four miles north-east of Aviemore, 1955, J. MILNE.

147/3. *GENISTA TINCTORIA* L. 24, Bucks.; rough meadowland near Stewkley, T. G. and M. COLLETT, J. E. LOUSLEY and D. H. KENT.

‡149/3. *ULEX MINOR* Roth. †66, Durham; Cassop Vale (1956, *Vasc. (Subst.)*, 41, 24).

153/5. *MEDICAGO ARABICA* (L.) Huds. 32, Northants.; canal bridge near Castle Thorpe, A. S. HARRIS and D. E. ALLEN.

§+154/2. *MELILOTUS ALBA* Medic. ‡52, Anglesey; border of arable land near Lligwy, probably introduced with a cultivated crop, R. H. Roberts (1956, *Nature in Wales*, 2, 353).

§+154/4. *MELILOTUS INDICA* (L.) All. *94, Banff.; garden weed, Dufftown: *95, Elgin; rough ground, Rothes and Carron. M. McCALLUM WEBSTER.

155/21. *TRIFOLIUM DUBIUM* Sibth. +112, Zetland; rough pasture, south side of Eela Water Burn, introduced, W. SCOTT.

155/22. *TRIFOLIUM MICRANTHUM* Viv. 94, Banff.; grass lawn of lodge, Aberlour House, Mrs. STUART, comm. M. McCALLUM WEBSTER.

+163/1. *GALEGA OFFICINALIS* L. 56, Notts.; open woodland, Carlton in Lindrick, 1955, R. C. L. HOWITT.

§171/2. *ORNITHOPUS PERPUSILLUS* L. *106, E. Ross; Munloch Bay, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

176/1. *VICIA SYLVATICA* L. 40, Salop; Whitecliff Wood, west of Ludlow, 1938: 81, Berwick; cliffs and railway cuttings, north of Berwick, 1942, F. AMBROSE. 96, Easternness; raised shingle persisting on beach between Fort George and Ardesier, small plants that seldom flower, M. McCALLUM WEBSTER.

§176/7. *VICIA BITHYNICA* (L.) L. *+56, Notts.; Kelsal, 1952, R. C. L. HOWITT.

§176/14. *VICIA LATHYROIDES* L. *+56, Notts.; railway bank, Church Warsop, 1951, R. C. L. HOWITT.

§178/3. *LATHYRUS TUBEROSUS* L. *+16, W. Kent; well established on the edge of Longfield rubbish-tip, J. F. and P. C. HALL.

178/9. *LATHYRUS APHACA* L. 13, W. Sussex; grassy bank, Hangleton, Miss C. SCHELWALD.

+183/5. *PRUNUS DOMESTICA* L. *106, E. Ross; hedges near Dingwall, 1943, U. K. DUNCAN.

§+184/10. *SPIRAEA SALICIFOLIA* L. *56, Notts.; Pinxton Dumble, Pinxton, 1952, R. C. L. HOWITT.

187/1×2. *GEUM* × *INTERMEDIUM* Ehrh. 90, Angus; roadside ditch and bank, by the main road near Mains of Stobhall and by Broadgreen, near Cargill, with both parents, R. A. GRAHAM and R. M. HARLEY.

§189/6. *POTENTILLA TABERNAEMONTANI* Aschers. *106, E. Ross; cliffs near Rosemarkie, B.S.B.I. FIELD MEETING, conf. J. E. LOUSLEY, comm. U. K. DUNCAN.

190/2. *ALCHEMILLA XANTHOCHLORA* Rothm. 24, Bucks.; Windsor Hill, Princes Risborough, B. P. PICKESS, conf. and comm. D. H. KENT. 78, Peebles.; roadside below Boreland, near Portmore Loch, 1954: 85, Fife; roadside ditch, Inverkeiling Bay, 1954, C. W. MUIRHEAD, both conf. S. M. WALTERS.

190/4. *ALCHEMILLA VESTITA* (Buser) Raunk. 83, Edinb.; Upper Hobbies How, above Loganba, on limestone rocks, 1954, C. W. MUIRHEAD, conf. S. M. WALTERS.

190/8. *ALCHEMILLA GLABRA* Neygenf. 78, Peebles.; roadside near Boreland, 1954: 85, Fife; Inverkeiling Bay, in roadside ditch, 1954, C. W. MUIRHEAD, both conf. S. M. WALTERS.

190(2)/2. *APHANES MICROCARPA* (Boiss. & Reut.) Rothm. 32, Northants.; abundant in sandpit near Tiffield, Towcester, A. S. HARRIS and D. E. ALLEN. 36, Hereford.; Fowlett Farm, Eastnor, F. M. DAY, det. S. M. WALTERS. 96, Easternness; near Milton, Drumnadrochit: *101, Kintyre; by Carradale Water, also seashore verge, Peninver and New Orleans, E. Kintyre, M. H. CUNNINGHAM, det. S. M. WALTERS. *106, E. Ross; near Lochluichart station, B.S.B.I. FIELD MEETING, conf. S. M. WALTERS, comm. U. K. DUNCAN. *111, Orkney; sandy oatfield at seashore, Mill Bay, below church, Stronsay, 1952, J. SINCLAIR.

‡192/1. *ACAENA ANSERINIFOLIA* (J. R. & G. Forst.) Druce. ‡25, E. Suffolk; fringe of a wood at Easton Bavents, several patches, R. A. Long (1952, *Ann. Rep. Lowestoft Field Club*, 7, 225).

194/10c. *ROSA DUMETORUM* f. *SEMIGLABRA* (Rip.) W.-Dod. 56, Notts.; roadside, Cottam, 1951, R. C. L. HOWITT, det. R. MELVILLE.

194/19d. *ROSA TOMENTOSA* var. *PSEUDO-CUSPIDATA* (Crép.) Rouy & Camus. 56, Notts.; Eakring, R. C. L. HOWITT, det. R. MELVILLE.

§195/8. *SORBUS ANGLICA* Hedl. *40, Salop; plentiful on Blodwel Rocks near Oswestry, on carboniferous limestone: *47, Montg.; Breidden Hill; south side of Llanymynech Hill (a continuation of the Shropshire station): *50, Denb.; limestone crags, Trevor Rocks, Llangollen; one plant on walls of Castell Dinas Bran, Llangollen, A. M. STIRLING.

§195/11. *SORBUS RUPICOLA* (Syme) Hedl. *47, Montg.; on Craig Breidden, with *S. anglica*, A. M. STIRLING.

§195/13. *SORBUS ARIA* (L.) Crantz. *56, Notts.; Styrrup, R. C. L. HOWITT.

§195/15. *SORBUS TORMINALIS* (L.) Crantz. *47, Montg.; rocks near Llanfyllin, one plant, A. M. STIRLING.

§196/2. *CRATAEGUS OXYACANTHOIDES* Thuill. ‡56, Notts.; Farndon, 1952; common in the Trent Valley, R. C. L. HOWITT.—But see *J. Bot.*, 1909, 136.—Ed.

199/2. *SAXIFRAGA OPPOSITIFOLIA* L. 48, Mer.; on calcareous rocks in Pennant Dyfi, A. O. Chater (1956, *Nature in Wales*, 2, 311).

§199/17. *SAXIFRAGA GRANULATA* L. 34, W. Gos.; hillside, Hawkesbury, D. Munro Smith (1956, *Proc. Bristol Nats. Soc.*, 29, 102). ‡106, E. Ross; sand dunes, Fortrose, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN. Remove from brackets in *C.F.*

§199/18. *SAXIFRAGA CERNUA* L. *97, Westernness; on exposed basic rocks at about 3000 ft., near Ben Nevis, E. A. BLAKE.

199/22. *SAXIFRAGA HIRCOLUS* L. H.39, Antrim; Garron peninsula, last seen in Antrim about 1920, M. P. H. Kertland (1956, *Irish Nats. J.*, 12, 51).

207/5. *RIBES ALPINUM* L. †95, Elgin; grounds of Darnaway Castle, Forres, M. McCALLUM WEBSTER.

§211/1. *SEDUM TELEPHIUM* L. *56, Notts.; Gamston Wood, Gamston, 1953, R. C. L. HOWITT.

§211/7. *SEDUM ALBUM* L. *†106, E. Ross; cliffs near Rosemarkie, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

§214/1. *HIPPURIS VULGARIS* L. 24, Bucks.; Grand Union Canal near Langley: gravel pits, Marlow, abundant, 1954-56, F. AMBROSE. *93, N. Aberdeen.; pool near river Deveron, Dunlagas; *95, Elgin: old lime-kiln, Cothall, M. McCALLUM WEBSTER.

216/2. *MYRIOPHYLLUM ALTERNIFLORUM* DC. 108, W. Sutherland; Loch an Aigeil, Stoer, R. A. GRAHAM and R. M. HARLEY.

218/1. *PEPLIS PORTULA* L. 31, Hunts.; damp hollows in cleared area, Monk's Wood, S. M. WALTERS.

§220/3. *EPILOBIUM HIRSUTUM* L. *94, Banff.; by burn at Sandend, and by burn between Spey Bay and Portgordon, M. McCALLUM WEBSTER.

†220/7(2). *EPILOBIUM ADENOCALON* Hausskn. 36, Hereford.; station yard, Colwall, 1954; roadside, Colwall, F. M. DAY, det. G. M. ASH.

§+220/17. *EPILOBIUM PEDUNCULARE* A. Cunn. 60, W. Lancs.; Loftshaw Moss, Burnmoor, 1955: 64, Mid-West Yorks.; near Kingsdale Head Farm, Kingsdale, Ingleton, G. W. GARLICK. *105, W. Ross; abundant on the sides of the stream immediately beside Achininver Youth Hostel, Achiltibuie, J. DICKSON. *111, Orkney; heathery, sandy roadside by excavations from a tunnel, Wee Fea, above Lyness, North Walls, Hoy, J. SINCLAIR.

§+223/1. *OENOTHERA BIENNIS* L. *56, Notts.; common in waste places, R. C. L. HOWITT.

§225/1. *CIRCAEA LUTETIANA* L. *106, E. Ross; Brahan Woods, near Conon Bridge, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

§225/2. *CIRCAEA INTERMEDIA* Ehrh. *73, Kirkcudbr.; rocky bank, Kirkbean Burn, H. MILNE-REDHEAD. *106, E. Ross; near Achilty, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

+250/1. *CARUM CARVI* L. 92, S. Aberdeen; near Cockbridge: 94, Banff.; The Square, Tomintoul; frequent round farm buildings. Aberlour: 95, Elgin; roadsides near Knockendo and Auchiestown, M. McCALLUM WEBSTER.

250/2. *CARUM VERTICILLATUM* (L.) Koch. 48, Mer.; rediscovered in quantity in a meadow by the river Glaslyn at Minffordd, Penrhyn-deudraeth, an old locality given in D. A. Jones's MS. Flora. This species is apparently unknown elsewhere in the county, Mrs. H. M. Richards (1956, *Nature in Wales*, 2, 311).

§+252/1. *FALCARIA VULGARIS* Bernh. *56, Notts.; railway side, Kilmington, 1951, R. C. L. HOWITT.

§257/1. *MYRRHIS ODORATA* (L.) Scop. *93, N. Aberdeen.; common round Turriff and Huntly, M. McCALLUM WEBSTER.

§258/2. *CHAEROPHYLLUM TEMULENTUM* L. *96, Easterness; roadsides, Ardesier and Culloden, M. McCALLUM WEBSTER.

+275/2. *ANGELICA ARCHANGELICA* L. 56, Notts.; side of river Trent, North Leverton, 1951, R. C. L. HOWITT.

276/3. *PASTINACA SATIVA* L. *+106, E. Ross; shore near Cromarty, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

§+276/5. *PEUCEDANUM OSTRUTHIUM* (L.) Koch. *93, N. Aberdeen; small island in river Deveron, Huntly, and one mile north of Huntly on Keith road: 94, Banff.; in two localities south of Aberlour: 109, Caithness; roadside, outside cottage, Inver, M. McCALLUM WEBSTER.

‡287/1. *SAMBUCUS RACEMOSA* L. 94, Banff.; hedges and rough ground. Dufftown: 95, Elgin; open woods, Dallas and Rothes: 96, Easternness; open woods near Beauly: 106, E. Ross; policies of Allahgrange House, M. McCALLUM WEBSTER.

§296/2. *GALIUM MOLLUGO* L. *96b, Nairn; one mile west of Nairn on main road, M. McCALLUM WEBSTER.

296/13. *GALIUM ANGLICUM* Huds. 12, N. Hants.; sparingly on chalk spoil heaps, Popham Beacons, E. C. WALLACE.

§296/14. *GALIUM CRUCIATA* (L.) Scop. ‡95, Elgin; grass verge. Carron, M. McCALLUM WEBSTER. *106, E. Ross; near Evanton, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

§298/3. *ASPERULA CYNANCHICA* L. *55, (Rutland); limestone grassland by roadside near Empingham, A. M. STIRLING.

304/4. *VALERIANELLA CARINATA* Lois. 17, Surrey; railway bank, Nutfield, 1955, B. A. KNELLER, det. and comm. D. P. YOUNG.

310/1. *EUPATORIUM CANNABINUM* L. 47, Montg.; wooded crags of Craig Rhiwarth, Llangynog, at 1,000 ft., A. M. STIRLING.

‡318/15. *ASTER ERICOIDES* L. 16, W. Kent; rubbish-tip, Downe; this species is much grown in gardens now, and may occur increasingly as an escape, D. P. YOUNG.

§‡333/1. *INULA HELENIUM* L. ‡95, Elgin; near farmhouse, one mile south-east of Nethybridge, M. McCALLUM WEBSTER. But see Burgess *Flora*, 15.—Ed. *96b, Nairn; about outhouses at Drynechan Lodge, garden escape, M. McCALLUM WEBSTER.

§333/4. *INULA CONYZA* DC. ‡66, Durham; on fixed dunes north of Hartlepool; given for Durham and Northumberland in *C.F.* apparently in error (1956, *Vasc. (Subst.)*, 41, 24).

353/1b. *BIDENS CERNUA* var. *RADIATA* DC. 40, Salop; Brown Moss, Whitechurch: 58, Cheshire; pond near Malpas, A. M. STIRLING.

§‡354/2. *GALINSOGA CILIATA* (Rafn.) Blake. *16, W. Kent; weed in nursery, Farnborough, Mrs. L. ACKERMAN, det. and comm. E. B. BANGERTER. 17, Surrey; cornfield in Esher Place park, in great quantity; weed in two nurseries, Croydon, D. P. YOUNG and H. INGLIS. *59, S. Lancs.; Hesketh Park, Southport—previously reported in *Watsonia*, 2, 199, as *G. parviflora* Cav., D. E. ALLEN. *75, Ayr.; garden at Kilmarnock, possibly introduced from Troon with garden plants, R. C. WALLS.

370/4. *CHRYSANTHEMUM LEUCANTHEMUM* L. 112, Zetland; near Scalloway; west side of Tingwall Loch, 1955, W. SCOTT.

‡371/3. *MATRICARIA MATRICARIOIDES* (Less.) Porter. *106, E. Ross; near Lochluichart station, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

†372/3. *COTULA CORONOPIFOLIA* L. 3, S. Devon.; brackish marsh by river Exe, Woodbury, T. J. Wallace, det. at Kew (1955, *Rep. & Trans. Devon. Asscn.*, **87**, 328).

†378/21. *ARTEMISIA VERLOTORUM* Lamotte. 16, W. Kent; grassy road bank near Mountain Farm, Marden, J. F. and P. C. HALL, conf. D. H. KENT. Rubbish-tip, Sevenoaks, several large colonies, J. E. LOUSLEY, D. McCLINTOCK, J. F. and P. C. HALL.

‡380/2. *PETASITES ALBUS* (L.) Gaertn. *94, Banff.; frequent round Banff: *95, Elgin; common in Moray: *96, Easternness; Beauly: 96b, Nairn; Holme Rose; Nairn, M. McCALLUM WEBSTER. *106, E. Ross; near Evanton, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN, *112, Zetland; waste ground, Lerwick, W. SCOTT.

‡380/3. *PETASITES FRAGRANS* (Vill.) C. Presl. *93, N. Aberdeen.; about village of Gordonstown: *94, Banff.; grounds of Cairnfield House, Buckie; about Dufftown and Cullen: *95, Elgin; garden escape, Forres: *96, Easternness; about village of Ardesier, M. McCALLUM WEBSTER. *106, E. Ross; shore, Rosemarkie, 1943, U. K. DUNCAN.

†381/1. *DORONICUM PARDALIANCHES* L. 83, Edinb.; Mortonhall, Liberton, 1948, E. B. BASDEN; Kevock, near Lasswade, J. F. BASDEN.

‡383/3. *SENECIO AQUATICUS* Hill. *93, N. Aberdeen.; plentiful by river Deveron at Huntly and Turriff, M. McCALLUM WEBSTER.

383/8. *SENECIO VISCOSUS* L. 22, Berks.; abundant on railway sidings, Cookham station, 1952, F. AMBROSE. 106, E. Ross; railway siding, Muir-of-Ord, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

383/10c. *SENECIO VULGARIS* var. *HIBERNICUS* Syme. 32, Northants.; abundant in quarry west of Milton, near Northampton, A. S. HARRIS and D. E. ALLEN.

383/10e. *SENECIO VULGARIS* var. *RADIATUS* Koch. 37, Wores.; Malvern, F. M. DAY.

†385/2. *CALENDULA ARVENSIS* L. 19, N. Essex; waste ground near Witham, D. E. ALLEN, det. A. MELDERIS.

395/1. *CARDUUS NUTANS* L. 95, Elgin; roadside, New Elgin, M. McCALLUM WEBSTER.

396/1b. *CIRSIUM ERIOPHORUM* subsp. *BRITANNICUM* Petrák. 24, Bucks.; scrub slope, Wooburn to Hedsor, 1954, F. AMBROSE.

‡399/1. *SILYBUM MARIANUM* (L.) Gaertn. *94, Banff.; sea shingle, Portgordon: *95, Elgin; three plants in newly tilled ground, Moy House, Forres, M. McCALLUM WEBSTER. *106, E. Ross; entrance to Invergordon Dockyard, Mrs. B. H. S. RUSSELL.

419. *HIERACIUM*. All det. by P. D. SELL and C. WEST.

419/58. *HIERACIUM DEGANWYENSE* Pugsl. 83, Edinb.; Blackpond Hill, on basalt rocks, 1954, C. W. MUIRHEAD.

419/63. *HIERACIUM ORIMELES* F. J. Hanb. 112, Zetland; Hurda Field, north of Mavis Grind, W. SCOTT.

419/65. *HIERACIUM CALEDONICUM* F. J. Hanb. 83, Edinb.; on scree above Loganlea Reservoir, c. 1,000 ft., 1954, C. W. MUIRHEAD.

419/73. *HIERACIUM DICELLA* Sell & West. 83, Edinb.; Arthur's Seat, c. 600 ft. on rocks facing north-west: Loganlea Reservoir. 1954. C. W. MUIRHEAD.

419/136. *HIERACIUM CRAVONIENSE* (F. J. Hanb.) Roffey. 82, Haddington; rocks on Gullane Point, 1953, C. W. MUIRHEAD.

419/246. *HIERACIUM SALTICOLA* (Sudre) Sell & West. 6, N. Som.: Leigh Woods, A. H. G. Alston (1956, *Proc. Bristol Nats. Soc.*, 29, 103).

419/254. *HIERACIUM FLAGELLARE* Willd. 83, Edinb.: roadside between Luffen Houses and Law Heads: 84, Linlithgow: railway bank near Dalmeny station: 85, Fife.: waste ground, North Queensferry station. 1954, C. W. MUIRHEAD.

425/3. *LACTUCA SALIGNA* L. 18, S. Essex: inner sea-wall, near Febbing, 1955, K. L. ALVIN, conf. J. E. LOUSLEY, D. McCLINTOCK and B. T. WARD.

‡425/4. *MYCELIS MURALIS* (L.) Reichb. *106, E. Ross; walls, Evanton, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

†425/8. *CICERBITA MACROPHYLLA* (Willd.) Wallr. 7, N. Wilts.; among fodder, north of Marlborough Downs, J. M. HODGSON, det. and comm. E. B. BANGERTER.

‡428/2b. *TRAGOPOGON PRATENSIS* subsp. *MINOR* (Mill.) Hartm. f. 95, Elgin; Spey Bay railway station: *96, Easternness; Kingussie railway station: 96b, Nairn; railway embankment, Nairn, M. McCALLUM WEBSTER. *106, E. Ross; near Invergordon, Mrs. B. H. S. RUSSELL.

‡435/2. *CAMPANULA LATIFOLIA* L. ‡+71, Man; old orchard, Ballamonagh, Sulby, M. QUAYLE—only previous record in *Top. Bot.*, comm. D. E. ALLEN. *106, E. Ross; near Evanton, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

†435/13. *CAMPANULA ALLIARIFOLIA* Willd. 17, Surrey; railway embankment, London Road station, Guildford, M. NORMAN, det. and comm. D. P. YOUNG.

439/1. *VACCINIUM OXYCOCCOS* L. 69b, N. Lancs.; bog south-east of Three Shire Stone, Wrynose Pass, alt. 1250 ft., R. MACKECHNIE.

§449/1. *DABOECIA CANTABRICA* (Huds.) C. Koch. *†105, W. Ross; beside the Abhainn Cuileg, Dundonnell road, near Braemore, Mrs. P. C. LE NASURIER, comm. B. L. J. BYERLEY.

467/1. *ANAGALLIS TENELLA* (L.) L. 60, W. Lancs.; damp sands, Sunderland Point, 1955, G. W. GARLICK.

473/2. *VINCA MINOR* L. †96, Easternness; Perth Road, Inverness, garden escape, M. McCALLUM WEBSTER.

§476/1. *CICENDIA FILIFORMIS* (L.) Delarb. *49, Caern.; south-west part of Lleyn Peninsula, Miss A. P. CONOLLY and Miss P. M. SMITH.

§477/1. *BLACKSTONIA PERFOLIATA* (L.) Huds. †66, Durham; in plenty on a bank along a saltwater pool south of the sand dunes at Seaton Carew: given for v.c. 66 in *C.F.* apparently in error (1956, *Vasc. (Subst.)*, 41, 24).

478/4. *CENTAURIUM PULCHELLUM* (Sw.) Druce. 31, Hunts.; abundant on rough ground, edge of wood near railway, Brampton, 1954, D. A. DAVIES and J. G. DONY (1955, *Hunts. Fauna & Flora League Rep.*, 8, 13).

§497/1. *SYMPHYTUM OFFICINALE* L. *94, Banff.; Banff, Cullen, Dufftown, Keith and Tomauoulin: *95, Elgin; Grantown on Spey railway yard, white-flowered, 1950, M. McCALLUM WEBSTER.

497/2. *SYMPHYTUM TUBEROSUM* L. †14, E. Sussex; naturalised beside a stream, Maresfield, D. E. ALLEN and D. P. YOUNG.

§506/7. *MYOSOTIS SYLVATICA* Hoffm. *†71, Man; roadside between Sulby and Ballaugh, W. H. HARDAKER, comm. D. E. ALLEN.

§507/1. *LITHOSPERMUM OFFICINALE* L. *106, E. Ross; Castle Craig, Mrs. B. H. S. RUSSELL, comm. M. McCALLUM WEBSTER.

511/1b. *CALYSTEGIA SEPIUM* var. *AMERICANA* (Sims) Hyland. 31, Hunts; more frequent than the white-flowered form, Hod Fen, Yaxley, J. L. GILBERT.

§517/2. *SOLANUM NIGRUM* L. ††95, Elgin; rubbish-tip, Rothes; garden weed, Forres, M. McCALLUM WEBSTER.—But see Burgess, *Flora*, 22.

§527/3. *VERBASCUM THAPSUS* L. *106, E. Ross; Rosemarkie, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

†527/5. *VERBASCUM BLATTARIA* L. 17, Surrey; on new embankment, Esher Place park, D. P. YOUNG. 39, Staffs.; the plant recorded from Burton-on-Trent in *B.E.C. 1946-47 Rep.*, 13. 304. as *Celsia cretica* L. is *V. blattaria*, D. P. YOUNG.

532/1. *LINARIA VULGARIS* Mill. 96, Easternness; Beauly, Ardesier and Kingussie, M. McCALLUM WEBSTER.

532/3. *LINARIA REPENS* (L.) Mill. 69, Westin.; growing by path 100 yards east of Haweswater Dam, Bampton, G. HALLIDAY.

§+532/26. *CYMBALARIA MURALIS* Gaertn., Mey. & Scherb. 94, Banff.: walls at Banff, Macduff and Dufftown: 96b, Nairn; Nairn and Croy: *96, Easternness; Ardesier, M. McCALLUM WEBSTER. *106, E. Ross: near Evanton, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

†537/1b. *MIMULUS LUTEUS* L. 108, W. Sutherland; roadside ditches. Stoer and Clashnessie, R. A. GRAHAM and R. M. HARLEY.

543/4. *VERONICA CHAMAEDRYIS* L. 112, Zetland; abundant by roadside between Asta and Tingwall, W. SCOTT.

§543/5. *VERONICA MONTANA* L. *106, E. Ross; Brahan Woods, near Canon Bridge, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

545/3. *EUPHRASIA BREVIPIILA* Burnat & Greml. 3, S. Devon.; cliff pastures, Beer Head, 1953, F. AMBROSE, det. P. F. YEO.

545/9. *EUPHRASIA CURTA* (Fr.) Wettst. 108, W. Sutherland; by the broch at Stoer, R. A. GRAHAM and R. M. HARLEY, det. E. F. WARBURG.

546/1. *ODONTITES VERNA* (Bellardi) Dumort. 112, Zetland; along edges of oat crops near Hamnavoe, Burra Isle, W. SCOTT.

550/7. *OROBANCHE HEDERAE* Duby. 50, Denb.; limestone rocks, Pen-y-Corddyn Mawr, near Abergele, A. M. STIRLING.

§550/10. *OROBANCHE MINOR* Sm. *31, Hunts.; on cultivated red clover, meadow, Wistow, Miss F. M. BLACKHURST, conf. R. A. GRAHAM.

§558/1. *MENTHA ROTUNDIFOLIA* (L.) Huds. ‡H.31, Louth; a large clump by the roadside on Coole Bog, near Ardee, 1955, A. L. K. KING (1956, *Irish Nats. J.*, 12, 71).

§558/10. *MENTHA* × *GENTILIS* L. 43, Radnor.; by the Wye nearly under the railway bridge, by Llyswen, near Boughrood, R. A. GRAHAM and R. M. HARLEY. *60, W. Lancs.; ditches, Coldcotes, 1953, G. W. GARLICK. 71, Man; marshy ground, Ballabilpherie, R. H. TYRER, det. R. A. GRAHAM, comm. D. E. ALLEN.

558/12. *MENTHA* × *SMITHIANA* R. Graham. 42, Brecon.; stream near Llwyn-filly, south-west of Llanigan, near Three Cocks, R. A. GRAHAM and R. M. HARLEY.

§559/1. *LYCOPUS* *EUROPAEUS* L. *108, W. Sutherland; marshy ground near boathouse, Loch Hope, 1955, M. McCALLUM WEBSTER.

560/1. *ORIGANUM* *VULGARE* L. 47, Montg.; wooded crags of Craig Rhiwarth, Llangynog, A. M. STIRLING.

§577/4. *STACHYS* × *AMBIGUA* Sm. *60, W. Lancs.; 60, W. Lancs.; Bank Houses, Cockersands, 1955; Roeburndale Plantation, Caton, 1955; in the lane from Old Wennington to Moss House, Wennington, G. W. GARLICK.

§581/1. *LAMIUM* *ALBUM* L. *106, E. Ross; Cromarty, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

+581/2. *LAMIUM* *MACULATUM* L. 56, Notts.; hedgebank, Rempstone, 1954, R. C. L. HOWITT.

§581/5. *LAMIUM* *MOLUCCCELLIFOLIUM* Fr. *107, E. Sutherland; garden weed, Holmsdale, M. McCALLUM WEBSTER.

§583/1. *BALLOTA* *NIGRA* L. 95, Elgin; by roadside between Fochabers and Spey Bay, 1952, M. McCALLUM WEBSTER. Remove from brackets in *C.F.*

§588/9. *PLANTAGO* *MEDIA* L. *96b, Nairn; grass in Kirk garden, 1950, M. McCALLUM WEBSTER.

+596/6. *AMARANTHUS* *RETROFLEXUS* L. 11, S. Hants.; plentiful in a field of sugar beet, Wickham, F. M. DAY. 36, Hereford.; sewage works, Hereford, Mrs. L. WHITEHEAD, comm. F. M. DAY.

§606/2. *ATRIPLEX* *LITTORALIS* L. 34, W. Glos.; on tidal mud, Avonmouth, 1953, C. W. Bannister (1955, *Proc. Cotteswold Nats. F.C.*, 31, 259). *95, Elgin; Findhorn estuary, 1950, M. McCALLUM WEBSTER. *106, E. Ross; Cromarty, B.S.B.I. FIELD MEETING, conf. J. E. LOUSLEY, comm. U. K. DUNCAN.

§606/3. *ATRIPLEX* *PATULA* L. *94, Banff.; rough ground at Buckie and Findochty, M. McCALLUM WEBSTER. But see *Top. Bot. Supp.*, 1.

§606/17. *HALIMIONE PORTULACOIDES* (L.) Aellen. *73, Kirkcudbr.; bank of ditch, salt-marsh, Southwick Merse, H. MILNE-REDHEAD.

§615/2. *POLYGONUM CONVULVULUS* L. *112, Zetland; oat-field, Tingwall, 1955; garden weed, Easterhoull, Scalloway, 1955, W. SCOTT.

+615/20(2). *POLYGONUM CAMPANULATUM* Hook. f. 95, Elgin; by river Lossie near Elgin: 96, Easternness; roadside between Culloden and Croy, 1950, M. McCALLUM WEBSTER, det. A. MELDERIS.

+615/32. *POLYGONUM CUSPIDATUM* Sieb. & Zucc. 112, Zetland; waste ground, Lerwick, 1955, W. SCOTT.

§618/9. *RUMEX CONGLOMERATUS* Murr. *101, Kintyre; bank of burn by Aros Moss near Machinhanish Airport, M. H. CUNNINGHAM, det. J. E. LOUSLEY.

625/1. *HIPPOPHAE RHAMNOIDES* L. 45, Pems.; on dunes near Tenby it has in the last ten years extended rapidly to form dense almost impenetrable masses of scrub. This spread which appears to be purely vegetative has dominated all other vegetation including marram grass. L. J. Watson (1955, *Country Life*, 118, 1191). +94, Banff.; planted near Cullen, 1927: +95, Elgin; planted at Kinloss, 1930; M. McCALLUM WEBSTER.

§626/1. *VISCUM ALBUM* L. ‡31, Hunts.; eight lime trees heavily infected, Kimbolton Castle grounds, 1955 (1956, *Ann. Rep. Kimbolton School N.H.S.*, 1955, 7).

628/11. *EUPHORBIA CYPARISSIAS* L. +22, Berks.; established on a bank at Moor Hall, Cookham, 1950-56, F. AMBROSE, conf. J. G. DONY.

§628/14. *EUPHORBIA PEPLUS* L. *106, E. Ross; weed in garden of Ord Arms, Muir-of-Ord, 1955, M. McCALLUM WEBSTER.—But see *Top. Bot. Supp.*, 1: Fortrose, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

633/1×4. *ULMUS GLABRA* × *PLOTHI*. 31, Hunts.; Tollbar Spinney, Stibbington, J. L. GILBERT, conf. R. MELVILLE.

633/2×1. *ULMUS CARPINIFOLIA* × *GLABRA*. 56, Notts.; roadside, East Stoke, 1953, R. C. L. HOWITT, det. R. MELVILLE.

§633/8. *ULMUS CORITANA* Melville. *31, Hunts.: Hemingford Grey, S. M. WALTERS.

§633/8×4. *ULMUS CORITANA* × *PLOTHI*. 56, Notts.: Sutton Bonnington, 1955, R. C. L. HOWITT, det. R. MELVILLE.

§644/1. *CARPINUS BETULUS* L. *60, W. Lancs.; Wash Dub Wood, Docker, G. W. GARLICK.

§645 1. *COBYLUS AVELLANA* L. *112. Zetland; on sea-cliffs, by a stream, near Catfirth, Mainland, W. SCOT. Undoubtedly native, both from habitat and accompanying species, which include *Rosa canina* and *Sorbus aucuparia*, D. H. N. SPENCE.

§650 3. *SALIX ALBA* L. *116. E. Ross; near Dingwall, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

650 5b. *SALIX CAPREA* subsp. *SEBICEA* (Anderss.) Flod. 90, Angus; in one or two places by the river, near the head of the glen, Glen Doll. R. A. GRAHAM and R. M. HABLEY, det. R. D. MEIKLE.

§650 14. *SALIX ARBUSCULA* L. *57. W. Perth; Ben Ledi, B.S.B.I. FIELD MEETING, comm. J. DICKSON, U. K. DUNCAN and J. GRANT ROGER.

§651 1. *POPULUS CANESCENS* (Ait.) Sm. **106. E. Ross; Dingwall, 1943, U. K. DUNCAN, conf. J. E. LOUSLEY.

§+651 8. *POPULUS ALBA* L. *106. E. Ross; Garve, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

+656 2. *ELODEA CALLITRICHOIDES* (Rich.) Casp. 6, N. Som.; in quantity in the canal at the aqueduct, Limpley Stoke, J. P. M. BRENNAN, 17, Surrey; pool near river Thames, Old Deer Park, Richmond, B. WELCH.

+656 (3) 1. *LAGAROSIPHON MAJOR* (Ridl.) Moss. 18, S. Essex; pond, Whipps Cross, J. B. PRATT.

§667 1. *CEPHALANTHERA RUBRA* L. Rich. *24, Bucks.; see separate paper on p. 234.

§667 3. *CEPHALANTHERA LONGIFOLIA* (L.) Fritsch. 146, Cards.; eight flowering stems at Eglwysfach, Mts. I. M. Cross and W. M. Condry (1956, *Nature in Wales*, 2, 312).

668 1. *EPIPACTIS PALUSTRIS* L. Crantz. 69, W. Lancs.; damp sand, Sunderland Point, 1955, G. W. GARLICK.

§668 (3) 6. *EPIPACTIS PHYLANTHES* G. E. Sm. *16, W. Kent; Eynsford, per K. E. BULL, conf. D. P. YOUNG, comm. F. ROSE.

§668 4. *EPIPACTIS PURPURATA* Sm. *26, W. Suffolk; Little Cornard, 1912, B. T. LOWNE (*Hb. Kew*); still there 1956, D. P. YOUNG.

668 5. *EPIPACTIS ATORUBENS* (Hoffm.) Schult. 68, Durham; Cornforth; Shadforth, J. W. Heslop Harrison 1956, *Vase. (Sutst.)*, 41, 24).

§676 (2). *IRIS FOETIDISSIMA* L. *51, Flint; apparently wild on steep slope below crags, Nant-y-Ffrith, near Wrexham, A. M. STIBLING.

694/1. *CONVALLARIA MAJALIS* L. 30, (Hunts.); Woodbury Woods, near Everton, c. 1905, C. G. TEBBUTT and H. N. DIXON: still there, C. F. TEBBUTT. 40, Salop; native on limestone at Blodwell Rocks, near Oswestry: 49, Caerns.; limestone 'pavement' near Pabo, Llandudno, A. M. STIRLING.

§702/6. *ALLIUM URSINUM* L. *95, Elgin; by burn, Burgie; by flush leading into river Spey south of Fochabers, M. McCALLUM WEBSTER.

§702/8. *ALLIUM CARINATUM* L. *60, W. Lancs.; hedge, Ellel Hall Road, Galgate, 1948, G. W. GARLICK.

§707/1. *ORNITHOGALUM PYRENAICUM* L. ‡31, Hunts.; by the side of a ditch, Hail Weston, 1952, E. Milne-Redhead and J. G. Dony (1954, *Ann. Rep. Hunts. Fauna & Flora Soc.*, 1953, 22).

§709/1. *FRITILLARIA MELEAGRIS* L. *†71, Man; meadow, Sulby, planted, per M. QUAYLE, comm. D. E. ALLEN.

713/1. *COLCHICUM AUTUMNALE* L. 42, Brecon; damp meadow near Llwyn-filly, south-west of Llanigan, near Three Cocks, R. A. GRAHAM and R. M. HARLEY.

718/6. *JUNCUS BALTICUS* Willd. 96b, Nairn; banks of Findhorn river at Drynachan Lodge, M. McCALLUM WEBSTER.

718/8. *JUNCUS SUBNODULOSUS* Schrank. 60, W. Lancs.; damp sand, Sunderland Point, G. W. GARLICK.

718/14. *JUNCUS COMPRESSUS* Jacq. 32, Northants.; margin of flooded brick-pit, Cosgrove, D. E. ALLEN.

§718/16. *JUNCUS TENUIS* Willd. *†23, Oxon.: bank of river Thames, near Bampton, N. M. PRITCHARD and E. F. WARBURG. †60, W. Lancs.; bank of Preston-Kendal Canal, Torrisholme, 1955: †64, Mid-W. Yorks; footpath from Bentham to Ingleton, 1951, G. W. GARLICK. *†106, E. Ross; a few plants on playing field of R.N. camp near Brahan Castle, B.S.B.I. FIELD MEETING, comm. M. McCALLUM WEBSTER.

[722/2. *SPARGANIUM ERECTUM* L. 33, E. Glos.; Berkeley Canal, 1913, C. BAILEY: distributed through B.E.C. as *S. ramosum*, 'deep water form' (cf. *Rep. Bot. Soc. & E.C.*, 1913, 500-501 (1914). The specimen in *Hb. Mus. Brit.* is *Sagittaria sagittifolia* L. (submerged form). det. D. H. DALBY, comm. E. B. BANGERTER.]

722/4. *SPARGANIUM ANGUSTIFOLIUM* Michx. 101, Kintyre; Loch-an-Arramh, Knapdale, M. H. CUNNINGHAM.

722/5. *SPARGANIUM MINIMUM* Wallr. 101, Kintyre; Loch-an-Arramh, Knapdale, M. H. CUNNINGHAM.

§724/1. *ACORUS CALAMUS* L. *†106, E. Ross; Brahan Woods, near Canon Bridge, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

†726/1. *CALLA PALUSTRIS* L. 16, W. Kent; woodland bog, Pembury, C. A. STACE, comm. E. B. BANGERTER.

§729/2. *ALISMA LANCEOLATUM* With. *16, W. Kent; East Peckham, F. ROSE.

730/1. *BALDELLIA RANUNCULOIDES* (L.) Parl. 64, Mid-W., Yorks.; ditch and side of pond, Newby Moor, 1955, G. W. GARLICK.

731/1. *LURONIUM NATANS* (L.) Raf. 43, Salop; boggy margins of pools at Brown Moss, near Whitchurch, A. M. STIRLING.

745/3. *ELEOCHARIS MULTICAULIS* (Sm.) Sm. 56, Notts.; Church Warsop, 1953, R. C. L. HOWITT, det. S. M. WALTERS.

§746/2. *SCIRPUS MARITIMUS* L. †95, Elgin; common on Findhorn estuary, M. McCALLUM WEBSTER.—But see Burgess, *Flora*, 33.

746/3. *SCIRPUS LACUSTRIS* L. 112, Zetland; Tirsá and Trolla waters, near Strom Loch; Sae Water, near Loch of Voe, 1955; Flossy Loch, two miles south-east of Scalloway, W. SCOTT.

746/13. *SCIRPUS FLUITANS* L. 96b, Nairn; Loch Allan and lochans in vicinity, M. McCALLUM WEBSTER. 108, W. Sutherland; ditch beside the peat road, near Loch a Mhi Runaich, Stoer, R. A. GRAHAM and R. M. HARLEY.

§747/1. *ERIOPHORUM LATIFOLIUM* Hoppe. *111, Orkney; marshy banks of stream, Black Pows, Burn of Ore, North Walls, Hoy, with *Carex limosa*, J. SINCLAIR.

§750/1. *CLADIUM MARISCUS* (L.) Pohl. 108, W. Sutherland; valley fen below road between Kylestrome and Scourie, G. HALLIDAY. †H.6, Waterford; a large colony north of Ardmore, 1954, D. A. Webb and W. A. Watts (1956, *Irish Nats. J.*, 12, 111). H.39, Antrim; a small colony on the slopes of Binnageen, 3½ miles south-west of Carnlough, 1955, J. Heslop-Harrison (1956, *Irish Nats. J.*, 12, 72).—Remove from brackets in *C.F.*

§753/4. *CAREX VESICARIA* L. *47, Montg.; roadside ditch, Criggion, near Breidden Hill, Welshpool, A. M. STIRLING. 96b, Nairn; Loch Flemington, M. McCALLUM WEBSTER.

753/13. *CAREX LAEVIGATA* Sm. 60, W. Lancs.; Potts Wood and Cragg Wood, Littledale, 1955, G. W. GARLICK.

753/22. *CAREX SEROTINA* Mérat. 96, Easternness; loch near Milton, Drumnadrochit, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

§753/23. *CAREX EXTENSA* Gooden. ‡85, Fife; dune slacks on Tents Muir, 1955, A. A. SLACK and A. M. STIRLING. But see *Top. Bot.*

753/34. *CAREX PALLESCENS* L. 31, Hunts.; Monk's Wood, 1955, J. L. GILBERT.

753/38. *CAREX LIMOSA* L. 46, Cards.; in small quantity, loosely rooted, in very wet peat in one spot in Tregaron Bog, Mrs. H. R. H. Vaughan (1956, *Nature in Wales*, 2, 313). *94, Banff.; bog at Blackpots near Banff, 1947: 95, Elgin; bog on Dava Moor, 1953, M. McCALLUM WEBSTER.

§753/45. *CAREX ELATA* All. *106, E. Ross; near Loch Glass, B.S.B.I. FIELD MEETING, conf. E. NELMES, comm. U. K. DUNCAN.

§753/58. *CAREX CURTA* Gooden. *112, Zetland; abundant in marshy fields near Norwick, Isle of Unst, W. SCOTT and W. PALMER, conf. E. NELMES.

§753/61. *CAREX PAIRAEI* F. W. Schultz. *73, Kirkcudbr.; rough grassland, near Meikle Richorn, H. MILNE-REDHEAD.

753/65. *CAREX DIANDRA* Schrank. 109, Caithness; bog near Achavanich, M. McCALLUM WEBSTER.

§753/72. *CAREX PAUCIFLORA* Lightf. *69b, Lake Lanes.; bog south-east of Three Shire House, Wrynose Pass, alt. c. 1,250 ft., R. MACKECHNIE.

§758/3. *SPARTINA TOWNSENDII* H. & J. Groves. *60, W. Lanes.; salt-marshes, Sunderland and Bolton-le-Sands, 1955, G. W. GARLICK.

§770/3. *ALOPECURUS MYOSUROIDES* Huds. *71, Man; cornfield near Kiondroghad, Andreas, W. H. HARDAKER, comm. D. E. ALLEN. 95, Elgin; distillery yards, Rothes and Carron, M. McCALLUM WEBSTER.

770/6. *ALOPECURUS AEQUALIS* Sobol. 24, Bucks.; sheltered pond sides, Dropmore to Burnham, F. AMBROSE, det. J. G. DONY.

780/3f. *AGROSTIS GIGANTEA* var. *RAMOSA* (Gray) Philipson. 31, Hunts.; abundant in dykes, Hod Fen, Yoxley, J. L. GILBERT, det. C. E. HUBBARD.

783/1. *CALAMAGROSTIS EPIGEJOS* (L.) Roth. 60, W. Lanes.; lane from Nether Kellet to Kellet Seeds, G. W. GARLICK.

§785/1. *APERA SPICA-VENTI* (L.) Beauv. 22, Berks.; abundant in wheat field, two miles south of Bracknell, F. AMBROSE, det. J. G. DONY. *+94, Banff.; several plants near Dufftown railway station, M. McCALLUM WEBSTER.

789/1. *AIRA CARYOPHYLLEA* L. 112, Zetland; common on rocks at the west side of the head of Burra Firth, Unst, R. C. PALMER and W. SCOTT.

793/1. *TRisetum FLAVESCENS* (L.) Beauv. *94, Banff.; rough ground, Macduff: *109, Caithness; roadside verge near Dunbeath, M. McCALLUM WEBSTER. *112, Zetland; about eight plants along roadside at Haroldswick, Unst, W. SCOTT.

809/1. *KOELERIA GRACILIS* Pers. 31, Hunts.; on a garden lawn, Stibbington, J. L. GILBERT.

§818/1. *MELICA NUTANS* L. ‡50, Denb.; rocks at World's End, Llangollen, also at Rhaeder-y-Bedd, five miles south of Llansannon, A. M. STIRLING. Remove from brackets in *C.F.*

§822/1. *BRIZA MEDIA* L. *112, Zetland; west side of Tingwall Loch, W. SCOTT.

§+824/1. *POA CHAIXII* Vill. *94, Banff.; policies of Cairnfield House, Clochan, M. McCALLUM WEBSTER. *98, Argyll; by the bridge below Falls of Cruachan, G. HALLIDAY.

§824/3. *POA SUBCAERULEA* Sm. *18, S. Essex; marsh at Berwick Pond, near Rainham. K. L. ALVIN, det. A. MELDERIS. 82, Haddington: sandy shore, Gosford Bay, 1954, C. W. MUIRHEAD. 101, Kintyre; sandy pasture by Waterfoot, Carradale, E. Kintyre, M. H. CUNNINGHAM, det. C. E. HUBBARD.

§824/5. *POA PALUSTRIS* L. *72, Dumfries.; in shallow water with organic substrate, with *Glyceria maxima*, Castle Loch, Lochmaben, H. MILNE-REDHEAD.

§825/3b. *GLYCERIA DECLINATA* Bréb. 64, Mid-W. Yorks.; ditch. Bentham, 1955, G. W. GARLICK. *73, Kirkcudbr.; cattle-trampled stream flowing down hill pasture, Collochan, H. MILNE-REDHEAD.

826/1. *CATAPODIUM RIGIDUM* (L.) C. E. Hubbard. 47, Montg.; limestone scree, Llanymynech Hill, near Oswestry, A. M. STIRLING.

826/3. *FESTUCA ARUNDINACEA* Schreb. 112, Zetland; roadside, Haroldswick, Unst, R. C. PALMER and W. SCOTT, det. W. O. HOWARTH.

826/3×2. *FESTUCA ARUNDINACEA* × *GIGANTEA*. 31, Hunts.; rough ride, Old Weston, 1955, T. PATSTON and J. L. GILBERT, det. C. E. HUBBARD.

826/3×829/1. *FESTUCA ARUNDINACEA* × *LOLIUM PERENNE*. 6, N. Som.; with both parents on a grassy verge of the towpath by the river Avon near Clifton Bridge station, C. I. and N. Y. Sandwith, conf. C. E. Hubbard (1956, *Proc. Bristol Nats. Soc.*, **29**, 106).

§826/10(2). *FESTUCA VIVIPARA* (L.) Sm. ‡66, Durham; rock ledges on Falcon Clints, J. W. Heslop-Harrison (1956, *Vasc. (Subst.)*, **41**, 24).

826/11. *FESTUCA LONGIFOLIA* Thuill. 6, N. Som.; sand-dunes, Burnham, 1952, I. W. Evans, det. C. E. Hubbard (1956, *Proc. Bristol Nats. Soc.*, **29**, 106).

826/18. *VULPIA MYUROS* (L.) C. C. Gmel. *106, E. Ross; railway siding, Muir-of-Ord, B.S.B.I. FIELD MEETING, conf. A. MELDERIS, comm. U. K. DUNCAN.

†826(2)/1. *NARDURUS MARITIMUS* (L.) Fiori. 55, (Rutland); Clips-ham Quarry, widespread over a large area of quarry floor, on exposed oolite, E. K. HORWOOD, det. T. G. TUTIN.

§827/3. *BROMUS STERILIS* L. *108, W. Sutherland; by the Tral-ligyll, near the hotel, Inchnadamph, G. HALLIDAY.

827/13. *BROMUS UNIOLOIDES* Kunth. 17, Surrey; rubbish-tip, Earls-wood, 1954, B. M. C. MORGAN, det. B. WELCH (correction of error in *Proc. B.S.B.I.*, **2**, 150).

†827/13(2). *BROMUS CARINATUS* Hook. & Arn. 37. [Warw.]; bank of river Rea by Cannon Hill Park, Birmingham, 1955, D. E. ALLEN, conf. A. MELDERIS.

§827/19(2). *BROMUS LEPIDUS* Holmb. ‡32, Northants.; grassland, Upton, north of Upton Church, 1954, J. L. GILBERT, conf. C. E. HUBBARD.—But see Dony, *Fl. Beds.*, 441. 36, Hereford.; Colwall: 37, Wores.; Shadybank Common, F. M. DAY, det. C. E. HUBBARD. *72, Dumfries.; roadside, Meikledale, R. C. L. HOWITT, conf. S. M. WALTERS. *106, E. Ross; near Lochluichart station, B.S.B.I. FIELD MEETING, conf. A. MELDERIS, comm. U. K. DUNCAN. *112, Zetland; pasture at south end of Loch Asta, 1935, R. C. PALMER, det. C. E. HUBBARD; abundant in hay-fields near Scalloway and at Norwick, Unst., W. SCOTT.

§827/19(3). *BROMUS THOMINII* Hardouin. 36, Hereford.; Colwall, F. M. DAY. ‡48, Mer.; Morfa Harlech; Dyffryn golf links; Fairbourne; sand-dunes, Barmouth, P. M. Benoit (1956, *Nature in Wales*, **2**, 313). ‡52, Anglesey; Holyhead area, A. D. Q. Agnew; Newborough Warren, P. M. Benoit (1956, *Nature in Wales*, **2**, 314).

830/1×4. *AGROPYRON JUNCEIFORME* × *REPENS*. 106, E. ROSS; Cromarty, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

§833/3. *PARAPHOLIS INCURVA* (L.) C. E. Hubbard. The record for Gibraltar Point Nature Reserve in *Proc. B.S.B.I.*, 2, 43, should read 54, N. Lincs. and not 53, S. Lincs.

§835/2. *HORDEUM MURINUM* L. *94, Banff.; along coast from Cullen to Portgordon, 1952: *96, Easternness; rough ground, Ardesier, M. McCALLUM WEBSTER.

§836/1. *ELYMUS ARENARIUS* L. *†55, Leics.; disused sandpit, Roundhill, Thurmaston, 1953, B. M. G. JONES. *106, E. ROSS; Fortrose, B.S.B.I. FIELD MEETING, conf. A. MELDERIS, comm. E. B. BANGERTER.

§844/4. *EQUISETUM PRATENSE* Ehrh. *95, Elgin; banks of river Findhorn, Darnaway, M. McCALLUM WEBSTER.

§844/7. *EQUISETUM HYEMALE* L. 90, Angus; Glen Doll, among the heather by Jock's Path below Craig Rennet, R. A. GRAHAM and R. M. HARLEY. 95, Elgin; woods at Darnaway, R. RICHTER. 96b, Nairn; two stations near Loch Loy: 106, E. ROSS; plentiful by roadside near Munloch: *109, Caithness; a few plants by river about a mile from Dunbeath, M. McCALLUM WEBSTER.

844/9. *EQUISETUM VARIEGATUM* Schleich. ex Weber & Mohr. 60, W. Lancs.; damp sand, Sunderland Point, 1955, G. W. GARLICK.

§845/1. *CRYPTOGRAMMA CRISPA* (L.) R.Br. ex Hook. *101, Kintyre; Cruach-a-Phubuill, Knapdale, alt. c. 1,500 ft., A. G. KENNETH, comm. M. H. CUNNINGHAM, det. E. C. WALLACE.

851/2. *ASPLENIUM TRICHOMANES* L. 24, Bucks; old wall, Stoke Hammond, T. G. and M. COLLETT, J. E. LOUSLEY and D. H. KENT.

§851/3. *ASPLENIUM VIRIDE* Huds. *101, Kintyre; Cnuc-na-Seamraig, Knapdale, alt. c. 600 ft., A. G. KENNETH, comm. M. H. CUNNINGHAM, det. E. C. WALLACE.

§856/1c. *DRYOPTERIS BORRERI* Newm. 60, W. Lancs.; Wash Dub Wood, Docke: *90, Angus; Rossie Moor near Brechin, 1955: *91, Kincard.; near Riccarton House, Stonehaven, U. K. DUNCAN, conf. A. H. G. ALSTON. *96, Easternness; near Milton, Drumnadrochit: *106, E. ROSS; near Lochluichart station, B.S.B.I. FIELD MEETING, conf. A. H. G. ALSTON, comm. U. K. DUNCAN.

857/4. *CYSTOPTERIS FRAGILIS* (L.) Bernh. 112, Zetland; on rocks in a burn at Catfirth, Nesting, W. SCOTT.

859/1. *CETERACH OFFICINARUM* DC. 24, Bucks.; old wall, Stoke Hammond, T. G. and M. COLLETT, J. E. LOUSLEY and D. H. KENT.

863/2. *HYMENOPHYLLUM WILSONII* Hook. 64, Mid-W. Yorks.; among mosses, Boxenghyll Gorge, Ingleton, G. W. GARLICK. 108, W. Sutherland; shaded rock near the road bridge at the head of Loch Nedd, east of Drumbeg, R. A. GRAHAM and R. M. HARLEY.

864/1. *OSMUNDA REGALIS* L. 14, E. Sussex; by a stream near Chelwood Gate, Ashdown Forest, R. A. BONIFACE and E. C. WALLACE. 56, Notts.; Finningley, not recorded from Notts. for over 50 years, R. C. L. HOWITT. *95, Elgin; damp slack, Culbin Sands, one small plant, E. C. WALLACE. 108, W. Sutherland; east side of Loch an Aigeil, Stoer, R. A. GRAHAM and R. M. HARLEY.

§866/1. *OPHIOGLOSSUM VULGATUM* subsp. *POLYPHYLLUM* (A. Braun) E. F. Warb. ‡52, Anglesey; in short turf on sandy soil, Newborough Warren and Llanddwyn, R. H. Roberts (1956. *Nature in Wales*, 2, 356).

§867/1. *PILULARIA GLOBULIFERA* L. 40, Salop; pond borders and boggy ground, Brown Moss, near Whitechurch. A. M. STIRLING. *96b, Nairn; Loch of the Ord, Lethen, 1926, Dr. J. B. SIMPSON—still persisting, though scarce, M. McCALLUM WEBSTER.

869/1. *ISOETES LACUSTRIS* L. 95, Elgin; Lochindorb, 1953, M. McCALLUM WEBSTER.

CHAROPHYTA, all det. by G. O. ALLEN→

§872/5. *NITELLA TRANSLUCENS* Ag. *101, Kintyre; Loch Arail, Knapdale, A. G. KENNETH, comm. M. H. CUNNINGHAM.

873/2. *TOLYPELLA PROLIFERA* Leonh. 28, W. Norfolk; Welney Washes, E. L. SWANN.

§873/4. *TOLYPELLA NIDIFICA* Leonh. *25, E. Suffolk; Easton Broad, G. H. ROCKE.

876/2. *CHARA CANESCENS* Lois. 25, E. Suffolk; Easton Broad, G. H. ROCKE.

876/10c. *CHARA BALTICA* var. *RIGIDA* Groves & Bull.-Webst. 27, E. Norfolk; Hickling Broad, G. H. ROCKE.

876/12c. *CHARA ASPERA* var. *LACUSTRIS* H. & J. Groves. 109, Caithness; Loch Watten, M. McCALLUM WEBSTER.

ABSTRACTS FROM LITERATURE

Compiled by DOUGLAS H. KENT

Thanks are due to E. B. Bangerter and A. E. Wade for their assistance.

SYSTEMATIC, ETC.

7/1. *CALTHA PALUSTRIS* L. Johnson, A. T., 1955, *Caltha palustris*, *Gard. Chron.*, **137**, 174-175.

7/1. *CALTHA PALUSTRIS* L. Stevens, A. B. P., 1956, The structure and development of the hydathodes of *Caltha palustris*, *New Phyt.*, **55**, 339-345.

21. *PAPAVER*. Acheson, R. M., Harper, J. L. & McNaughton, I. H., 1956, Distribution of anthocyanin pigments in poppies, *Nature*, **178**, 1283-1284.

21/2. *PAPAVER RHOEAS* L. Allen, H. G., 1956, Variations in the common poppy (*Papaver rhoeas*), *J. Northants. N.H.S. & F.C.*, **33**, 82-84. Deals with some observations on the variation in flower colour, number of stigmatic rays, hair clothing and leaf colour made during a field meeting of the Botanical Section of the Society.—[A.E.W.]

21/2. *PAPAVER RHOEAS* L. Koopmans, A., 1956, A trisomic *Papaver rhoeas*, *Genetica*, **28**, 35-41.

39. *CARDAMINE*. Lövkist, B., 1956, The *Cardamine pratensis* complex—outlines of its cytogenetics and taxonomy, *Symb. Bot. Upsal.*, **14** (2), 1-131.

45. *COCHLEARIA*. Lawalrée, A., 1956, *Cochlearia pyrenaica* DC. en Belgique, *Bull. Soc. Roy. Bot. Belg.*, **88**, 94.

54. *BRASSICA*. Håkansson, A., 1956, Seed development of *Brassica oleracea* and *B. rapa* after certain reciprocal pollinations, *Hereditas*, **42**, 373-395.

54/18(2)b. *BRASSICA INTEGRIFOLIA* var. *CARINATA* (A. Braun) O. E. Schulz. Vaughan, J. G., 1956, Seed-coat structure of Ethiopian 'rape', *Nature*, **178**, 1188-1189. *Brassica integrifolia* var. *carinata* imported into Europe for oil extraction is cultivated in Ethiopia and adjacent N. African territories and has been included in the *B. juncea* complex. Details are given of its seed-coat structure.—[D.H.K.]

64/3. *THLASPI ALPESTRE* L. Riley, R., 1956, The influence of the breeding system on the geneecology of *Thlaspi alpestre* L., *New Phyt.*, **55**, 319-330.

88/11. *VIOLA PALUSTRIS* L. Evans, L. T., 1956, Chasmogamous flowering in *Viola palustris* L., *Nature*, **178**, 1301.

96/1. *SILENE MARITIMA* With. Turrill, W. B., 1956, *Silene maritima* With. subsp. *islandica* D. & A. Löve, *Hook. Icon. Pl.*, **36**, t. 3549, 1-5. Taxonomic studies on British and Icelandic material of *Silene maritima* cultivated at Kew.—[D.H.K.]

96/1. *SILENE MARITIMA* With. Turrill, W. B., 1956, *Silene maritima* With. subsp. *thorei* (Dufour) Rouy & Fouc., *Hook. Icon. Pl.*, **36**, t. 3550, 1-2. *Silene maritima* subsp. *thorei* is known from sandy shores in south-west France, facing the Bay of Biscay and from the Spanish Biscayan coast. Material collected by the author from cliffs near Kimmeridge, Dorset in 1924 can scarcely be distinguished from specimens of subsp. *thorei* except that the leaves, on an average, are narrower relative to their length.—[D.H.K.]

100. *CERASTIUM*. Hultén, E., 1955, *Cerastium glabratum* Hartm., species restituendo, *Arch. Soc. Zool. Bot. Fenn. 'Vanamo'*, **9**, supplement, 62-69.

100. *CERASTIUM*. Hultén, E., 1956, The *Cerastium alpinum* complex: a case of world-wide introgressive hybridization, *Svensk Bot. Tidsk.*, **50**, 412-495. Taxonomic studies have shown that the *Cerastium alpinum* group forms a chain of species connected not only by hybrids but also by hybrid swarms, dominating the *Cerastium* flora primarily in Spitzbergen, Greenland and the Arctic American Archipelago, but also in Scandinavia and Iceland.

Within the area of *C. alpinum* subsp. *lanatum*, and also somewhat outside it, hybrid swarms with *C. arcticum*, *C. glabratum*, *C. beeringianum* and *C. regelii* as the other components occur where the areas of two or more of these species overlap. New species about to come into being through a recombination of the genes of these species are developing in different places.

The small areas to which the plants must have been restricted in Spitzbergen and Greenland during the glacial period account for the almost complete hybridisation that has taken place between the *Cerastium* species present there.

Through *C. beeringianum* the chain stretches to Alaska, eastern Asia and Japan, where *C. beeringianum*, *C. aleuticum* and *C. fischerianum* form a series. In eastern America *C. beeringianum* subsp. *terrænora* can be suspected to be a recombination type uniting the properties of *C. beeringianum*, *C. arcticum* and *C. alpinum* subsp. *lanatum* and formed through isolation in a small area, and introgressive hybridisation during the glacial period.

C. jenisejense seems to be transgressing into *C. beeringianum* (var. *grandiflorum* in Alaska) and into *C. regelii* (Novaya Zemlya). It is intermediate between *C. regelii* and *C. beeringianum* and may be expected to have formed during or just after the glacial period as a recombination type of this hybrid. In the very limited area where it overlaps the distribution of *C. alpinum* and *C. glabratum*, traces of hybrids with these species have been observed.

In Scandinavia the bicentric area of *C. arcticum* and *C. glabratum* indicates that they survived at least the last glaciation, and that the hybridisation so clearly demonstrated in the ample material examined has taken place since the last glaciation. It is moreover, by no means so extensive as that in Spitzbergen and Greenland.

The peculiar ampho-atlantic area of the three species *C. alpinum*, *C. arcticum* and *C. regelii* makes it probable that they have at least the latter part of their history more or less in common. To enable us to form any opinion about that history a wealth of facts must be assembled and compiled, taxonomic, phyteogeographical and cytogenetical, covering not only these species, but many others besides. We are far from being able to assess this history today with any reasonable degree of certainty.—[Author's summary p.p.]

This account of the *C. alpinum* complex is illustrated by many distribution maps and photographs. Full synonymy of the various taxa is given and a number of new varieties are described. Several analytical keys are given and those referring to *C. alpinum* and *C. arcticum* are given below.

C. alpinum L.

- A. Plant low growing, few flowered, leaves rounded, pedicels with dense fine patent viscid pubescence subsp. *squalidum*
- A. Plant taller, leaves elongated or lanceolate, pedicels lanate or \pm viscid :
- B. Tips of the basal shoots with a brush of lanate with entangled hairs :
- C. Pubescence of leaves long, entangled, lanate :
 - D. Lanate hairs fine, soft, no hairs with broad base in the margin of the leaves subsp. *lanatum*
 - D. Lanate hairs coarser, hairs with broad base occur in the margin of the leaves var. *robustum*
- C. Pubescence of leaves shorter, more strigose, leaves short and narrow var. *strigosum*
- B. Pubescence of the leaves evenly distributed subsp. *alpinum*

C. arcticum Lange

- A. Leaves almost glabrous or slightly hirsute on the surface, ciliated at the margin from short 3-few-celled hairs, thicker at the base but lacking *alpinum* hairs var. *arcticum*
- A. *Alpinum* hairs present :
 - B. Only traces of *alpinum* hairs present on the leaves and on the stems var. *alpinopilosum*
 - B. Leaves strongly pubescent from \pm lanate hairs usually coarser than *alpinum* hairs, often ciliated from hairs broader at the base :
 - C. Plant low-growing, densely tufted :
 - D. Yellowish-green, pubescence whitish or light coloured, calyx lobes obtuse with broad scarious margins, usually only one long-pedicelled flower developed var. *vestitum*
 - D. Dark-green, pubescence sordid, calyx lobes dark coloured, \pm acute, inflorescence branched with thick branches var. *sordidum*

The *C. alpinum* complex in Scotland is treated in detail and the author cites *exsiccata* that he has seen. *C. alpinum* subsp. **lanatum** (Lam.) Aschers. & Graebn. occurs locally but is apparently absent from the Hebrides and from the Shetlands. *C. arcticum* var. *arcticum*, and var. **alpinopilosum** Hultén var. nov. occur on the higher mountains and the hybrid *C. alpinum* \times *arcticum* is common. On the island of Unst, where neither *C. alpinum* or *C. arcticum* is present, the endemic serpentine-type *C. edmondstonii* (Edmondst.) Murb. & Ostenf. is abundant, and the author suggests that it would be of interest if its variation

could be investigated in order to ascertain its taxonomic status.—[D.H.K.]

101/2. *STELLARIA NEMORUM* L. Andreas, C. H., 1956, Notes on *Stellaria nemorum* L., *Acta Bot. Neerl.*, **5**, 145-156. Studies on the morphology, geography, ecology and nomenclature of *Stellaria nemorum* and its subsp. *glochidisperma* in the Netherlands.—[D.H.K.]

105/5. *SPERGULARIA RUBRA* (L.) J. & C. Presl. Webb, D. A., 1956, *Spergularia rubra* in Connemara, *Irish Nats. J.*, **12**, 111.

111/1. *ELATINE HYDROPIPER* L. Grøntved, J., 1956, *Elatine hydro-piper* i Danmark, *Bot. Tidssk.*, **53**, 96-98.

112. *HYPERICUM*. Merxmüller, H. & Vollrath, H., 1956, Ein amerikanisches *Hypericum* als Neubürger in Europa, *Ber. Bayer. Bot. Ges.*, **31**, 130-131. *Hypericum maius* (A. Gray) Britton, a N. American species, has been found naturalised in Bavaria. It is new to Europe. Attention is also drawn to the recent discovery of the related *H. canadense* in France.—[D.H.K.]

*112. *HYPERICUM*. Webb, D. A., 1957. *Hypericum canadense* L., a new American plant in western Ireland, *Irish Nats. J.*, **12**, 113-116.

125/4. *LINUM USITATISSIMUM* L. Pandey, K. K., 1956, Studies in autotetraploids of linseed (*Linum usitatissimum* L.). I. Growth rate, *Hereditas*, **42**, 120-128.

132. *OXALIS*. Shinnars, L. H., 1956, Yellow-flowered *Oxalis* (Oxalidaceae) of eastern Texas and Louisiana, *Field & Lab.*, **24**, 39-40. Describes and keys the yellow-flowered species of *Oxalis* found in Texas and Louisiana. A new variety of *O. dillenii* Jacq.—var. *radicans*, is described; it has yellow petals with inconspicuous red-orange basal markings.—[D.H.K.]

133/4. *IMPATIENS GLANDULIFERA* Royle. Huxley, A. J., 1956, A balsam from the Himalayas, *Country Life*, **120**, 1186. A short note on *Impatiens glandulifera* and its history in Britain.—[D.H.K.]

153. *MEDICAGO*. Nègre, R., 1956, Les luzernes du Maroc, *Trav. Inst. Scient. Chérifien: Série Bot.*: No. 5, i-xxi & 1-119. The species of *Medicago* and their subspecific taxa known in Morocco are described and keyed. Many illustrations and photographs of fruits, flowers and leaves are also given. Many of the species found in Britain, are included in the account.—[D.H.K.]

153. *MEDICAGO*. Shinnars, L. H., 1956, *Medicago polymorpha* var. *vulgaris*, *Rhodora*, **58**, 310. *Medicago polymorpha* var. *ciliaris* L. renders illegitimate *M. denticulata* var. *ciliaris* Sér. The commonest N. American bur-clover, *M. hispida* Gaertn., must become *M. polymorpha* var. *vulgaris* (Benth.) comb. nov. based on *M. denticulata* var. *vulgaris* Benth.; under this goes f. *apiculata* (Willd.) comb. nov. based on *M. apiculata* Willd., and f. *tuberculata* (Godr.) comb. nov. based on *M. polycarpa* var. *tuberculata* Godr.—[D.H.K.]

160. *LOTUS*. Larsen, K., 1956, Cytotaxonomical studies in *Lotus*. 3. Some new chromosome numbers, *Bot. Tidssk.*, **53**, 49-56.

*See **Plant Notes**.—Ed.

185. *RUBUS*. Beyerinck, W., 1956, *Rubi Neerlandici*, *Verh. Kon. Ned. Akad. Wetenschapp.*, **51**, 1-156. A taxonomic revision of the brambles of the Netherlands with notes on their ecology and distribution.—[D.H.K.]

190. *ALCHEMILLA*. Sougnez, N. & Lawalrée, A., 1956, *Alchemilla gracilis* Opiz en Belgique, *Bull. Jard. Bot. Brux.*, **26**, 247-252. The discovery of a species of the *Alchemilla vulgaris* aggregate, *A. gracilis* Opiz, in Belgium is reported. Details of the associated plants (*Festuceto-Cynosuretum cristati*) are given. The Belgian material is described and the distribution (central and northern Europe and Siberia) outlined. The stem and petioles are covered with obliquely spreading hairs and the pedicels are densely hairy or glabrous.—[E.B.B.]

220/1. *CHAMAENERION ANGUSTIFOLIUM* (L.) Scop. Heslop-Harrison, J. W., 1956, The rosebay willow-herb, *Vasc. (Subst.)*, **41**, 25. While the aggressive rapidly spreading garden form of *Chamaenerion angustifolium* may be transplanted with ease, attempts to transplant the native form from Durham and the Hebrides have failed.—[D.H.K.]

220/3. *EPILOBIUM HIRSUTUM* L. Bartels, F., 1956, Abnorme Epidermisausbildung bei einer Plasmonabänderung von *Epilobium hirsutum* als Beitrag zum Determinationsproblem, *Ber. Deutsch. Bot. Ges.*, **69**, 375-380.

239. *ERYNGIUM*. Hamel, J.-L., 1955, Étude caryologique de quelques *Eryngium*, *Bull. Soc. Bot. France*, **102**, 488-502. A cytological study of several species of *Eryngium*, including *E. maritimum* and *E. campestre*.—[E.B.B.]

245. *BUPLEURUM*. Larrival, M.-Th., 1954, Étude des plantules de *Bupleurum rotundifolium* L., *B. fruticosum* L., *B. ranunculoides* L., *Bull. Soc. Hist. Nat. Toulouse*, **89**, 8-18.

253/1. *SIUM LATIFOLIUM* L. Webb, D. A., 1956, *Sium latifolium* on the Boyne and *Cladium mariscus* in Co. Waterford, *Irish Nats. J.*, **12**, 111.

284/1. *HEDERA HELIX* L. Jensen, H. N., 1956, Om *Hedera helix* i Danmark, *Bot. Tidssk.*, **53**, 108.

296. *GALIUM*. Ehrendorfer, F., 1956, Struktur Verbreitung und Geschichte der Sippen von *Lepto-Galium* in Bayern, *Ber. Bayer. Bot. Ges.*, **31**, 5-12.

333/4. *INULA CONYZA* DC. Temperley, G. W., 1956, *Inula conyza* DC., *Vasc. (Subst.)*, **41**, 30. It is suggested that *Inula conyza* in Co. Durham is a survival from ballast introductions many years ago.—[D.H.K.]

339/3. *AMBROSIA ARTEMISIIFOLIA* L. Moss, E. H., 1956, Ragweed in south eastern Alberta, *Canad. J. Bot.*, **34**, 763-767. *Ambrosia artemisiifolia* var. *elatior* is established in depressions and on borders of natural prairie and cultivated land in two regions of south eastern Alberta. It is thought that the species was introduced to the Canadian plains though the possibility that it is indigenous there cannot be dismissed.—[D.H.K.]

353/2. *BIDENS TRIPARTITA* L. Rollin, P., 1956, Action de la température et de la lumière sur la germination des akènes de *Bidens tripartita* L. (Composées) *Rev. Gén. Bot.*, **63**, 461-475. Experiments under various conditions of light and darkness show that alternating temperatures are necessary for the germination of achenes of *Bidens tripartita*.—[E.B.B.]

378. *ARTEMISIA*. Lawalrée, A., 1956, L'*Artemisia tournefortiana* Reichb. an Portugal, *Agron. Lusit.*, **18**, 92. *Artemisia tournefortiana* Reichb., a native of eastern Europe, has been found as an adventive in Portugal. Known also from France, Holland and Belgium, it has in the past been confused with *A. biennis* Willd. The characters of the two species are differentiated.—[D.H.K.]

396/8. *CIRSIUM ARVENSE* (L.) Scop. Bakker, D. & Diender, D., 1956, De akkerdistel, *De Levende Natuur*, **59**, 121-127.

405/13. *CENTAUREA SCABIOSA* L. Fröst, S., 1956, The cytological behaviour of accessory chromosomes in *Centaurea scabiosa*, *Hereditas*, **42**, 415-431.

419. *HIERACIUM*. De Retz, B., 1956, La Genre *Hieracium* subgen. *Pilosella* dans la Flore Française, *Bull. Soc. Franc. Ech. Pl. Vasc.*, **7**, Supplement, 1-25.

419. *HIERACIUM*. Oskarrson, I., 1954, Studies on *Hieracium demissum* (Strömf.) Dahlst., *Svensk Bot. Tidskr.*, **48**, 45-64. *Hieracium demissum* is endemic to Iceland but is closely related to some species found in the Shetlands. It is suggested that it has descended from them during the time of Iceland's colonisation.—[D.H.K.]

419. *HIERACIUM*. Reiter, M., 1954, *Die Hieracien (Habichtskräuter) des Landes Salzburg*. pp. 1-20. Salzburg.

422/2. *LEONTODON AUTUMNALIS* L. Blake, S. F., 1955, *Leontodon autumnalis* in Alaska and Washington. *Leafl. West. Bot.*, **7**, 285-286.

423. *TARAXACUM*. Van Soest, J. L., 1956, Les *Taraxacum* de Belgique, I. (Introduction et sections *Erythrosperma*, *Palustria* et *Speetabilia*). *Bull. Jard. Bot. Brux.*, **26**, 211-235. Describes and keys the microspecies of *Taraxacum* in Belgium.—[D.H.K.]

425. *LACTUCA*. Lindquist, K., 1956, Reflexed and erect involucre in *Lactuca*, *Hereditas*, **42**, 436-442.

446/4. *ERICA CILIARIS* L. Runge, F., 1956, *Erica ciliaris* L. een nieuwe plantesoort voor Nederland, *De Levende Natuur*, **59**, 155-156. *Erica ciliaris* has been found in the Netherlands.—[D.H.K.]

460. *PRIMULA*. Valentine, D. H., 1956, Studies in British *Primulas*. 5. The inheritance of seed compatibility, *New Phyt.*, **55**, 305-318.

466/1. *GLAUX MARITIMA* L. Boivin, B., 1956, Notulae taxonomicae. 2: *Glaux maritima* Linné, *Bull. Soc. Roy. Belg.*, **88**, 10-11. In N. America *Glaux maritima* L. is divided into two subspecies: (a) subsp. *maritima*, which includes var. *maritima*, and var. *angustifolia* var. nov., the latter differing in its erect (rarely prostrate) habit, narrowly-lanceolate leaves and corolla-lobes often slightly shorter than the tube; (b) subsp. *obtusifolia* (Fern.) Boivin, which includes var. *obtusifolia* and

var. *macrophylla* var. nov., the latter differing mainly in its white (or almost white) corolla and usually larger size.—[E.B.B.]

467. ANAGALLIS. Taylor, P., 1956, The genus *Anagallis* in Tropical and South Africa, *Kew Bull.*, 1956, 321-350. *Anagallis arvensis* subsp. *arvensis* is reported from both Tropical and South Africa where it is a weed of cultivation introduced from Europe. The author shows that the genus *Centunculus* is not taxonomically sound and places *C. minimus* as *Anagallis minima* (L.) E. H. L. Krause.—[D.H.K.]

468/1. CENTUNCULUS MINIMUS L.—See 467. ANAGALLIS.

477/1. BLACKSTONIA. Robyns, A., 1956, Le genre *Blackstonia* en Belgique, au Grand-Duché de Luxembourg et aux Pays-Bas, *Bull. Jard. Bot. Brux.*, 26, 353-368. Although only *Blackstonia perfoliata* (L.) Huds. is found in Belgium, a second species, *B. serotina* (Koch) G. Beck occurs in Luxembourg and the Netherlands. In this detailed study of the two species, distribution, ecology, uses, common names are given in addition to taxonomic data. A photo and distribution map of *B. perfoliata* in Belgium illustrate the work and a diagram of the flowers of both species help to distinguish them. Under *B. perfoliata* the var. *intermedia* (Ten.) Domin is reduced to f. *intermedia* (Ten.) A. Robyns comb. nov. on the grounds that a single quantitative character, acuteness of corolla-lobe, does not warrant varietal rank, and f. *debilis* Domin is considered merely a local ecological form.

B. serotina belongs to the submediterranean element spreading to central Europe with its northern limits in the Netherlands and the valley of the upper Rhine; it therefore shows a somewhat discontinuous distribution the cause for which being unknown to the author. The key to separate the two species is given as:

Stem leaves triangular to oval-triangular, connate the entire width of their base; sepals linear to linear-lanceolate, free to very slightly connate at base and usually 2/3 to 3/4 length of corolla, 1 sub 3-nerved; corolla-lobes obtuse to subacute at apex; style slightly bifid *perfoliata*

Stem leaves oval to elliptic, connate the entire width of their contracted base; sepals linear-lanceolate, slightly connate at the base in a short tube, ± = corolla, usually 3-nerved; corolla-lobes acute-subacute at apex; style bifid usually for ± half its length *serotina*

—[E.B.B.]

515/2. CUSCUTA EUROPAEA L. Gaertner, E. E., 1956, Dormancy in the seed of *Cuscuta europaea*, *Ecology*, 37, 389.

517. SOLANUM. Heiser, C. B., Junr., 1955, The *Solanum nigrum* complex in Costa Rica, *Ceiba*, 4, 293-299.

534. ANTIRRHINUM. Dayton, T. O., 1956, The inheritance of flower colour pigments. I. The genus *Antirrhinum*, *J. Gen.*, 54, 249-260.

543. VERONICA. Lehmann, E., 1956, Wie kann die Erbanlage von Einfluss auf die Verbreitung von Unkräutern sein?, *Umschau*, 24, 756-758.

546. ODONTITES. Marklund, G., 1955, Die Gattung *Odontites* in Finnland, *Acta Soc. Flora Fauna Fenn.*, 72 (16), 1-18.

550/12. *OROBANCHE PURPUREA* Jacq. Böcher, T. W., 1956, *Orobanche purpurea*, *Bot. Tidssk.*, **53**, 106-107.

561. *THYMUS*. Pigott, C. D., 1956, A taxonomic revision and ecological study of British *Thymus*, *Abstr. Diss. Univ. Camb.*, **1953-54**, 25-27.

566. *SALVIA*. Delestaing, N., 1954, Contribution à l'étude cytologique du genre *Salvia*, *Rev. Cytol. Biol. Veg.*, **15**, 195-224.

566. *SALVIA*. Werth, E., 1956, Zur Kenntnis des Androeceums der Gattung *Salvia* und seiner stammesgeschichtlichen Wandlung, *Ber. Deutsch. Bot. Ges.*, **69**, 381-386.

587/1. *AJUGA REPTANS* L. Pfirsch, E., 1956, Sur les stolons d'*Ajuga reptans* L.: cas de stoloniflorie et de multistolonie, *Bull. Soc. Bot. France*, **103**, 233-235. Certain anomalies in the development of *Ajuga reptans* have been given taxonomic value. The conclusions here are that "stoloniflorie", the flowering on stolons, is not a racial character; that "multistolonie", excessive development of stolons, needs further study.—[E.B.B.]

588. *PLANTAGO*. Hylander, N., 1955, Ett obeaktat svensk fynd av en nordamerikansk vallfröinkomling, *Plantago rugelii* Dene., *Acta Soc. Flora Fauna Fenn.*, **72** (9), 1-6. A specimen in the herbarium of Uppsala University originally labelled *Plantago major* f. *americana* and collected among cultivated American clovers in southern Sweden in 1883 has been found to be the N. American *P. rugelii* Decne. It appears to represent the only known discovery of this species in Europe, which is surprising since the plant was listed as one of the most characteristic impurities of American red clover seed during the period at the end of the 19th and beginning of the 20th century when the seed was imported on a large scale. The author considers that it is most probable that *P. rugelii* has occurred ± casually in other European countries but has been overlooked owing to its similarity to *P. major*.—[D.H.K.]

595. *SCLERANTHUS*. Pedersen, A., 1956, *Scleranthus polycarpus*. Bakke-knave i Danmark, *Bot. Tidssk.*, **53**, 99-103.

615. *POLYGONUM*. Lawalrée, A., 1956, Note sur quelques taxa cultivés, *Bull. Soc. Roy. Bot. Belg.*, **88**, 94. The plant usually assigned to *Polygonum baldschuanicum* Regel in Belgium is in fact *P. auberti* L. Henry, which has fairly lax panicles of white (or nearly white) flowers less than 6mm. in diameter, and fruits infrequently; whereas *P. baldschuanicum* has more dense panicles of pink flowers 6 mm. or more in diameter and fruits freely.—[E.B.B.]

615. *POLYGONUM*. Löve, A. & D., 1956, Chromosomes and taxonomy of eastern North American *Polygonum*, *Canad. J. Bot.*, **34**, 501-521. Cytological and taxonomical studies on *Polygonum*, mainly section *Ariculare*. *P. rurivagum* Jord. has $2n=20$ (Canadian material), *P. heterophyllum* subsp. *heterophyllum* has $2n=6$ (Canadian, Swedish and Icelandic material), *P. ariculare* L. sens. str. (retained as the correct name for *P. aquale* Lindm.) has $2n=40$, and the subsp. *calcatum* (Lindm.) Thell., which is partly identical with *P. ariculare* var.

depressum Meisn., has $2n=40$; it hybridises easily with subsp. *aviculare*. Keys are given to the identification of the various taxa.—[D.H.K.]

618. RUMEX. Lambinon, J., 1956, Note sur quelques Rumex hybrides de la flore Belge, *Bull. Soc. Roy. Bot. Belg.*, **88**, 29-32. New stations are recorded in Belgium for the hybrids *R. × pratensis* (*R. crispus* × *obtusifolius*) and *R. × dufftii* var. *blockii* (Zapalow.) Lambinon comb. nov. (*R. sanguineus* var. *viridis* × *obtusifolius*). In addition four new hybrids are recorded for Belgium: *R. × dufftii* Hausskn. (*R. sanguineus* × *obtusifolius*), *R. × abortivus* Ruhmer (*R. conglomeratus* × *obtusifolius*), *R. × wirtgenii* G. Beck (*R. conglomeratus* × *palustris*) and *R. × limosus* Thuill. (*R. conglomeratus* × *maritimus*). Descriptions, and illustrations of the perianth-segments, are given for these four.—[E.B.B.]

626/1. VISCUM ALBUM L. Cove, D. J., 1956, The distribution of mistletoe (interim report), *Starfish*, **9**, 20-32. A preliminary account of a national survey of mistletoe hosts. Of 831 infestations noted, 345 were on apple (*Malus sylvestris* agg.), 222 on hawthorn (*Crataegus monogyna* and *C. oxyacanthoides*), 133 on *Ulmus* spp. and 76 on *Tilia* spp. Details are given of the other hosts.—[D.H.K.]

626/1. VISCUM ALBUM L. Cove, D. J., 1956, Distribution of the mistletoe, *Countryside*, **17**, 503-506.

632/2b. MERCURIALIS ANNUA var. AMBIGUA (L.) Duby. Thomas, R. G., 1956, Effects of temperature and lengths of day on the sex expression of monoecious and dioecious angiosperms, *Nature*, **178**, 552-553. Gives details of experiments on *Mercurialis annua* var. *ambigua*.—[D.H.K.]

633/2. ULMUS CARPINIFOLIA Gleditsch. Melville, R., 1956, An early specimen of *Ulmus carpinifolia* Gleditsch, *Kew Bull.*, **1956**, 179-181.

636/1. FICUS CARICA L. Condit, I. J. & Enderud, J., 1956, A bibliography of the fig, *Hilgardia*, **25**, 1-663.

643/1. ALNUS GLUTINOSA (L.) Gaertn. Pommer, E.-H., 1956, Beitrage zur Anatomie und Biologie der Wurzel-Knöllchen von *Alnus glutinosa* Gaertn., *Flora*, **143**, 603-634.

650. SALIX. Lawalrée, A., 1956, Note sur quelques taxa cultivés, *Bull. Soc. Roy. Bot. Belg.*, **88**, 94-95. *Salix babylonica* L. is not planted in Belgium and the weeping-willows attributed to it are usually *S. × chrysocoma* Dode, a hybrid between *S. babylonica* and *S. vitellina*. The area of cultivation of *S. babylonica* is not further north than the eumediterranean region.—[E.B.B.]

650. SALIX. Sugaya, S., 1956, Terminal bud formation in *Salix*, *Sci. Rep. Tôhoku Univ. Biol.*, **22**, 5-11.

650. SALIX. Sugaya, S., 1956, Further notes on the terminal bud formation in *Salix*, *Sci. Rep. Tôhoku Univ. Biol.*, **22**, 45-48.

657/1. VALLISNERIA SPIRALIS L. Gastagne, E., 1956, Le *Vallisneria spiralis* L. en Belgique, *Bull. Soc. Roy. Bot. Belg.*, **88**, 33. A short note on the progress of *Vallisneria spiralis* through France since 1787, and its recent arrival in Belgium. It appears to be established in the Meuse.—[E.B.B.]

659→ ORCHIDACEAE. Rochette, P., 1955, Observations sur quelques Orchidées du Dauphiné, *Bull. Soc. Bot. France*, **102**, 534-540. Records of several rare or little known orchids (mostly British species) in the Dauphiné. *Orchis ustulata* var. *grandiflora* f. *incisa*, *O. ustulata* f. *longiloba* and *Platanthera* × *hybrida* f. *litardierei* are three new forms described and illustrated. Some abnormal flower-structures are described and some interesting morphological details given.—[E.B.B.]

668/5. EPIPACTIS ATRORUBENS (Huffm.) Schult. Heslop-Harrison, J. W., 1956, The orchid, *Epipactis atrorubens* in Co. Durham, *Vasc. (Subst.)*, **41**, 31.

669/9(3). ORCHIS TRAUNSTEINERI Sauter. Holmen, K. & Kaad, P., 1956, Über *Dactylorchis traunsteineri* auf der Insel Läsö, *Bot. Tidsskr.*, **53**, 35-48.

669(3)/1. HIMANTOGLOSSUM HIRCINUM (L.) Spreng. Déliot, M., 1955, Étude structurale du chromosome somatique chez le "*Loroglossum hircinum*" (L.) Richard, *Le Botaniste*, **39**, 315-337. The technique used to prepare somatic chromosomes of *Himantoglossum hircinum* for study is described. A plate of microphotographs showing stages in division is the basis of the study, which concerns the relationship between structure and chemical nature of the chromosome.—[E.B.B.]

676. IRIS. Randolph, L. F. & Reehinger, K. H., 1954, Die geographische Verbreitung einiger europäischer und mediterraner Iris-Arten, *Ver. Zool.-Bot. Ges. Wien*, **94**, 82-96.

676/1. IRIS PSEUDACORUS L. Jessen, K., 1955, Is *Iris pseudacorus* thalassochorous?, *Acta Soc. Flora Fauna Fenn.*, **72** (12), 1-7. *Iris pseudacorus* has been discovered on the island of Vorso, Jutland, where hitherto it was unknown. It is believed that the seeds were sea-borne from the mainland. Experiments with *I. pseudacorus* seeds have shown that they will germinate after being kept for up to 31 days in sea water.—[D.H.K.]

694/1. CONVALLARIA MAJALIS L. Denaeyer-de-Smet, S., 1956, La teneur en glucoside des feuilles de Muguet (*Convallaria majalis* L.) au cours de leur développement, *Bull. Soc. Roy. Bot. Belg.*, **88**, 13-16.

702. ALLIUM. Helm, J. H., 1956, Die zu Würz- und Speisezwecken kultivierten Arten der Gattung *Allium* L., *Die Kulturpflanze*, **4**, 130-189. Many species and subspecific taxa of *Allium* cultivated as vegetables are keyed and described, these include *Allium scorodoprasum*, *A. anaploprasum*, *A. porrum*, *A. sativum*, *A. schoenoprasum*, *A. cepa*, *A. fistulosum* and *A. rosea*. The author agrees with the view that *A. babingtonii* is best placed as a variety of *A. scorodoprasum*.—[D.H.K.]

706. ENDYMION. Turrill, W. B., 1956, "Polyploidy in bluebells", *Nature*, **178**, 706.

706. ENDYMION. Wilson, J. Y., 1956, Polyploidy in bluebells (*Endymion nonscriptus* and *E. hispanicus*), *Nature*, **178**, 195-196.

706/2. SCILLA AUTUMNALIS L. Vazart, M. B., 1956, A propos du gamétophyte du *Scilla autumnalis* L., *Rev. Gen. Bot.*, **63**, 281-291.

719/6. *LUZULA CAMPESTRIS* (L.) DC. Castro, D. & Noronha-Wagner, M., 1956, Nota sobre autoploidia induzida em *Luzula campestris* DC., *Agron. Lusit.*, **18**, 123-126.

732. *SAGITTARIA*. Stauffer, H., 1954, *Sagittaria latifolia* Willd. in der Schweiz, *Ber. Schweiz Bot. Ges.*, **64**, 135-138. The N. American *Sagittaria latifolia* Willd., long naturalised in Switzerland and adjacent countries, is extending its range while the native *S. sagittifolia* L. is decreasing. The distinguishing characters of the two species are summarised and compared.—[D.H.K.]

737. *POTAMOGETON*. Webster, D. H., 1956, Notes on the distribution of *Potamogeton* species and hybrids in Nova Scotia, *Proc. Nova Scotian Inst. Sci.*, **24**, 16-24. Includes a number of species also found in Britain.—[D.H.K.]

737/11. *POTAMOGETON* × *NITENS* Weber. Weibel, R., 1956, Une nouvelle station du *Potamogeton nitens* Weber dans le Dauphiné, *Trav. Soc. Bot. Genève*, **3**, 16-19. Hitherto known only from eight Departments of France this hybrid pondweed has been found in the Isère in the Lac de Paladru. One parent, *P. perfoliatus*, was found but not the other, *P. gramineus*. A description, based on the specimens, is given.—[E.B.B.]

745. *ELEOCHARIS*. Rainha, B. V., 1956, Uma *Eleocharis* nova para a flora Portuguesa, *Agron. Lusit.*, **18**, 85-86. *Eleocharis flavescens* (Poir.) Urban has been discovered in Portugal as an adventive. A key is given to the Portuguese species of *Eleocharis*.—[D.H.K.]

750/1. *CLADIUM MARISCUS* (L.) Pohl.—See 253/1. *SIMUM LATIFOLIUM* L.

751/1. *KOBRESIA SIMPLICIUSCULA* (Wahlenb.) Mackenzie. Duman, M. G., 1956, Three new North American varieties of *Kobresia*, *Bull. Torr. Bot. Club.*, **83**, 192-195. The North American form of *Kobresia simpliciuscula* is described as var. *americana* var. nov. It differs from the form found in Europe and Greenland by its shorter achenes and its long, scale-like stalked rachillae.—[D.H.K.]

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754→ *GRAMINEAE*. Paunero, E., 1955, Las Avenas españolas, I., *An. Jard. Bot. Madrid*, **13**, 149-229. Describes and figures a number of Spanish grasses including some found in Britain.—[D.H.K.]

754→ *GRAMINEAE*. Sharma, A. K. & Deepesh, N. De, 1956, Cytology of some of the millets, *Caryologia*, **8**, 294-308. Studies on Indian millets, including *Setaria italica* $2n = 18$, *S. verticillata* $2n = 18$ and *S. glauca* $2n = 36$.—[D.H.K.]

754→ *GRAMINEAE*. Stebbins, G. L., 1956, Taxonomy and the evolution of genera, with special reference to the family Gramineae, *Evolution*, **10**, 235-245. The morphological characteristics are reviewed of two groups of grasses in which a large number of supposed inter-

generic hybrids have been obtained, namely the genera *Festuca* and *Lolium*, and the tribe *Hordeae*. This study leads to the conclusion that the supposed genera can be recognized only on the basis of certain conspicuous characteristics of the inflorescence, and if all of the morphological differences are considered together, or if emphasis is placed upon the perianth (lodicules) and mature fruit or caryopsis, the species concerned differ from each other no more than do different species belonging to the same genus elsewhere in the family. In other genera (*Glyceria*, *Lepturus*) morphological and cytological evidence indicates that these should be split. This type of evidence leads to the conclusion that the differentiation of genera comes about by means of processes which are a continuation of those operating in the origin of species, but with greater emphasis on the extinction of intermediate populations.—[Author's summary.]

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765. PHALARIS. Blake, S. T., 1956, A synthetic new species of *Phalaris* (Gramineae), *Proc. Roy. Soc. Queensland*, **67**, 27-28. A highly fertile allopolyploid of the cross *Phalaris minor* × *tuberosa* has been obtained. It has well marked morphological characters and is a promising pasture grass. It is described and figured as *P. daviesii*.—[D.H.K.]

765. PHALARIS. Vose, P. B., 1956, Dormancy of seeds of *Phalaris arundinacea* and *Phalaris tuberosa*, *Nature*, **178**, 1006-1007.

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780. AGROSTIS. Jones, K., 1956, Species differentiation in *Agrostis*, 2. The significance of chromosome pairing in the tetraploid hybrids of *Agrostis canina* subsp. *montana* Hartm., *A. tenuis* Sibth. and *A. stolonifera* L., *J. Gen.*, **54**, 377-393.

780. AGROSTIS. Jones, K., 1956, Species differentiation in *Agrostis*, 3. *Agrostis gigantea* Roth and its hybrids with *A. tenuis* Sibth. and *A. stolonifera* L., *J. Gen.*, **54**, 394-399.

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794. AVENA. Thurston, J. M., 1956, Weed studies: wild oats, *Rep. Rothamsted Exper. Station*, **1955**, 73-74. Gives details of further experimental studies on *Avena fatua* and *A. ludoviciana*.—[D.H.K.]

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794/6. *AVENA STRIGOSA* Schreb. Werneck, H. L., 1954, *Die Formenkreise des Sandhafers (Avena strigosa Schreb.) in Oberösterreich*.

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827. *BROMUS*. Wendelbo, P., 1956, Anthropochore *Bromus*-arter i Norge, *Blyttia*, **14**, 1-3. Of the 20 species of *Bromus* found in Norway only *B. ramosus*, *B. benekenii* and possibly *B. hordeaceus* var. *thominii* are indigenous. *B. japonicus* has been much confused with *B. arvensis*, while *B. racemosus*, *B. macrostachys* and *B. carinatus*, all new to Norway, are found in one locality each. *B. madritensis* is very rare.

B. sterilis has mostly been found on discharged ballast and is now very rare. *B. inermis*, found only twice in Norway before 1900, has been sown on railway embankments and is spreading rapidly in many parts of the country. *B. hordeaceus* var. *thominii* is discussed and doubt is thrown upon the probability of Scandinavian and British material seen being identical with *B. thominii* Hardouin described from France.—[D.H.K.]

829/1. *LOLIUM PERENNE* L.—See 826/4. *FESTUCA PRATENSIS* Huds.

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869. *ISOETES*. Chevassut, G. & Quezel, P., 1956, Contribution à l'étude des groupements végétaux de mares temporaires à *Isoetes velata* et dépressions humides à *Isoetes hystrix* en Afrique du Nord, *Bull. Soc. Hist. Nat. Afr. Nord*, **47**, 59-73. The plants associated with these two species of *Isoetes*, in temporary pools in the case of *I. velata* and in damp depressions and ruts in the case of *I. hystrix* are tabulated and the lists analysed. Many British species occur, particularly *Myosotis*

sicula in the first association and *Radiola linoides* in the second. The authors suggest that a study of these North African (particularly Algerian) *Isoetetalia* will help in the sociological study of French Mediterranean groups.—[E.B.B.]

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EXHIBITION MEETING, 1956

An Exhibition Meeting was held in the Lecture Hall of the British Museum (Natural History), London, S.W.7, by kind permission of the Trustees, on Saturday, November 24, 1956, from 2.30 to 5.30 p.m. Over 350 members and guests attended, and exhibits were arranged by 39 individuals and institutions. An account of these is given below, based on notes supplied by the exhibitors. For further details see *Nature*, **179**, 351-353 (1957).

PROGRESS OF THE DISTRIBUTION MAPS SCHEME

Maps were exhibited showing, in hundreds, the numbers of records received so far for each square of the National Grid. They indicated that the concentration in the London area is not now so obvious, many records from Scotland, Ireland and Wales having been received during the summer. Gaps still existed but the arrangement of the Field Meetings for 1957 was in some way designed to fill these.

As an example of productions from the Scheme maps were displayed showing the distribution of *Liparis loeselii*, *Himantoglossum hircinum*, *Orchis ustulata* and *Spiranthes spiralis*.—S. M. WALTERS & F. H. PERRING.

RECENT PLANT DISCOVERIES IN SCOTLAND

Herbarium specimens of the following plants were exhibited—*Saxifraga cernua*—Ben Nevis Range, coll. E. A. Blake; *Koenigia islandica*—Ardmeanach Peninsula, Mull, coll. R. W. M. Corner; *Melampyrum arvense*—Melrose, coll. R. W. M. Corner; *Carex buxbaumii*—parish of Urquhart and Glenmoriston, Easternness, coll. J. G. Roger and R. E. C. Ferreira; *Galinsoga ciliata*—Goldenacre, Edinburgh, coll. P. S. Green.

These specimens have now been deposited in the herbarium of the Royal Botanic Garden, Edinburgh.—THE COMMITTEE FOR THE SCOTTISH FLORA.

THE OBERGURGL MEETING; FLOWERS OF THE TYROL

This exhibit illustrated the visit made by a party of Junior members to the Austrian Tyrol in August 1956.

Photographs of the party and views of the area visited were shown by P. V. Chatfield, S. Cockerill, Miss A. Carreck, Miss P. Brookes, Miss N. Coward and Miss E. Sadler, while coloured slides of many of the plants found were exhibited in a display cabinet by P. G. Sheasby.

Paintings and sketches of the plants were provided by M. Edmunds and Miss S. Syanaga, and pressed specimens by C. J. Cadbury, D. L. Gilbert, M. F. Johnstone and A. W. Westrup.

A full log of the meeting and a list of all the plants recorded were compiled and shown by C. J. Cadbury. The full page account of the meeting which was published in *The Times Educational Supplement* of October 12, 1956, and a map showing the district visited and the routes taken completed the exhibit.—THE JUNIOR ACTIVITIES COMMITTEE.

G. C. DRUCE'S DISCOVERY OF INTROGRESSION

In Dr. G. C. Druce's *Flora of Berkshire* (1897) the following passage occurs on p. 370, commenting on the fact that *Linaria vulgaris*, previously a fairly constant species, had assumed greater variability in the Oxford district following the introduction of *L. repens*:—

"The question arises whether the variability of *L. vulgaris* (and other species) may have been caused by the pollination by a second species in one of its ancestors, so that the stability of the species has been disturbed? This may have taken place, not necessarily in the generation immediately preceding, but in a more remote ancestor, so that the hybrid influence had been gradually neutralized by successive pollination with a similar species. A hybrid is almost always handicapped by the more numerous individuals of one or the other parent, so that the chances are immensely against the pollination by a similar hybrid form. Hence in fertile hybrids the influence of one or other of the parents is gradually eradicated. My point is that after the traces of cross-pollination have disappeared, it does not follow that an equally stable species remains as that which existed before the cross-pollination took place. I think it will be found that the plant is more distinctly liable to variation, not necessarily in the direction of its remote ancestor, but in other ways. To remote hybridization I think must be attributed the extreme variability exhibited by certain genera, such as *Rubus*, *Rosa*, *Salix*, *Epilobium*, etc.; these genera, as we know, being especially prone to hybridization."

This is as clear a statement of the phenomenon now known as introgressive hybridization (or introgression) as one could wish for. It antedates by no less than thirty years the Masters Lecture to the Royal Horticultural Society given by the Danish botanist C. H. Ostenfeld, hitherto accepted (e.g. by Heiser, *Bot. Rev.*, 1949, **15**, 645) as the earliest statement clearly foreshadowing the studies of introgression that subsequently developed in the 1930's.

It would appear that Dr. Druce never pursued this line of thought further, at least in print. It may possibly have been at least partially responsible for his ever-increasing interest in the infra-specific variation of British plants.—D. E. ALLEN.

SOME OBSERVATIONS ON *SALICORNIA*

Drawings of fertile segments and photographs illustrating the habit of several forms of *Salicornia* found in south-east England were shown. Emphasis was placed on the value of the shape of the fertile segments in deciding whether an individual is a diploid or tetraploid.

It was suggested that habit and inflorescence were the more important characters in the tetraploid species, while segment shape was more important in the diploid species. *Salicornia prostrata* and *S. gracillima* appear to be respectively prostrate and unbranched forms of other diploid species.—P. W. BALL.

VERONICA FILIFORMIS SM. IN BRITAIN*

Herbarium specimens and photographs of *Veronica filiformis* were displayed together with a map showing the known distribution of the species as an established escape in Britain. Fruits of *V. filiformis* were also exhibited together with fruits of *V. persica* for comparison.—E. B. BANGERTEK & D. H. KENT.

A HYBRIDISATION EXPERIMENT IN STELLARIA

Living material of an artificial hybrid, *Stellaria media* (L.) Vill. × *S. neglecta* Weihe, produced in the summer of 1956, was exhibited together with herbarium sheets of the hybrid and its parents. The hybrid is morphologically similar to *S. neglecta*; it differs from both parents in having (3-) 8-10 stamens and in being highly male- and totally female-sterile.—P. M. BENOIT.

A NEW METHOD OF PRESERVING PLANTS

Plants are generally preserved by drying, since they rapidly decay when they are stored without being dried. This decay is caused partly by fungi and partly by chemical destruction from the plant's own enzyme system. Since gamma rays are known to kill fungi and inactivate enzymes, an attempt was made to sterilise freshly picked plants with gamma radiation. The plants exhibited were sealed in transparent packets, subjected to doses of from one-half to ten million reps, and stored for six months.

Moulds which covered the specimens which had not been irradiated were not seen on those which had received a million reps or more. All the specimens changed colour on storage, showing that enzymes were not inactivated by the doses used. The immediate effect of large amounts of radiation is that the plants are partly dehydrated. It is unlikely that this method of preserving plants will be used except for a few special purposes.—H. J. M. BOWEN.

SOME INTERESTING PLANTS FROM THE EUROPEAN HERBARIUM

This exhibit was prepared to enable examples of interesting and newly recorded plants to be seen, some of which were described in "Plant Notes", and in papers in the *Proceedings* and *Watsonia*. The following herbarium specimens were shown:—*Geranium robertianum* subsp. *robertianum*, subsp. *maritimum* (Bab.) H. G. Bak. and subsp. *celticum* Ostenf., *Phacelia viscida* (Benth. ex Lindl.) Torr., *Verbena elegans* Kunth, *Polygonum campanulatum* Hook. f., *Lathyrus heterophyllus* var. *unijugus* Koch†, *Festuca rubra* var. *arenaria* × *Vulpia membran-*

*See separate paper on p. 197.

†See also **Plant Notes**.—Ed.

*acea**, *Bromus benekenii* (Lange) Trimen and *Sarracenia purpurca* L.
—BRITISH MUSEUM (NATURAL HISTORY).

SOME SAMPLES FROM THE AUTOGRAPH COLLECTION

The Botanical Department's historic collection of letters forms the basis of its autograph collection, from which the following items were exhibited:—Sir Joseph Banks (1743-1820), one of the 20 volumes of transcripts and a volume of original letters. Robert Brown (1773-1858) and Jonas Dryander (1748-1810), collections of letters. From the miscellaneous collection:—George Bentham (1800-1884), William Borrer (1781-1862), John Thomas Irvine Boswell (1822-1888), William Curtis (1746-1799), Sir Joseph Dalton Hooker (1817-1911), Sir William Jackson Hooker (1785-1865), John Ray (1627-1705), Sir James Edward Smith (1759-1828) and Hewett Cottrell Watson (1804-1881).—BRITISH MUSEUM (NATURAL HISTORY).

SOME ARCTIC ALPINES AT THE SOUTHERN END OF THEIR RANGE

About sixty "alpine" and "arctic-alpine" species were found by the Cambridge Ecological Expedition to Macedonia in 1956, during an investigation in the north Albanian Alps, where these cross into Jugoslavia. These mountains lie only about seventy miles north of a line through the Balkans, south of which there is a very marked drop-off in the number of "alpine" species present. Photographs of the mountains and plant communities taken by N. A. Robinson were shown.

Herbarium specimens of nine species were exhibited accompanied by maps showing their distribution in the Balkans. These species were:—*Oxytropis campestris*, *Dryas octopetala*, *Alchemilla monticola*, *Empetrum hermaphroditum*, *Moneses uniflora*, *Antennaria dioica*, *Gnaphalium supinum*, *Homogyne alpina* and *Carex ornithopoda* var. *castanea*.—A. J. CARPENTER, P. J. GRUBB & G. A. GUYMER.

DR. DILLENIUS TAKES A HOLIDAY—MRS. H. N. CLOKIE.

LATE-GLACIAL PLANTS FROM SCOTLAND AND THEIR PRESENT AND PAST DISTRIBUTION

A few examples of plant remains (e.g. leaves, fruits, etc.) found in a Late-Glacial deposit in southern Scotland were shown. The site, Whitrig Bog, Berwickshire, lies near the Tweed, at an altitude of about 400 ft.

Some of the species represented, such as *Papaver* sect. *Scapiflora*, are now no longer growing in the British Isles: others like *Betula nana* and *Salix herbacea* have a much more restricted distribution today—occurring only on the higher mountains, or in the extreme north.

Maps showing the present distribution of *Betula nana*, *Salix reticulata*, *S. herbacea*, *Polygonum viviparum* and *Oxyria digyna* were exhibited with an indication of the known occurrences during Late-Glacial, Full-Glacial and Interglacial times. Three of these maps were

*See also **Plant Notes**.—Edl.

prepared in conjunction with the B.S.B.I. Maps Scheme and the Sub-department of Quaternary Research, Cambridge.—Miss A. P. CONOLLY.

CICENDIA FILIFORMIS IN NORTH WALES

Specimens of *Cicendia filiformis* (L.) Delarb. were exhibited from the south-western part of the Lleyn Peninsula, Caernarvonshire, discovered during August 1956.

This is the first time that *Cicendia* has been recorded from North Wales although it has been known from Pembrokeshire near St. David's Head for some years. Apart from this the species is almost entirely restricted to the extreme south and south-west coast of England and the south-west of Ireland.

A map prepared by the B.S.B.I. Maps Scheme was shown illustrating recent and older records.

The plants were growing in some abundance in and around a group of rocky pools on an otherwise rather barren heath within a mile of the sea. Some plants were half-submerged scattered in a dense sward of *Deschampsia setacea* (Huds.) Hack. and *Littorella uniflora* (L.) Aschers. Others were fringing the damp pool margins amongst *Radiola linoides* Roth, *Anagallis minima* (L.) E. H. L. Krause (*Centunculus minimus* L.) and a species of *Riccia*.—Miss A. P. CONOLLY & Miss P. M. SMITH.

VARIOUS METHODS OF BOTANICAL ILLUSTRATION

This exhibit was prepared to show, without bias, the merits and disadvantages of black and white photography and of certain methods of drawing and painting in botanical illustration.

The value of photography as an aid in routine work and in the recording of plant forms which are lost or much modified in drying was demonstrated by photographs of *Salicornia* and *Impatiens* (by D. H. Dalby). These showed also how photographs can provide impartial evidence where the faithfulness of drawings might be doubted.

The greatest weakness of photography, that of lack of selectivity, was remedied by the drawings and paintings of *Armeria*, *Geranium* and *Impatiens* (by G. W. Dalby), which showed how the essential character of a plant's growth habit can be recorded quickly in a field sketch, and how a finished illustration (in colour or black and white) can be produced from an annotated study. The great value of black and white drawings as a basis for reproduction by modern methods was also stressed.—D. H. DALBY & Miss G. W. DALBY.

RUMEX CONGLOMERATUS AND *R. SANGUINEUS*

Herbarium specimens of *Rumex sanguineus* and *R. conglomeratus* were exhibited with specimens of wild and cultivated intermediate forms between the two species. A report, and experimental results accompanying them, designed to show the difficulty of classifying these fertile intermediates under the present system, either as species, or as hybrids.—P. J. FIELD.

CEPHALANTHERA RUBRA IN BUCKS. (V.c. 24)*

Specimens and photographs of *Cephalanthera rubra* (L.) Rich. from a Chiltern beech wood were exhibited.—R. S. R. FITTER.

CEPHALANTHERA RUBRA

Photographs of this rare orchid from one of its Gloucestershire localities in 1956 were shown.—G. W. T. H. FLEMING.

A GLOUCESTERSHIRE *CAREX* MYSTERY

On June 24th, 1955, a visit was paid to the basic pit beside the crossroads west of South Cerney, near Cirencester, v.c. 33. In this pit there is some spongy marsh and a pond full of accumulating refuse, and there grow here several species of *Carex* and some hybrids. A considerable collection was made, mainly of *Carex lepidocarpa* hybrids. Among these specimens we found the sedge exhibited, which seems to be *Carex grahami* Boott. Since this putative species is apparently a Scottish endemic, confined to one or two spots in the Highlands, we were much surprised.

It was at first thought that an error as to the source of the specimen had inadvertently crept in, but after deep research into every conceivable possibility the unpalatable fact emerged that the locality was as genuine as was our surprise: the sedge could only have been collected in this pit, indeed one of us seems to remember picking it—the fragmentary nature of the specimen being due to its growing almost out of reach, and a well-balanced and daring grab being necessary to obtain a piece without total immersion in the water and refuse.

It must be accepted that the locality is right. But is our plant *Carex grahami*? Some who know the species well agree, while others have suggested that it is a hybrid sedge outwardly very like the Scots plant, and in fact so alike that distinction becomes difficult. It should be noted that *Carex hostiana* and *C. vesicaria* both grow in the pit. We finders prefer to make no comment, beyond stating that we both know *C. grahami* in Glen Clova whence we also exhibited a gathering for comparison.

An attempt to re-find it this year was as fruitless as the *Carex* species seen on the unavoidably late date when the pit was revisited. We shall try again.—R. A. GRAHAM & R. M. HARLEY.

MENTHA × *MAXIMILIANEA* IN BRITAIN

Five specimens of *Mentha* × *maximiliana*, a hybrid of *M. aquatica* × *rotundifolia*, collected by Dr. J. K. Morton, were shown.

These five presumed hybrids have little outwardly in common, and that there is no readily recognisable similarity as occurs in—for example—the hybrids of *M. aquatica* with *M. spicata* (= *M.* × *piperita*), and yet each individually suggests its origin as *M. aquatica* × *rotundifolia*, either in leaf shape, or in inflorescence form, or in other characters.

*See separate paper on p. 234.

The calyx, which by analogy with other mints provides the best feature for critical distinction, shows characters intermediate between those of the two putative parents, for instance the overall length of that of *M. aquatica* averages c. 4.0 mm.; while that of *M. rotundifolia* averages 1.95 mm.; and that of *M. × maximiliana* appears to be c. 3.3 mm. In addition two specimens, kindly lent by the Curator of the Cambridge University herbarium, were found to bear a few branched hairs, which occur profusely in *M. rotundifolia* but not in *M. aquatica*.

One presumed hybrid has an inflorescence outwardly indistinguishable from that of *M. aquatica*, but the calyx is too short for this latter, and the leaves immediately suggest a hybrid of this mint with *M. rotundifolia*. The chromosome number (obtained by Dr. Morton) is 108, suggesting a back-cross of a fertile amphidiploid hybrid of *M. × maximiliana* with the *M. aquatica* parent:—

$$\frac{[(\text{aquatica } 96 + \text{rotundifolia } 24 = 60) \times 2 = 120] + \text{aquatica } 96 = 108}{2 \qquad \qquad \qquad 2}$$

These five occurrences are the only ones that have so far come to light as reasonably certain examples of this hybrid in Britain.—R. A. GRAHAM & R. M. HARLEY.

THE DISTRIBUTION OF *HIPPOPHAE RHAMNOIDES* IN THE BRITISH ISLES

A map giving known localities for the Sea-buckthorn (*Hippophae rhamnoides* L.) was shown based on both native and introduced records given in literature, field records, and herbarium material so far examined. It was indicated that this shrub is now recorded from 76 vice-counties as against 39 given in Druce's *Comital Flora of the British Isles* (1932). The exhibit was further illustrated by herbarium sheets, photographs, and living material in fruit.—E. W. GROVES.

PHENOTYPIC AND GENOTYPIC VARIATION IN SOME BRITISH POPULATIONS OF *MINUARTIA VERNA*

The range of environmental variation was illustrated with plants from sheltered mountain cliffs and exposed habitats, whilst the genetic variation was demonstrated with fresh material grown under uniform conditions. It was shown that environmental changes are capable of obscuring in the field the small genetic differences between the populations. The Lizard plants are the most distinct, but the features referred to in the Floras and the basis of the statement that the plants belong to subsp. *gerardi*, are practically all environmental. Wide variation also exists in seed size and morphology, but all British plants examined have a diploid chromosome number of 24.—G. HALLIDAY.

ANTENNARIA DIOICA VAR. *HYPERBOREA*

This taxon was compared with the sexual *Antennaria dioica* and the apomict *A. alpina*. In its morphology and geographical distribution it is much closer to the former. A scree habitat on Rhum was illus-

trated where it grew together with the typical *A. dioica*. It may well interbreed with this, but while it is a most distinct plant, until its breeding behaviour and chromosome number are discovered it is advisable to retain varietal status and not elevate it to specific rank as did D. Don.—G. HALLIDAY.

GALINSOGA CILIATA IN A BIRMINGHAM STREET

Specimens of *Galinsoga ciliata* found growing on the pavement of a busy Birmingham street were exhibited. This appears to be the first record for this species in v.c. 38.—W. H. HARDAKER.

FLORA OF WARWICKSHIRE: SPECIES DISTRIBUTION AND HABITAT ANALYSES

The distribution, habitat and frequency of plant species in Warwickshire are being surveyed by a method of area recording described below. The exhibits showed stages in the method used and gave some interim data and maps.

The county is divided into units of one square kilometre, identical with the smallest subdivision on 1" maps showing of the National Grid. These "basic squares", of which there are some 2,500 in Warwickshire, are being surveyed by a team of botanists from the Botanical Section of the Birmingham Natural History and Philosophical Society and the Botany Department of the University.

The method is roughly as follows: each collector takes one or more basic squares and is registered for these on a "Master map". Several visits at different times of the year are made to each square being surveyed, and a complete list of all species found is made together with habitats and frequencies. The habitats are conveniently grouped into eight major categories, each with subdivisions.

Two maps of 1 km. squares and the plant lists obtained from them were shown. A Collector's Card for use in the field is also available.

When the squares are completed the lists are sent to the Recorders and the records are copied on to species cards. The species cards are arranged so that the records for 1 km. squares are written in the same spatial relationship and on the same scale as the 1" ordnance survey map. Each card represents a 10 km. or major square and the whole of the cards can be laid out so that they themselves form a map.

The maps shown in the rest of the exhibit were preliminary attempts at recording the distribution of a number of species. A distinctive symbol is used for each habitat category. In some cases an attempt has been made to compare the distribution of calcicolous and calcifugous plants with the known geological structure of the county. A geological map showing the position of the chief lime-bearing strata was shown.

Finally, a series of habitat analyses has been made to show both the habitat range and preferences of the species mapped. These analyses show that although many species overlap in habitat range considerably, their preferences do not necessarily coincide.—J. G. HAWKES & R. C. READETT.

ASPECTS OF VARIATION AND REPRODUCTIVE BIOLOGY IN *DACTYLORCHIS*

Species within the genus *Dactylorchis* show a remarkable amount of variation in floral characteristics, sufficient to have given rise to classificatory difficulties. The exhibit illustrated the different sorts of variation, geographical in *D. fuchsii* and ecological in *D. incarnata*. In addition to intraspecific variation, hybridisation takes place frequently in nature to produce hybrid swarms. Of particular interest are the hybrids which arise between species of different chromosome number, since they may be expected to be more or less sterile. Some, however, show a degree of fertility, and produce embryos with the same chromosome number as one of the hybrid parents. It seems probable that these arise without any fertilisation, directly from an egg cell with the parental chromosome number.

The variation in some dactylorchid species was illustrated by mounted floral parts, wall maps, photographs and some microscope preparations of dactylorchid cytology.—Professor & Mrs. J. HESLOP-HARRISON.

A PROPOSED FLORA OF EUROPE

A committee of British and Irish botanists has been formed to study the possibilities of writing a "Flora of Europe". Progress in the planning of the proposed Flora has been so satisfactory that it was decided to stage an exhibit explaining the nature of the Flora and the general aims of the Editorial Committee.

The exhibit comprised a map of Europe outlining the area it is proposed to cover; a list of standard Floras for all the countries or territories involved; a catalogue of works pertaining to the flora of Europe in the library of the Botany School, Cambridge, running to several hundred titles; a selection of current European Floras showing diverse criteria; a short paper pointing out some of the major discrepancies between British and European taxonomy and the need for a less insular attitude in taxonomic studies in this country; a leaflet explaining the aims of the Committee; a proof of some sample pages of the Flora which have been prepared; and a guide for the use of collaborators.—V. HEYWOOD & S. M. WALTERS.

VARIATION IN *BROMUS MOLLIS* L. AGG. IN THE LIZARD PENINSULA.—
—C. JEFFREY.SOME PROBLEMS IN THE *ACUTAE* SECTION OF *CAREX*

(a) *CAREX JUNCELLA* (Fr.) Th. Fr. and *CAREX NIGRA* (L.) Reich.

C. juncella is a very caespitose plant with no stolons and a root stock with very short nodes. The basal sheaths and leaf bases are shiny and of a characteristic red-brown colour. The whole plant shows a characteristic habit, growing in tussocks up to 50-60 cm. high, resembling *C. elata* All. The subcaespitose form of *C. nigra* is a growth form characteristic of fens with standing water and reducing conditions. The tussocks are often 60-80 cm. high but consist of elongated, upright

rootstocks, and "pioneer" rhizomes (stolons) are always present. The ecological preferences of *C. juncella* are quite different from those of the subcespitose form of *C. nigra* in showing profuse tussock growth at the edges of streams and in such habitats as receive good water circulation. The fruit characters of *C. juncella* show the same variation seen in forms of *Carex nigra* and the colour variants, e.g. var. *melaena* with black fruit, namely, shape ranging from ovate to oblong-lanceolate, size 3.0-2.0 mm. \times 1.8-1.1 mm. The female glumes are equally variable in size and in relation of size to that of utricule. There is very little that keeps *C. juncella* distinct as a species from *Carex nigra*. Many records of *C. goodenowii* var. *junceae* (Fr.) Kükenth., especially in Middle Europe, refer to the subcespitose form. All tussocky forms of *C. nigra* should be looked at closely; as yet *C. juncella* has been recorded for the British Isles.

(b) *CAREX ACUTA* L. AND *CAREX AQUATILIS* WAHLENB.

Distribution maps of the two species in Europe and the British Isles were exhibited, showing that there is considerable overlap especially in the Midlands and north of England. The table below gives some main points of difference between the species and it is hoped that record material, especially for the Distribution Maps Scheme will be looked at more closely. I would be very pleased to see any material of this group.

SOME MAIN DIFFERENCES BETWEEN *C. ACUTA* AND *C. AQUATILIS*

ACUTA	AQUATILIS
1. <i>Rootstock</i> Basal sheaths shiny orange brown, acute; gradation in shape and size to relatively few leaves on fertile shoot.	Sheaths grey brown and not shiny; no or very few intermediate sheaths, numerous leaves at base of culm.
2. <i>Culm</i> Culm difficult to break: very rough especially under inflorescence. Triquetrous.	Culm brittle and snaps on bending: smooth under inflorescence. Trigonus.
3. <i>Leaves</i> Margins of leaves revolute.	Margins often involute.
4. <i>Floral characters.</i> Female glume acute-triangular often inrolled at apex.	Female glume more ovate and obtuse. N.B.—The apex may be inrolled (cuspidate) to give the appearance of being acute.
Utricule 2.5-3.0 mm. long, apex acute to beak.	Utricule 2.0-2.5 mm. long, apex rounded to short beak.

A. C. JERMY.

3-D PLANT PHOTOGRAPHS

A number of photographic slides in three-dimensional colour were shown. The subjects were normal and close-up views of British plants.—L. C. & S. T. JERMYN.

CARDAMINOPSIS PETRAEA

Photographs of specimens of *Cardaminopsis petraea* were exhibited to demonstrate the variation between widely separated populations, between ecologically distinct populations, and within a population. Attention was drawn to such characters as habit, size, hairiness and leaf shape, and reference made to the developmental and seasonal variation in the size and shape of the leaves. An annotated distribution map showed the range of this montane species in the British Isles.—B. M. G. JONES.

DRAWINGS OF SOME BRITISH PLANTS

20 plates of coloured drawings of British willows, rushes, sedges and grasses were shown.—Rev. W. KEBLE MARTIN.

AREMONIA STILL IN BRITAIN

A special search made on 5th May 1956 by Miss U. Duncan, J. Grant Roger and D. McClintock succeeded in refinding near Rait, Perthshire, *Aremonia agrimonoides* (L.) DC. Subsequently during the year it was seen at, or from, three further wild localities and one other, all in E. Scotland. It was grown by Philip Miller in 1739, but has not been regarded as a garden plant for many a long year. A list of records traced, and a map marking them were exhibited as well as herbarium and living specimens, and living specimens of *Agrimonia eupatoria* L., *Geum urbanum* L. and *G. macrophyllum* Willd. with which it has been confused.—D. McCLINTOCK.

LAGAROSIPHON MAJOR

This aquarists' throw-out, first detected in Britain in 1944 and since seen in three other places, was found in five fresh ones in 1956, two in Essex, two in Jersey and one in Alderney. Specimens were shown and a map of its localities so far. Water gardeners know this plant as "*Elodea crista*", and specimens were also laid out of the four other related species now in Britain—*E. canadensis* Michx., the spreading *E. callitrichoides* (Rich.) Planch., *E. nuttallii* (Planch.) St. John, in which Mr. J. E. Dandy has recently recognised our "*Hydrilla*", and *Egeria densa* Planch. (*Elodea densa* (Planch.) Casp.).—D. McCLINTOCK.

AN AMERICAN SPECIES POSSIBLY NATIVE IN EUROPE

Hypericum canadense L., a member of the American group of plants, native in W. Europe, was collected in July 1954 by Prof. D. A. Webb on the western shores of L. Mask in Connemara. In August 1956 it was visited again by him and D. McClintock independently and

named in September. Living Irish plants, fresh seeds, Irish and American dried specimens, and photos of it and one of its habitats were shown, together with a mapping card of 168 plants growing near by.—D. McCLINTOCK.

MONERMA CYLINDRICA

Specimens were exhibited of *Monerma cylindrica*, a Mediterranean grass, found in some quantity on a rubbish-tip at Earlswood, Surrey.—Miss B. M. C. MORGAN.

BRITISH POPPIES

Herbarium sheets showing characteristics of five British species of *Papaver* were exhibited, together with notes on the habitats, distribution, taxonomy and breeding behaviour of the plants. *P. rhoeas*, *P. dubium* and *P. argemone* occur as weeds of cultivated land while *P. hybridum* and *P. lecoqii* are restricted to road verges, old building sites and waste places.

These five species are usually differentiated on characters of the capsule, but this character does not give a satisfactory separation of *P. dubium* and *P. lecoqii*. A list of characters which can be used to distinguish these two species was included.

Hybrids are rare in the field, though some seed set was obtained in a number of experimental cases of inter-specific crossing. *P. dubium* × *P. lecoqii* and its reciprocal cross gave good seed set in every case attempted, which is significant in view of the close morphological relationship of the parents. None of the species appears to be self-fertile.

These poppies represent a group of closely related species in which the outbreeding mechanism is well developed, which commonly co-exist but which nevertheless remain distinct owing to strong genetic barriers.—I. H. McNAUGHTON.

A HYBRID SEDGE FROM WEST NORFOLK

Specimens were shown of the hybrid *Carex pseudocyperus* × *rostrata* found by the exhibitors growing at Cranberry Rough on the former site of Hockham Mere, W. Norfolk, v.c. 28, in 1955.

No achenes had developed on the hybrid itself but one sheet showed a specimen from another plant that appeared to be intermediate between the hybrid and *C. rostrata* in which a few achenes had developed, probably owing to its being nearer one of the fertile parents. An accompanying photograph showed the hybrid with its parents. For a full account see *Proceedings B.S.B.I.*, 2, 1-3 (1956).—C. P. PETCH & E. L. SWANN.

GENTIANELLA SEPTENTRIONALIS

The statistical results of work in progress on this species were summarised, and shown in graphical form. These demonstrated that there are marked discontinuities in the pattern of variation in *Gentianella*

septentrionalis, which are closely correlated with differences in geographical distribution. In addition, it was shown that the range of *G. septentrionalis* sensu lato, hitherto believed to be restricted to vice-counties 105-112, must be extended to cover a large area in Mid-Scotland.

Specimens were exhibited of the various morphological groups, and included the type specimens of both *Gentiana amarella* var. *calycina* Druce and of *Gentiana amarella* subsp. *septentrionalis* Druce. Both these names are now referable to *Gentianella septentrionalis* (Druce) E. F. Warburg.—N. M. PRITCHARD.

KENTISH PLANT DISCOVERIES IN 1956

Herbarium specimens of the following Kentish plants were exhibited:—*Epipactis phyllanthes*, *Sagittaria sagittifolia*, *Alisma lanceolatum*, *Potamogeton alpinus*, *Sparganium minimum* and *Artemisia verlotorum*.—F. ROSE.

THE FLORA OF THE PAS DE CALAIS

Herbarium specimens were shown to illustrate:—

(1) Plants which are in most cases local, or rare, in Britain as a whole, but especially characteristic of eastern Kent, and which appeared characteristic of, and sometimes common in, corresponding habitats in the Pas de Calais.

(2) Plants of Britain which are absent in Kent, but were seen in the Pas de Calais (their British distributions proved to be either East Anglian, northern or western; several were dune species).

(3) Plants absent as natives in Britain, but observed in the Pas de Calais. These include species from three habitats:—(a) Scrub on chalk: *Alnus incana*, *Euphorbia dulcis*, *Senecio spathulæfolius*, *Seseli montanum* (only seen in Somme). (b) Dunes: *Veronica teucrium*, *Muscari comosum*, *Carex trinervis*. (c) Arable fields on chalk: *Adonis aestivalis*, *Legousia speculum-veneris*.—F. ROSE.

AN INTERESTING *DACTYLIS* FROM THE LAKE DISTRICT

A herbarium specimen was exhibited of a *Dactylis* collected from calcareous rock ledges in shade at about 500-550 ft. in an ash-wych elm wood near the Yews in Borrowdale, v.c. 70. Mr. C. E. Hubbard has examined it and reports that it appears to resemble var. *pendula* Dumort. (1827), but this plant is without description by its original author. It matches specimens gathered by Mr. Hubbard in damp woodland between Patterdale and Brothers Water, v.c. 69 in 1939. It may be a diploid. I have a plant under cultivation which it is hoped to have cytologically examined.—F. ROSE.

VARIATION IN THE *POLYGONUM AVICULARE* AGGREGATE

Herbarium specimens were exhibited of some of the species which have been delimited by Jordan and Lindman within the *Polygonum*

aviculare complex. Plants were included under the names of *P. heterophyllum* Lindm., *P. aequale* Lindm., *P. calcatum* Lindm. and *P. ruri-ragum* Jord. ex Bor. Other anomalous forms which were thought to resemble *P. littorale* Link were included from maritime habits such as salt marshes and sand-dunes.—B. T. STYLES.

PHOTOGRAPHS AND SPECIMENS OF PLANTS MAINLY FROM JERSEY

A collection of photographs in colour of plants seen in Buckinghamshire in the course of the B.S.B.I. Whitsun Field Meeting were shown, together with herbarium specimens and photographs of a number of rare or, uncommon plants from Jersey.—Mrs. K. LE SUEUR.

VARIATION IN *POA ANNUA*

Poa annua shows a considerable amount of genotypic variation, as well as the phenotypic variation to be expected from the great range of habitats it occupies.

Specimens illustrating variation in habit, duration, amount of anthocyanin and hairiness of the lemma were exhibited. A fuller account of this variation will appear in *Watsonia*.—T. G. TUTIN.

SOME SCOTTISH PLANT RECORDS

Live specimens of *Equisetum hyemale* from v.c. 95 and v.c. 96b, were shown with herbarium sheets as follows:—*Carex norvegica*, Iawers range, v.c. 88; *Lamium maculatum*, v.c. 95; *Gagea lutea*, v.c. 95; *Poa chaixii*, v.c. 95; *Festuca altissima*, v.c. 95; *Bromus inermis*, v.c. 95; *Equisetum pratense*, v.c. 95; *Carex burbaumii*, v.c. 96; *Alopecurus aequalis*, v.c. 96, new to Scotland; *Poa flexuosa*, v.c. 96; *Poa nemoralis*, an interesting form from Hobkirk, v.c. 109; *Equisetum hyemale*, v.c. 109.—Miss M. McCALLUM WEBSTER.

REPORT OF THE COUNCIL FOR 1956

The report and the audited accounts printed below cover the period from 1st January to 31st December 1956. Comparative figures for 1955 are given in brackets.

MEMBERSHIP. During the year 200 (136) new members joined the Society and we lost 42 (60) by reason of death, resignation and the operation of Rule 6 (e). We lost by death Mr. H. N. Ridley, an Honorary Member, shortly after his hundredth birthday. We report also with regret the death of a member, Miss H. S. A. Dent, J.P., president since 1948 of the Wild Flower Society. The net increase in membership was 158 (76) and the total membership at the end of the year was 1,190 (1,032).

FINANCE. Notwithstanding the very large increase in membership, the receipts from subscriptions, £1,119, show only a rise of £105 compared with £1,014 received in 1955. There appears to be a certain reluctance among some of the older members to pay promptly and it is to be hoped that this may be remedied in 1957. Costs of sending out reminders are very high and members could save much of this by remitting subscriptions and arrears (if any) as quickly as possible to the Honorary Assistant Treasurer.

For the first time in three years the cost of printing *Watsonia* and *Proceedings* has not exceeded the receipts from subscriptions but this is brought about by a reduction in the number of pages in the *Proceedings* from 298 in 1955 to 196 in the present year.

Sales of periodicals and publications show a marked decline from £452 to £285. This is partly accounted for by a drop in the sales of the 1954 Conference Report and the *Flora of Buckinghamshire*. The forecast made in the 1955 Report of a substantial loss on the 1954 Conference Report materialised as sales to date amount to £178 while the cost of publication was £429.

Although the balance of £1,070 (£1,000) in the Publications Fund appears very satisfactory it must be borne in mind that this account of slowly accumulating funds will soon be charged with heavy commitments. Not only the 1956 Conference Report but also the *Index of British Herbaria*, the *Flora of Scilly*, and the new *British Plant List* will be charged to this fund. The last work will be published jointly with the British Museum (Natural History) with the assistance of a donation from the Hanbury Trust and it is anticipated that it will enjoy a large circulation among amateur and professional botanists alike.

In order to gain increased interest the sum of £500 was transferred from the Post Office Savings Bank to 4% Defence Bonds. Our total assets at the end of the year are £1,650 (£1,536).

There would appear to be no immediate cause for concern over the financial status of the Society but economic conditions may alter very

quickly and the position must be watched closely. Should the final results of the recent drive to gain still more members be disappointing, the raising of the rate of subscription may well be unavoidable.

DEVELOPMENT AND RULES COMMITTEE. Secretary: Mr. D. E. Allen.

This committee has been active and, in addition to its routine work of revising the panels of referees, has produced a new plan for decentralising the Society's work. A drive for new members among persons who have assisted with the Distribution Maps Scheme has been so far satisfactory. The Rules and Prospectus of the Society which had been two publications have now been reprinted and combined into one.

MEETINGS COMMITTEE. Secretary: Dr. H. J. M. Bowen.

A further decline has been shown in the attendances at field meetings but the work done during the meetings has been as useful as ever. The advertised programme was carried out with a total attendance of 105 (151) made up as follows: Buckingham 25, Exmoor 14, West Cumberland 12, Swansea 35 with the addition of some local botanists. Llandrindod Wells 12, Guildford 7. By contrast a field meeting to Hitchin on the day following the spring conference attracted over 80 members and guests.

The spring conference, the subject of which was "Progress in the Study of the British Flora", was attended by 161 compared with an attendance of 234 at the previous conference. We are grateful to the trustees of Bedford College and the head of the Department of Botany for the use of premises for the conference.

A very successful joint conference with the British Ecological Society was held at Southampton in September. Papers were read at the session for which the Society was responsible by Mr. M. J. Cole, Dr. D. P. Young, Mrs. J. P. Newbould, Dr. M. J. Borrell, Mr. N. M. Pritchard and Dr. C. T. Prime. Members were the guests of Professor J. E. G. Raymont and Professor W. T. Williams at a joint soirée. To these and Dr. J. M. Lambert, who was responsible for its organisation, we are grateful for the success of a new venture which attracted an attendance of 65. A field meeting to the New Forest, which was divided into three parties to pursue varied interests, was attended by 75.

The Annual Exhibition Meeting was held on 24th November in the Lecture Hall of the British Museum (Natural History) by kind permission of the trustees and was attended by 350 (300) members and guests. A showing of slides taken during the junior meeting at Obergurgl (Austria) was much appreciated. There were 46 (41) exhibits. The meeting was followed by a conversazione at Crosby Hall, Chelsea, at which there was an attendance of 87 (62).

Seven field meetings and a regional meeting at Birmingham have been arranged for 1957.

PUBLICATIONS COMMITTEE. Secretary: Mr. P. J. Wanstall.

During the year two parts of *Watsonia*, totalling 92 pages and completing Volume 3, and two parts of *Proceedings*, totalling 196 pages, have been issued.

The report of the 1956 conference, *Progress in the Study of the British Flora*, is now in proof stage and should be published soon. The *List of British Vascular Plants* is now being printed. This is being published jointly with the British Museum (Natural History) and will be eagerly awaited by members. Estimates are being sought for the *Index of British Herbaria* which it is hoped may soon be published.

Specimens of the Society's publications were exhibited at the Moscow Exhibition of British and American publications in October and at the Leipzig Fair in September.

We are again grateful to Mr. E. B. Bangerter for handling so efficiently the orders for our publications and to the trustees of the British Museum (Natural History) for facilities for their storage. We also wish to thank Professor Pearsall for the use of the library of the Department of Botany of University College for meetings of the committee.

CONSERVATION COMMITTEE. Secretary: Mr. J. E. Lousley.

The Committee has met three times during the year, twice jointly with representatives of the Nature Conservancy. Collaboration has continued closely with the Nature Conservancy and nine members have provided reports on twelve areas for which information was required; but on account of inaccessibility and other reasons, it has proved difficult to obtain reports on the remaining areas on the Conservancy's list.

During the year new threats have arisen to the classic areas in Upper Teesdale from proposals by the Tees Valley Water Board for the construction of new reservoirs. Plans made public in March for reservoirs at Cauldron Snout and Cow Green involved the inundation of areas of no great interest but the reservoirs were dangerously close to Widdy Bank Fell. Fortunately these plans proved impracticable and a fresh site near Dine Holm Scar and Cronkley Farm is being surveyed. We are following closely the new proposals. Other areas considered during the year included Berry Head, Devon; Farlington Marshes, Hants.; Hatfield Forest, Essex; Roydon Common, Norfolk; Knocking Hoe, Beds.; and a station for *Hierochloe odorata* in Renfrew. We have drawn the attention of the Nature Conservancy to the importance of safeguarding an area of raised bog in Cumberland, and the probable site of the original strain of *Spartina townsendii* at Hythe, Hants. The difficult problem of conserving interesting stretches of canal has been given careful consideration, and suggestions from members of suitable lengths of canal would be welcome. Numerous other threats have been reported during the year and appropriate action taken.

MAPS COMMITTEE. Secretary: Professor A. R. Clapham.

Progress made with the Distribution Maps Scheme during its third year is the subject of a separate report made by the Director. The accounts which are kept separately from the Society's accounts are similarly shown elsewhere.

JUNIOR ACTIVITIES COMMITTEE. Secretary: Mr. A. W. Westrup.

Six field meetings intended mainly for fifth and sixth form pupils of grammar schools were held in England during the year. The total attendance was 259 (232) made up as follows: Chipstead Valley 61, West Wittering 33, Kenfig Burrows 38, Epping Forest 51, Miller's Dale 60, Runnymede 76. A visit to the South London Botanical Institute was attended by 56 young persons. Fresh ground in the history of the Society was broken with a residential meeting abroad at Oberurgl in the Austrian Tyrol. With an attendance of 29 this was a great success and we are indebted to Professor and Frau Gams for their most helpful assistance. A programme arranged for 1957 includes field meetings, a residential meeting in Ireland and a visit to the Linnean Society. Progress continues with compilation of a panel of lecturers and the exploration of means of preparation of a cinematograph film.

COMMITTEE FOR THE STUDY OF THE SCOTTISH FLORA.

During the first full year of its existence the committee arranged two exhibition meetings and held five field meetings. The latter had a total attendance of 87 made up as follows: Dalmeilington 3, Peebles 9, Cromarty 7, Hawick 8, Ben Ledi (intended for juniors) 60. Reports of these meetings will appear in *Proceedings*, Vol. 2, Part 4.

An exhibition meeting held in the spring at the Royal Academy Inverness, by kind permission of the Director of Education and the Rector, was attended by 130. Ten exhibits were shown and after the meeting Mr. J. Grant Roger showed some colour transparencies of some Scottish high-altitude plants. Another meeting held in the autumn in the Department of Botany of Glasgow University, by kind permission of the Regius Professor of Botany and of the University Court, was attended by about 80 and 15 exhibits were shown. After the meeting Miss E. P. Beattie gave a lecture on the Maps Scheme and Mr. B. W. Ribbons showed some colour transparencies mainly of plants of the Scottish coast.

During the year Mr. D. M. Henderson was appointed by the Botanical Society of Edinburgh in the place of Mr. B. L. Burt as one of its representatives on the committee. The committee is grateful for all the assistance of the members and officers of the two sponsoring societies and other friends for their continued helpful co-operation.

GEORGE TAYLOR, President.

J. G. DONY, General Secretary.

By Order of the Council.
6th February 1957.

GENERAL FUND.

1955		1955			
£64	To Balance from 1955 ...	£34 10 6	£50	By Transfer to Journal Fund	£250 0 0
1014	„ Subscriptions received ...	1119 3 6	750	„ Transfers to Proceedings Fund ...	400 0 0
9	„ Receipts from Advertisements ...	9 1 0	40	„ Transfers to Meetings Committee Fund ...	10 0 0
44	„ Income-tax Recovered ...	46 11 8	—	„ Grant to Maps Scheme ...	50 0 0
33	„ Interest on Post Office Savings Account ...	33 11 6	28	„ Notional Interest to Publications Fund ...	25 0 0
—	„ Interest on 4% Defence Bonds ...	14 19 8	11	„ Hire of Rooms for Council and Committee Meetings	10 16 6
41	„ Sales of Reports and Reprints ...	—	1	„ Cheque Book ...	0 10 0
			16	„ Duplicating Minutes of Meetings ...	14 0 2
			24	„ Officers' Expenses ...	15 13 11
			1	„ Fire Insurance ...	1 2 6
			4	„ Advertising Expenses ...	—
			3	„ Telephones ...	4 6 1
			17	„ Committee Secretaries' Expenses ...	20 8 1
			159	„ General Printing and Stationery ...	49 16 5
			—	„ Printing Notices of Meetings ...	130 17 0
			—	„ Foreign Exhibition Expenses ...	3 3 0
			—	„ Recruiting Drive Expenses ...	26 12 11
			2	„ Affiliation Fee to Biological Council ...	—
				„ Postages and Petty Expenses :	
				Hon. General Secretary ...	£18 5 1
				Hon. Treasurer ...	11 2 6
				Hon. Assistant Secretary ...	21 3 11
				Hon. Assistant Treasurer ...	10 0 0
				Parcelling Publications at Nat. History Museum ...	10 0 0
			64		70 11 6
			35	„ Balance ...	174 19 9
£1205		£1257 17 10	£1205		£1257 17 10

JOURNAL FUND

1955		1955			
£360	To Balance from 1955 ...	£193 18 9	£374	By Printing <i>Watsonia</i> and postages :—	
50	„ Transfers from General Fund ...	250 0 0		Vol. III, part 5	£224 17 0
158	„ Sales of <i>Watsonia</i> ...	127 13 2		Vol. III, part 6 (part payment)	220 0 0
					£444 17 0
			194	„ Balance ...	126 14 11
£568		£571 11 11	£568		£571 11 11

PROCEEDINGS FUND.

1955		1955	
£46	To Balance from 1955	£121 15 4	£695 By Printing <i>Proceedings</i> and postages thereon:—
750	„ Transfers from General Fund	400 0 0	Vol. II, part 1 £258 10 3
21	„ Sales of <i>Proceedings</i>	32 2 7	Vol. II, part 2 206 8 10
			122 „ Balance
			£494
£817		£553 17 11	£817
			£553

PUBLICATIONS FUND.

1955		1955	
£1132	To Balance from 1955	£1000 7 11	£350 By Printing 1954 <i>Conference Report</i>
28	„ Interest for year on initial balance at 2½% (per General Fund)	25 0 0	Part paid
3	„ Sales of 1948 <i>Conference Report</i>	10 5 7	— „ Expenses editing <i>Conference Report</i>
9	„ Sales of 1950 <i>Conference Report</i>	10 4 2	52 „ Non-recurring items
22	„ Sales of 1952 <i>Conference Report</i>	21 16 2	1000 „ Balance
112	„ Sales of 1954 <i>Conference Report</i>	66 4 5	
68	„ Sales of <i>Flora of Buckinghamshire</i>	3 2 1	
14	„ Sales of <i>Comital Flora</i>	12 5 4	
4	„ Sales of <i>Flora of Northamptonshire</i>	1 7 6	
£1392		£1150 13 2	£1392
			£1150

MEETINGS COMMITTEE FUND.

1955		1955	
£10	To Transfer from General Fund	£10 0 0	£56 By Balance from 1955
17	„ Field Meetings Fees	14 1 6	— „ Loss on 1956 <i>Conference</i>
1	„ Balance	3 1 2	— „ Half-expenses, Southampton Meeting
			12 „ Expenses, Exhibition and Conversazione
			10 „ Secretarial Expenses
£58		£27 2 8	£58
			£27

The Balances on Life Members' and Benevolent Funds remain unchanged for the year at £145 12s 0d and £39 11s 0d. respectively.

BALANCE-SHEET as at 31st December 1956.

		1955	
234	General Fund	£174 19 9	£400 500 National Savings Certificates, at cost
194	Journal Fund	126 14 11	£400 0 0
22	Proceedings Fund	88 18 10	1 Meetings Committee's Fund
100	Publications Fund	1070 16 3	Debit Balance
146	Life Members' Fund	145 12 0	1069 Deposit at Post Office Savings Bank
40	Benevolent Fund	39 11 0	702 8 10
—	Cheques issued but not presented for payment	3 7 3	— 4% Defence Bonds
			500 0 0
			66 Cash at Bank
			44 10 0
336		<u>£1650 0 0</u>	<u>£1536</u>
			<u>£1650 0 0</u>

Examined and found correct,
17th January 1957.

(Signed) J. H. G. PETERKEN, Hon. Auditor.
.. E. L. SWANN, Hon. Treasurer.

DISTRIBUTION MAPS SCHEME
THIRD ANNUAL REPORT TO 31st DECEMBER 1956

Reasonable progress has been made throughout the year. The Cambridge office has been kept busy—hectically busy at times—and the response of volunteer recorders (there are now about 3,000 names on our books) has far exceeded expectations. Many of the new volunteers offered as a result of an article on the Scheme in the *Observer*, to which the response was unexpectedly large. Following this, B.B.C. publicity was obtained on “Radio News-reel”, the “Countryside in August” and the “Naturalists’ Notebook”.

The Scottish office has been transferred from the Edinburgh office of the Nature Conservancy to the private address of the Scottish officer, Miss E. P. Beattie, who succeeded Mrs. M. E. D. Poore in February 1956. The response of Scottish field botanists in general and the work of the Scottish Flora Committee have been most gratifying, and considerably more progress has been made, particularly with remote areas, than was expected. In Ireland, too, the numbers of squares adequately recorded, both from the Dublin and the Belfast offices, is quite encouraging. The following data gives some indication of progress:

<i>No. of 10 km. squares in:</i>	<i>Species recorded</i>			
	>250	>150	>50	<50
England and Wales	841	314	237	266
Scotland	214	195	238	335
Ireland	108	204	207	331

The specially planned recording field meetings in 1956 did excellent work, in particular those in Radnor (34 squares covered) and Bucks. (25 squares covered).

There are approximately 330,000 records in the system and about the same quantity at the Regional card stage. About 125 species have been completed from herbaria and literature. The speed of incorporation of records has given rise to anxiety and the possibility of employing a second (part-time) operator has been discussed, but no action has yet proved necessary.

During the year negotiations on the future of the Scheme, the machinery and the card index have proceeded with the Nature Conservancy. These have not yet been completed, but much thought has been given to possible long-term development.

Negotiations are in progress with the Cambridge University Press for printing the maps, and the technical problems involved are being solved. Some general decisions on format, use of symbols, legends, etc., for the final Atlas has been taken by the Committee, to serve as a basis for negotiation with the printers.

Progress in recording in Great Britain makes it possible to envisage near-completion of the main field recording there in 1957—although petrol rationing may cause severe and unexpected restrictions. Ireland could then receive a special recording 'drive' in 1958.

The size and quality of the contributions made by amateur and professional botanists to the Scheme continue to be one of its most impressive features. Our thanks are due to all contributors, and also to referees and specialists who have given freely of their time and experience. I should like to add a special word of thanks to Mr. Perring, Miss Matthews and Mrs. Fincham for their unstinting service in what have been at times almost overwhelming situations.

S. M. WALTERS.

DISTRIBUTION ATLAS ACCOUNT.

1955		1955	
£119	To Balance from 1955 ...	£556 3 6	
2000	„ Grant from Nuffield Foundation ...	2150 0 0	
1959	„ Grant from Nature Conservancy ...	1960 0 0	
—	„ Grant from B.S.B.I. ...	50 0 0	
16	„ Interest on 3½% Defence Bonds ...	14 17 8	
—	„ Repayment on 3½% Defence Bonds ...	500 0 0	
—	„ Interest on 4½% Defence Bonds ...	5 19 7	
8	„ Interest on Deposit Account ...	34 1 6	
—	„ Sales of Record Cards, etc.	10 17 1	
—	„ Cheques issued but not presented for payment ...	55 5 0	
			By Furniture and Office Equipment:—
			Cambridge ...
			Dublin ...
			Edinburgh ...
		£182	£76 9 6
		771	„ Mechanisation Equipment ...
		50	„ Postages and Telephones ...
		228	„ Printing and Stationery ...
		55	„ Rent, Rates and Room Hire ...
		2092	„ Salaries and Wages (9 months only) ...
			„ Travelling Expenses:
			Staff ...
			Others ...
		141	168 19 7
		7	„ Insurance ...
		12	„ Clerical Assistance ...
		—	„ Heating and Lighting ...
		—	„ Repairs and Improvements ...
		8	„ Other Expenses ...
		—	„ Investment in 4½% Defence Bonds ...
		556	„ Balance:
			Current Account ...
			Deposit Account ...
			800 0 0
			1105 15 7
£4102		£5337 4 4	£4102
			£5337 4 4

Examined and found correct,
17th January 1957.

(Signed) J. H. G. PETERKEN, Hon. Auditor.
„ E. L. SWANN, Hon. Treasurer.

COMMITTEE FOR THE STUDY OF THE SCOTTISH FLORA

SECOND ANNUAL REPORT TO 31st DECEMBER 1956

During the first full year of its existence the Committee arranged two Exhibition Meetings, one in the spring and one in the autumn, and a number of field meetings (chiefly to help the Distribution Maps Scheme) during the summer.

The Field Meetings were held at Dalmellington (26th-27th May), led by Mr. R. Mackechnie and attended by two others; Peebles (15th-17th June), led by Mr. P. S. Green and attended by eight others; Cromarty (30th June-7th July), led by Miss U. K. Duncan, who deputised for Mr. Burttt, and attended by six others; and Hawick (7th-9th September), led by Mr. J. Grant Roger and attended by seven others. A one-day Junior Meeting, led by Mr. Ribbons, attended by about 60, was held at Ben Ledi, Perthshire, on Saturday, 16th June. Reports of these meetings will appear in the *Proceedings of the B.S.B.I.*, Vol. 2, part 4.

The Spring Exhibition Meeting took place in the Royal Academy, Inverness (by kind permission of the Director of Education and the Rector), on Friday, 9th March 1956, and about 130 people were present. The visitors were welcomed by the Rector, Mr. D. J. Macdonald and, later in the evening, Mr. Roger shewed colour transparencies of divers high altitude Scottish plants. Among the exhibits were the following: Sheets of Batrachian *Ranunculi* spp. (Miss U. K. Duncan); sheets of rare plants from Inverness-shire from the Royal Botanic Garden, Edinburgh; the two Watercresses, *Rorippa nasturtium-aquaticum* and *R. microphylla* and their hybrid (P. S. Green); plants from Switzerland having Scottish associations (R. Mackechnie); photographs and charts demonstrating the morphological responses to grazing in *Erica cinerea* and *Calluna vulgaris* (C. H. Gimingham); Map of hydrosere at Loch of Park near Banchory, Aberdeenshire (C. H. Gimingham and E. T. Robertson); British Dandelions (A. J. C. Grierson); British species of *Pinguicula*, original plates drawn by Miss Stella Ross-Craig for her series *Drawings of British Plants* (B. L. Burttt); grasses, sedges and rushes, mostly from Moray but including the cross *Festuca rubra* × *Fulpia membranacea* from Southport (M. McCallum Webster); and an exhibit provided by Mrs. Poore on the Distribution Maps Scheme. Grateful thanks are due to Mrs. Caldwell and Mr. Wright who made most of the local arrangements. Two useful results of the meeting were that local people agreed to help in recording for the Maps Scheme and that a series of evening classes in botany began in Inverness.

The Autumn Exhibition Meeting was held in the Department of Botany of the University of Glasgow (by kind permission of the Regius Professor of Botany and of the University Court) on Saturday, 10th November 1956, when about 80 people were present. The following

exhibits were shewn: Specimens of *Saxifraga cernua*, *S. rivularis*, and *S. cespitosa* from the Herbarium were displayed to illustrate the finding in 1956 of these three species growing together on limestone rock above 3000 feet in the Ben Nevis range. *S. cernua* has been seen on two mountains and on one of them 90-100 plants were counted, 55 producing bulbils (E. A. Blake); plants from Switzerland having Scottish associations (R. Mackechnie); *Alchemilla vulgaris* in Britain (Miss M. E. Bradshaw); 14 of the 35 new county records made at the Cromarty field meeting (Miss U. K. Duncan); *Aremonia agrimonoides* in Scotland (D. McClintock and P. S. Green); the genus *Galinsoga* in Scotland (P. S. Green); *Hierochloa odorata*, specimens from three Scottish localities (Glasgow University Herbarium) together with colour transparencies of the species in its Renfrewshire station (B. W. Ribbons); plants from the Kincardineshire coast (Miss I. K. Munro and Miss A. R. Hutchison); alpine species from north west Scotland (J. H. Dickson); Scottish seaweeds, to show the subspecies of *Fucus inflatus* and the dichotomous species of *Codium* (Dr. E. Conway); new records from Scotland received at the Royal Botanic Garden during 1956: *Koenigia islandica* in Mull at the north end of Maol Mheadhonach on the Ardmeanoch Peninsula, and *Melampyrum arvense* from Melrose (R. W. M. Corner), *Spartina townsendii* from Kirkcudbrightshire (J. B. Primrose), and *Carex buxbaumii* from East Inverness-shire (J. G. Roger); the progress in the Distribution Maps Scheme in Scotland (Miss E. A. Beattie).

After tea Miss Beattie, the Scottish Regional Officer, spoke about the Maps Scheme and then Mr. Ribbons showed colour transparencies of *Phyllodoce coerulea* and of plants of the Scottish coast which were commented upon by himself and Mr Mackechnie.

The Chairman of the Committee, Mr. Burt, presided at both the Spring and Autumn Exhibition Meetings.

The membership of the committee remained unchanged until October when the Botanical Society of Edinburgh appointed Mr. D. M. Henderson to replace Mr. Burt as representative of its Council.

The Committee is very grateful for all the assistance given by members and friends and also to the officers of the two sponsoring societies for their continued helpful co-operation.—B. W. RIBBONS.

ANNUAL GENERAL MEETING, 13th APRIL 1957

The Annual General Meeting was held at the Botany School, Downing Street, Cambridge, on Saturday, April 13th, 1957, at 12 noon.

Mr. J. E. Lousley (Vice-President) was in the chair and 66 members were present.

Mr. Lousley said that the B.S.B.I. is far from being a predominantly London society, for, in the last hundred years, the Society had a London address for only twenty-eight of them, the others having included Thirsk, Manchester and Oxford. But recently Council had agreed to hold the Annual General Meeting outside London periodically from time to time, and this was the first occasion. Cambridge seemed particularly appropriate because of the magnificent support that the Society receives from Cambridge botanists and the close association of the Society with the University, and also in order that members might see the Maps Scheme in action, and we were very grateful for all the arrangements that had been made for this meeting and week-end.

The Minutes of the last Annual General Meeting, as printed in *Proceedings B.S.B.I.*, Vol. II, Pt. 1, page 92, were adopted.

COUNCIL'S REPORT.—The Report of the Council for the year 1956 had been printed and circulated. The Chairman congratulated the General Secretary on an excellent report and mentioned that a special feature was the wonderful progress made by the Maps Scheme and the number of new members which the Maps Scheme had introduced. On Finance, it was regretted that so few members pay by seven-year covenant, by which the Society benefits (by income-tax rebate) to the extent of 15/7 for every guinea subscription received. On Conservation, the Society's attitude of opposition to the construction of a reservoir anywhere in Upper Teesdale was stressed, as it is not one rare plant that is threatened, but a whole area of unique and unparalleled interest. In connection with Field Meetings, Miss M. Bradshaw hoped that it would again be possible to organise inexpensive weeks for undergraduates and young graduates, similar to that held in the Lake District in 1953. Mr. Lousley said that Council was much gratified that the Committee for the Study of the Scottish Flora had done such good work in its first year, and had excellent plans for the second. The adoption of the Report was proposed by Mr. R. A. Graham, seconded by Mr. E. Milne-Redhead and carried.

ELECTION OF PRESIDENT.—Dr. Taylor retired after two years' service and was not willing to stand for re-election owing to heavy pressure of work and other engagements. The Chairman expressed the Society's thanks to Dr. Taylor who had, as President, been a great help to the Society and opened avenues of approach to other organisations. Council

had nominated Prof. T. G. Tutin, who had been Vice-President from 1952 to 1956 and active in the Society's organisation and work. His election as President was carried with acclamation and he then took the Chair.

ELECTION OF TWO VICE-PRESIDENTS.—Council had nominated Mr. G. M. Ash and Prof. D. A. Webb, and their election was carried unanimously.

ELECTION OF HONORARY SECRETARY, HONORARY TREASURER, HONORARY EDITOR, AND HONORARY MEETINGS SECRETARY.—Council had nominated Dr. J. G. Dony, Mr. E. L. Swann, Dr. E. F. Warburg and Dr. H. J. M. Bowen respectively, and they were re-elected unanimously and with acclamation.

ELECTION OF MEMBERS OF COUNCIL.—There were four vacancies occasioned by the retirement, under Rule 3 (e), of Prof. J. H. Burnett, Mr. R. A. Graham, Mr. D. E. Allen and Mrs. A. N. Gibby. The President expressed appreciation of their services. Four members, Mr. A. W. Westrup, Dr. S. W. Walters, Mr. E. Milne-Redhead and Miss L. W. Frost had been nominated under Rule 3 (f) and were elected. The order of seniority for retirement, as decided by lots drawn by the Chairman, is in the sequence given.

ELECTION OF AN HONORARY MEMBER.—Council had nominated Prof. H. Gams, of the University of Innsbruck, in recognition of his great assistance during the visit of junior members to the Austrian Tyrol in 1956, and he was elected unanimously.

Mr. Bangarter proposed that a letter expressing the Society's thanks be sent to Dr. Taylor, and the President proposed that the Society's thanks be conveyed in a letter to Prof. G. E. Briggs for placing the facilities of his Department at our disposal during this meeting. It was agreed to ask the General Secretary to send these letters and, there being no other business, the President thanked members for their attendance and declared the Meeting closed at 12.50 p.m.

J. G. D.

B. W.

ASSISTANT SECRETARY'S REPORT FOR 1956

During 1956, 200 new members joined the Society, this being 64 more than in 1955, and 58 more than in 1954. Of the new members 129 were Ordinary members, 27 Subscriber members, 39 Junior members and 5 Family members. Losses were 42, this being 18 less than in 1955, and 17 more than in 1954. Of these, 33 members resigned, 1 ceased to be a member under Rule 6 (e), and we regret having to record the deaths of the following 8 members:—Miss H. S. Dent, Mrs. J. W. Haines, E. Knott, B. T. Lowne, H. N. Ridley (Honorary member), Lady Roche, Professor Sir W. Wright Smith and I. H. Welsh.

New Ordinary members are:—W. L. Abbott, L. G. Adams, A. D. Q. Agnew, Miss S. B. Andrews, Dr. T. H. Angel, Mrs. F. M. Ball, Mrs. M. R. Banks, Miss G. M. Barrett, T. H. C. Bartrop, Mrs. K. M. Blades, Miss P. Bland, Miss I. Blewett, H. W. Boon, Mrs. J. Branch, F. E. Branson, K. M. Brown, Miss J. Buchanan, D. J. Budge, Miss B. A. Burrough, K. S. Cansdale, A. J. Carpenter, Miss S. Carter, Miss K. Chalklin, J. H. Chandler, M. C. Clark, S. P. Clark, Mrs. M. C. Clayton, B. E. Costelloe, H. F. Cox, Mrs. H. Creighton, Mrs. H. E. Crockett, Mrs. G. Crompton, Mrs. J. I. Crosfield, F. David, Miss H. M. Davidson, T. E. Dennis, B. F. T. Ducker, Mrs. A. Dunn, Mrs. B. Everard, C. Farmer (rejoined), Miss A. Finlay, Mrs. M. A. Fixsen, Rev. A. F. Fountain, Dr. B. W. Fox, J. Freer, Mrs. S. G. Gillett, D. R. Glassford, Rev. G. G. Graham, T. E. C. Graty, Miss M. Gregory, E. C. M. Haes, G. Halliday, Miss A. K. Harding, Dr. J. Harper, M. J. Harvey, Mrs. W. G. Haythornthwaite, D. C. Hillyard, S. Holmdahl, C. A. Howe, Miss H. Inglis, Dr. H. Jones, B. E. Juniper, R. F. O. Kemp, J. H. Kern, Miss E. L. Kimber, Mrs. N. B. Landells, Dr. J. H. Lennard, J. Lewis, Mrs. M. Little, A. J. Luker, Mrs. A. K. McCosh, Mrs. G. Mackie, Miss V. J. MacNair, L. Magee, Miss A. L. Marchant, G. A. Matthews (rejoined), R. F. May, F. W. C. Merritt, G. R. Miller, D. A. C. Mills, A. T. Milne, H. E. R. Mugridge (rejoined), D. Murray, Rev. D. P. Murray, I. G. Nicholson, J. Kennedy O'Byrne, S. Perring, D. Philcox, G. Platten, J. E. Pollard, T. F. Preece, Miss E. A. Pringle, Miss M. N. Read, Miss M. Roberts, F. A. Robinson, Dr. J. Roche, Commander R. G. B. Roe, A. W. Round, D. Royle, Commander D. G. Satow, Professor I. Segelberg, F. Sharpe, S. Skillen, A. J. E. Smith, E. R. Smith, Mrs. M. Smith, R. Soper, Miss I. Spalding, E. W. R. Stollery, R. Sutton, Mrs. C. Swain, Lady Taylor, Dr. E. F. Thomas, J. F. Thomas, P. J. O. Trist, Mrs. M. Trost, T. Trought, A. H. Vaughan, Brigadier F. E. W. Venning, C. H. Warren, R. L. Wastie, Miss G. White, Miss J. M. Whyte, Mrs. V. M. Wilkinson, H. M. Wilks, Miss J. D. Williamson, Mrs. E. Wilson, V. Wolfe and Mrs. D. V. G. Woods.

New Junior members are:—Miss M. E. Beaumont, D. J. Belcher, I. H. Berwick, C. J. Bond, J. G. Bull, D. Burnett, P. V. Chatfield, J. B. Clark, Miss S. M. Cole, Miss N. Coward, G. E. Croot, Miss M. Crozier, D. J. Davies, R. Drane, D. St. J. Ecclestone, M. Edmunds, R. E. Emms, J. N. Gibbs, T. F. Hering, M. J. Hudson, Miss G. M. Hughes, J. R. Jack, Junr., T. J. Jennings, M. F. Johnstone, Miss S. A. Legg, J. W. Longworth, J. C. Luck, Miss F. Melville, M. S. Moon, Miss S. Newton, Miss V. Nicholls, P. Phelp, M. J. Richardson, M. D. Ross, Miss E. M. Sadler, P. D. Sayer, P. G. Sheasby, P. Bevington Smith and P. T. Warren.

New Subscriber members are:—Association Internationale de Phytosociologie, Beckenham Grammar School for Girls, B.E.N.A. Torridge & District Branch, Blackheath High School, Botanical Society of Japan, Honnold Library, Insituto Botanico, Florence, Instituto de Botánica Darwinion, Kingsbury County Grammar School, Kungl. Vetanskaps Akadamiens Bibliotek, Lord Wandsworth College Natural History Society, Mercer's School (rejoined), Miguel Raggio, Missouri Botanical Garden, Queen Mary College Library, Rosemead School, Royal Society of Canada, Société de chimie biologique, Southern Methodist University, Universidad Nacional de Tucumán, University College of S. Wales & Monmouthshire, University College of Wales Welsh Plant Breeding Station, University of Bristol Library, University of Washington Library, Ursuline High School and Wallington County Grammar School for Boys.

New Family members are:—Mrs. W. J. Goddard, Mrs. R. Sutton, Miss M. Wilks, Mrs. H. M. Wilks and Mrs. P. A. Willé.

D. H. KENT.

January 1957.

REVIEW

Trees, Woods and Man. H. L. EDLIN. Pp. xv + 272 with 24 photographs in black and white and 24 in colour and two text figures. New Naturalist Series, Vol. 32. London, 1956: Collins; Price 30/-.

'I have sought to review the position of trees and forests in the life and landscape of Britain from the standpoint of the enquiring layman. . . . We shall have to range outside the woods into the fields in order to consider why, today, so little of our land is under woodland . . . Only after such processes (i.e. past farming practices, manorial systems, etc.) have been reviewed will it be realised why our scant stock of woodlands includes so few that can be called both natural and mature.' Such is the task which Mr. Edlin has set himself, and which has led him to sketch not one, but a whole series of fields.

The first few chapters form a somewhat awkward prologue on the life of trees—their growth, flowering and fruiting, the influence on them of climate and of soil, and the methods of planting and tending woods. Then come the chapters to which many will turn with greatest expectation—for they should surely form the main core of a book with the aims which its author has set out—on the natural woodlands in Britain, and on the history of our woodlands, leading up to two chapters on forestry in Britain at the present day, in which the economic factors that determine our country's forest policy and the organization and work of the Forestry Commission form the central theme. Finally part three (84 pages), bearing little relation to what has gone before, consists of 'studies of particular trees'.

The range of subject matter is so great that the treatment must inevitably be very superficial, and this superficiality has led the author to make many unsatisfactory statements which he would doubtless not have made in a more thorough treatment.

Space permits only a few examples of these ambiguities and half-truths. Edward Hoppus is mentioned in a list of names on p. 118 from which it would be inferred that he was an important forester; in fact he was Surveyor to the Corporation of London Assurance, and his famous tables and his bizarre method of calculating cubic contents were for the use of builders, glaziers, etc., with stone and glass, as well as for timber. On p. 107 a 'purlieu' is described as 'private land adjoining a Royal forest'. A purlieu was much more than this: it was land which not only adjoined a Royal Forest, but which had once been part of the forest, and over which the Forest Officials still exercised limited jurisdiction. The definition of a Chase on the same page is not that which is usually given. A statement on p. 87 to the effect that 'the needs of the Navy

were met, at most times, from the few sadly diminished Royal Forests on to 1805' is misleading; the Royal Forests supplied only a small part of the needs of the Navy, and these needs were met only by a continually increasing use of timbers other than oak; Albion (*Forests and Sea Power*, 1926) says that the Royal Forests rarely supplied as much as a tenth of the oak used by the Navy. On p. 198 it is explained that the Tudor law whereby a coppice which was subject to grazing rights was to be enclosed for seven years after cutting meant that in practice such a coppice remained continually enclosed, since seven years was the customary rotation for hazel coppice. It is true that six or seven years has been given by some modern authorities as a suitable rotation for hazel coppices, but I have never heard of an example myself of hazel worked on so short a rotation, and I know of no evidence that it was ever customary; on the contrary there is abundant documentary evidence to show that throughout the 18th century hazel rotations of 10-15 years were employed, and the 'seven year enclosure' rule is specifically mentioned by Pitt in 1813, in 'A general view of the Agriculture of the County of Northampton' as permitting much damage to the coppices during their open periods.

There are several ambiguities concerning the status of some of our trees. On p. 69 sweet chestnut seems to be included along with black and white poplars, as 'native', while on p. 196 it is 'almost certainly introduced'. *Populus nigra* is described on p. 206 as 'native', while *P. alba* and *P. canescens* are 'possibly native'; surely the evidence suggesting that *P. canescens* is indigenous is at least as good, if not better, than that applying to *P. nigra*. *Tilia platyphyllos*, it is implied, is only 'possibly native in Wales'; there is no mention of its abundance as an undoubted native in the Gloucester and Monmouth parts of the Wye valley, nor of the fact that its pollen has now been recognised in neolithic deposits in Kent. To say that *T. cordata* 'can still be found growing wild in a few scattered localities in England and Wales' scarcely gives a true picture of its abundance in many localities in the midland and western counties. On p. 206 the phrase 'trees of suitable strains, known as clones' is liable to give a wrong idea of the meaning of 'clone'; if the word is not to be defined properly, why introduce it at all? On page 7, the 'three contenders for the title of "tallest tree in Britain"' are all Douglas firs; on p. 241 a silver fir 'is claimed to be the biggest tree standing in Britain'. What is the meaning of the sentence describing the flowers of ash (p. 10): 'on the same tree, at one time or another, one may find purely male, or purely female flowers, or flowers embodying both sexes?' Hornbeam seedlings are scarcely shade-bearing 'like those of beech' (p. 192); they are much less shade-bearing, a difference which has to be taken into account in the natural regeneration of beech in those parts of Europe where the two trees grow together, since too heavy an opening of the canopy favours regeneration of hornbeam at the expense of beech.

Thus statements which are liable to give rise to misconceptions pervade many parts of the book. Probably the author is soundest when he

is explaining and justifying the Nation's Forest Policy and the work of the Forestry Commission, and foresters will be grateful to him for these valuable propaganda. They will also be pleased to see the names and work of people such as Sir William Schlich and Sir John Stirling Maxwell, and of organizations such as the Indian Forest Service and the various forest societies brought to the notice of the public. There are many miscellaneous fragments of useful information, and the author is at his best in the occasional passage where he is communicating his own experience or ideas. The present book overlaps to a considerable extent what Mr. Edlin has already written in his other popular books, especially 'Woodland Crafts in Britain' and 'British Woodland Trees'. The various sections of a book of such scope are inevitably rather disconnected, and contain much slightly ornamented narration of not particularly significant fact. Time and time again I found myself wishing that Mr. Edlin would say just a little more about some point which he merely mentions, and feeling that he under-rates the intelligence of his readers, or at least of the class of reader on whose shelves I myself see volumes of the 'New Naturalist' Series.

Any assessment of the merits of this book must be based on a consideration of its effect on the readers for whom it is intended. Quite clearly members of the B.S.B.I. should not turn to it for authoritative information on any aspect of the biology or history of our trees or woodlands. Quite clearly, also, if the editors publish such books they should not continue to state on the flyleaf that they maintain 'a high standard of accuracy'. Mr. Edlin's book looks attractive and reads easily, and it will doubtless find many purchasers who will be pleased with it. The real question is, do there exist readers whose general knowledge is so slight that they need to be told that an oak grows from an acorn, that it forms a resting bud each autumn, or that double and crimson varieties of hawthorn are grown in gardens, (yet apparently will know what ecologists, mycologists, sporophores, Algae and epiphytes are), and whose interest will yet be stimulated by such information? It seems to me that much more genuine interest in natural history would be aroused by a fuller discussion of few subjects, stressing the biology of our most important species, and bringing out much more vividly the way in which their behaviour and treatment have interacted to produce present conditions. Would not a layman's interest be stimulated by learning the reasons for doubting whether chestnut is native? Would he not be interested by knowing about lammas shoots and their effect on the growth of oak, thus helping him to notice details which he can readily see as he goes about the country? Is it necessary, or desirable for the purposes of popular exposition, to include sections on the growth of trees and on wood structure which are so full of shady statements as those on the first five pages of this book, which obviously expect that the reader shall give them no thought?

Personally I believe that there is no reason why being 'popular' should necessitate being either inaccurate or superficial, and that a

scientist, in explaining his work to laymen, should show how he arrives at his conclusions, when the process is not too abstruse and technical to be comprehensible to the lay mind. The evidence is often more important and better established than the conclusions, and the fascination of science lies to a considerable extent in its detective work. These are questions for the editors just as much as the author, and they must certainly bear some responsibility for what seem to me to be serious defects, many of which could have been easily remedied.—E. W. JONES.

BOOKS RECEIVED

CIFERRI, R. & GIACOMINI, V. *Nomenclator Florae Italicae, seu Plantae Vasculares in Italia sponte nascentes, advenae, aut saepius cultae*; Pars 1: Gymnospermae & Monocotyledones, 1950; Pars 2: Dicotyledones, fasciculus 1, 1954, Ticini. The arrangement of families and genera is based on the Engler-Diels system. Under each genus native and alien species appear first, followed by cultivated plants, and then hybrids. The two parts published already extend to 362 pages and it is clear that the finished list will be a very long one. There are many new names and new combinations. These occur especially in the rank of subspecies and for hybrids, of which very large numbers are included.

ROSS-CRAIG, S. *Drawings of British Plants*. Part IX. *Rosaceae* (2). G. Bell & Sons Ltd. London, 1956. Price 8/6. A continuation of the well known series, covering genera from *Alchemilla* to *Crataegus*.

SCHERY, R. W. *Plants for Man*. George Allen & Unwin Ltd. London, 1954. Price 70/-. This account of the economic uses of plants will be useful to English botanists interested in aliens as it provides explanations of the occurrence of some of the species found at docks and on rubbish-tips. The subject matter and illustrations have been selected for American rather than English readers.

SHORT NOTE

ORIGIN OF THE VASCULUM.

In the various *Oxford English Dictionaries* the earliest mention of the botanist's vasculum is given as 1844. This is evidently derived from the *New English Dictionary*, vol. 10, pt. ii (1928), where the 1844 reference proves to be *Proc. Berwickshire Nat. Club*, 2, 82: "The botanists having stored each their vasculum with specimens of the *Rubi*, the party again united". Surely there must be earlier references than this? There is an illustration of a vasculum in the second edition of *Encyclopaedia Metropolitana*: Botany, by Professor J. H. Balfour (1851), the model figured being exactly like the standard type used by botanists to-day. It is described as a japanned tin box, convex on both sides, the size used depending on the wish of the collector. Was the vasculum invented by botanists for its special purpose, or was it merely a modification of some similar receptacle used in another field? Did the more cylindrical type of vasculum used by Continental botanists have an independent origin?—D. E. ALLEN.

OBITUARIES

HILDA SOPHIA ANNESLEY DENT (1903-56) was born on October 5, 1903, the younger daughter of R. W. Dent and Mrs. E. V. Dent, O.B.E., and died on September 19, 1956, at the age of 52.

Although she had helped with the running of the Wild Flower Society for many years, she did not take over its Presidency (with which goes the work of Secretary and Editor) until her mother, who had founded the W.F.S. before 1892, died in 1948. The W.F.S. and its 700-800 members owe a great debt to the Dents, in whom all loyalties centre and who devotedly and personally organise and run the Society. Hilda Dent, a typical country woman of the best sort, was a real lover of the countryside and of Westmorland and her Lyvennet valley in particular, and her knowledge of wild flowers was considerable. She loved, as she once wrote "the beautiful things of life—the leisure, the friendship, the beauty and the peace". She was keen on the preservation of wild flowers and encouraged the W.F.S. in it. Her kindly modest unhurried judgment and her quiet sense of humour and of authority enabled the W.F.S. to include both advanced botanists and the veriest beginners of all ages to the great benefit of all. It is a tribute to her qualities that it has never been more flourishing than now.

Miss Dent's services to the "Nursery of British Botanists", which is what Dr. G. C. Druce dubbed the W.F.S., were however only one of her public-spirited activities—as letters in *The Times* after her death also showed. She was greatly interested in the Girl Guides for many years and was Captain and then Commissioner. She was a Folk Dancing enthusiast; she took an active part in the Women's Institutes and in all local church and school affairs and ran the Home Farm at the family house of Flass. When in 1942 she was appointed a magistrate for Westmorland she accepted the additional duty as a privilege and devoted her well-balanced and human sympathy to these responsibilities.

The Wild Flower Society is fortunate that her sister, Mrs. C. M. R. Schwerdt, at once stepped into her shoes to maintain the family tradition with all its arduous duties. I am grateful to her for helping me with details of this notice.

D. McCLINTOCK.

GEORG KÜKENTHAL (1864-1955). The long and fruitful life of Georg Kükenthal came to an end in October 1955. He was in his 92nd year. I knew him only through his botanical writings except for a brief visit he paid to Kew in the nineteen-thirties.

Kükenthal's botanical work was almost confined to the *Cyperaceae* and he was the greatest authority on the sedges whom we have seen.

His publications on this difficult group of plants, monographs, revisions and smaller works, the most important of which are listed below, number over 120. This was a prolific output but he never appeared to sacrifice accuracy for speed. His writings bore the hall-mark of quality. Even when one criticised his conclusions one admired the careful and detailed manner in which his work was presented.

His first really serious publication was the monograph of the *Cariceae*, which formed one of the stoutest volumes of *Das Pflanzenreich*. This appeared in 1909, the year following the skeletal and posthumous publication of his rival cyperologist, C. B. Clarke, "New Genera and Species of Cyperaceae" (*Kew Bull. Add. Ser.*, 8).

This descriptive account of *Carex* and its allies, embracing all the species then known, has never been superseded, and all later revisions of *Carex* have been on a regional basis. In my official work at Kew it has been my constant companion for over a quarter of a century. Although Krechetovich, the Russian cyperologist, myself, and perhaps others have differed from Kükenthal in his ideas on classification and phylogeny as expressed in his monograph of the *Cariceae*, this scarcely affects the intrinsic value of his work or detracts from its use in guiding one about among the *Carices* of the world.

The criticisms of Kükenthal's views on the classification of the *Cariceae* have been directed mainly against his patently artificial group, Subgenus *Primocarex*, where the sole qualification for inclusion was the possession of a single terminal spike, but also in a less degree against his general phylogenetic view that small and few-spiked species represent primitive types and the large and multispiked ones the most advanced. It should be added here that Kükenthal later reversed this view, as witness a letter to me in 1952, and as may be seen in the arrangement of the species in his second contribution to the series of monographs in Engler's *Pflanzenreich*, a monograph of the tribe *Cyperaceae*.

Two years before his work on the *Cariceae* appeared, Kükenthal settled in Coburg, where he resided until his death about 45 years later. During this long time, while scientific papers flowed from his pen, he apparently had no more than sporadic connection with a good herbarium and library, though he seems to have had a considerable private collection of plants, which was destroyed in the second world war.

In 1913, under the auspices of the St. Petersburg Botanic Garden, Kükenthal went with Professor Bornmüller on a journey of exploration to central Asia. The following year found him in Corsica where he was interned until 1917. After his return home he was elected General Superintendent of the Dukedom of Coburg. "Retiring from this post in 1928", says his daughter Martha, "he devoted himself to his beloved botany, and continued in this work until his death".

His monograph of the *Cyperaceae*, mentioned above, appeared in 1935-36. Therein he 'lumps' the whole tribe into a single genus, *Cyperus*, constructed from the following, recognised as distinct genera by C. B. Clarke, but only as subgenera by Kükenthal: *Eucyperus*, *Juncellus*, *Pycneus*, *Mariscus*, *Kyllinga*, and *Torulium*. Though this may be

regarded by some of us as a retrograde step, it is otherwise with his arrangement of species, the large plants with loosely and copiously paniced spikes being placed first with a gradual descent to the small species with capitate spikes.

Kükenthal's third published work in order of importance appeared between 1938 and 1952, the earlier parts in *Fedde's Repertorium* [1938-1944] and the later ones in *Engler's Botanische Jahrbücher* [1949-1952]. It bears the general title of "Vorarbeiten zu einer Monographie der *Rhynchosporoideae*" and consists of descriptive accounts of the twenty-two genera comprising the subgenus. At the completion of this work the author had reached the age of ninety!

His final interest was in the lichens, of which he made a collection in his last years, but he was not able to complete an account of them.

I cannot do better than end this notice with a tribute from Kükenthal's daughter Martha. "His energy was wonderful and his many-sided knowledge was a joy and inspiration to those about him. In him we lost an inexpressibly great man".

LIST OF KÜKENTHAL'S MORE IMPORTANT PUBLICATIONS.

- 1899: Die Carexvegetation des aussertropischen Südamerica, *Engl. Bot. Jahrb.*, **27**, 485-563.
- 1900: Species generis *Uncinia* Pers. in America meridionali extratropica sponte nascentes, *Bot. Centralbl.*, **82**, 1-10.
- 1909: Cyperaceae—Caricoideae, Engler, *Das Pflanzenreich*, **38** Heft, 824 pages, and 128 figures.
- 1911: Conspectus Cyperacearum Insularum Philippinensium, *Philipp. Journ. Sci.*, **6**, 57-64.
- 1921: Die Cyperaceen der Uleschen Amazonas—Expedition, *Engl. Bot. Jahrb.*, **56**, Beibl. 125, 13-25.
- 1921: Cyperaceae, in *Wissensch. Ergebn. d. Schwedisch. Rhodesia—Kongo Expedition*, Bund **1**, Ergänzungsh., 1-10.
- 1924: Beiträge zur Cyperaceen—Flora von Mikronesien, *Engl. Bot. Jahrb.*, **59**, 1-10.
- 1924: Beiträge zur Cyperaceen—Flora von Papuasien, *l.c.*, 41-60.
- 1925: *Cyperaceae*, in Beiträge zur Kenntnis der Flora des Kenia, Mt. Aberdare und Mt. Elgon, *Notizbl. Bot. Gart. Berl.*, **9**, Nr. 55, 299-316.
- 1926: *Cyperaceae novae vel criticae imprimis antillanae*, *Fedde, Repert.*, **23**, 183-222.
- 1929: *Cyperaceae sinenses a Dr. H. Smith collectae*, *Medd. Göteborg Bot. Trädg.*, **5**, 33-49 and 107-114.
- 1934: Beiträge zur Flora von Süd-Rhodesia, II. *Cyperaceae*, *Medd. Lunds Bot. Mus.*, **16**, 64-83.
- 1935-36: *Cyperaceae—Scirpoideae—Cypereae*, Engler, *Das Pflanzenreich*, **101** Heft, 671 pages with 65 figures.
- 1937-38: *Cyperaceae*, in Peter, *Flora von Deutsch-Ostafrika*, *Fedde, Repert. Beih.*, **40**, **5** Lief., 381-416 et 129-136 cum. tab. 79-81 et **6**. Lief., 417-540 et 137-142.
- 1938: Neue Beiträge zur Cyperaceen—Flora von Neu-Guinea, *Engl. Bot. Jahrb.*, **69**, 255-265.
- 1938-52: Vorarbeiten zu einer Monographie der *Rhynchosporoideae*, 1. *Schoenus*—17. *Tricostularia*, *Fedde Repert.*, **44-53**. 18. *Rhynchospora*—22. *Trachystylis*, *Engl. Bot. Jahrb.*, **74-75**.

BENJAMIN THOMPSON LOWNE (1878-1956) was born at Finchley, London, in 1878, and he died at Worthing in March 1956. By profession he was an electrical engineer, and the family business into which he went were pioneers in electric clock systems. The firm also developed the Lowne Air Meter, a device for testing the air flow in coal mines. It is said that there is now no coal mine without one of these meters.

From his earliest years he was interested in wild plants, and during his life he formed a very large and well-indexed herbarium of plants from north London, north-west Kent, and Sussex. This herbarium is now at the Royal Botanic Gardens, Kew.

His special study and interest was the raising of British plants from seed, and he conducted an extensive correspondence with several Universities on the exchange of seeds. He had a flair for the successful growing of "difficult" plants from seed, and conducted for many years the South Eastern Union of Scientific Societies seed exchange.

In his garden in Worthing, he grew more than 400 species of British wild plants including all the *Umbelliferae* and *Euphorbiaceae*. In common with many of his generation, he had been brought up on Bentham & Hooker, and was disinclined to accept many of the so-called 'critical' species and sub-species. He was, however, delighted with the Clapham, Tutin & Warburg *Flora* and was rapidly adjusting himself to the new names and to the more modern ideas described in it.

He contributed largely to Col. Wolley-Dod's *Flora of Sussex* published in 1937, and he possessed an extensive knowledge of Sussex botany. He was also a very capable general naturalist with a good knowledge of birds, insects, and spiders: and particularly of land snails of which he possessed a specimen of every British species usually collected by himself.

In the field he was a delightful companion with wide interests, and the writer is grateful for the opportunity of ten years of field botany with him. During this time, almost all his pre-war Sussex records were checked and listed, and many important additions were made to our knowledge of Sussex plants.

His many friends will miss his lively presence at botanical meetings and sympathy is extended to his widow who was the indefatigable companion of his excursions.

He had been a member of the Society since 1947.

O. BUCKLE.

HENRY NICHOLAS RIDLEY (1855-1956).—H. N. Ridley died at his home at Kew on October 24, 1956, and by his death the Society has been deprived of one of its most famous members. Known throughout the world for his part in the establishment of the rubber industry in Malaya, and renowned amongst botanists for his work on the taxonomy of tropical plants, he also made a considerable contribution to knowledge of the British flora. With such great achievements in other fields it is perhaps not surprising that few botanists now associate him with work done in this country.

Ridley was the son of the Reverend Oliver Matthew Ridley and Louisa Pole (Stuart) and was born on December 10, 1855, at West Harling, Norfolk. At school at Haileybury he was interested mainly in birds and insects. He graduated at Exeter College, Oxford, where he read Natural Science, and was awarded the Burdett-Coutts Geological Scholarship. Until the age of 25 his interests were mainly zoological, but he was unable to obtain a post in this branch of science, and in June 1880 took up an appointment as Assistant in the Department of Botany of the British Museum. His appointment began in the month during which the present building of the Natural History Museum was handed over to the Trustees and the great labour of removing the collections from Bloomsbury commenced. Ridley's duties included charge of the collections of Monocotyledons and he was soon describing new species from the Tropics. He resigned in 1888, and arrived in Singapore in November of that year to take up an appointment as the first scientific director of gardens and forests, Straits Settlements. For the next 23 years he devoted his life to the investigation of the plants and animals of Malaya, a pioneer work which led to his *Flora of the Malay Peninsula*. His wide-spread activities included tapping experiments on a plantation of trees of *Hevea brasiliensis*, which had been grown at Singapore from seedlings sent out from Kew by Sir Joseph Hooker in 1877. The results of these investigations, and Ridley's advocacy with characteristic enthusiasm of the commercial possibilities of growing Para rubber, are said to have been largely responsible for making feasible the development of modern Malaya. It was for this that the popular press dubbed him "Mr. Rubber".

He returned to England in 1912 on retirement, but continued to work for some 30 years in the Herbarium at Kew and elsewhere—descriptions of new species were published by Ridley as late as in his ninety-first year. In 1930 appeared his *Dispersal of Plants throughout the World*, a magnificent volume of 744 pages, involving a vast amount of research into literature, and including personal observations he had made over a period of half a century. His wide knowledge of plants in many parts of the world, coupled with a life-long interest in animals, his keen powers of observation and characteristic intensity of purpose, were qualifications which enabled him to produce a work which no other botanist of his time could have equalled. Seven years later he married Lily Doran. On December 10, 1955, he celebrated his one hundredth birthday, receiving many messages of good wishes, including one from the Queen. Mr. David Marshall, Chief Minister of the Singapore Government, called on him with other Ministers to make a presentation on behalf of the Government and people of Singapore, and in Malaya his birthday was marked by floodlighting of the botanical gardens, an exhibition and a banquet.

Ridley's work on the British flora falls into two periods—from 1880 until 1887 when he was on the staff of the British Museum, and after 1912. His first botanical paper appeared in 1880, when he wrote on

the vernal flowering of *Colchicum autumnale* at Bishopstone, near Hereford. In the following year he described *Carex pilulifera* var. *leesii* from shaded rocks at Plumpton in Yorkshire, and published a long list of records of Radnorshire plants. In 1882, with W. Fawcett (who was also an assistant in the Department of Botany, Natural History Museum, and later worked on the flora of Jamaica), he published additions to the flora of Dorset. In 1884, Ridley wrote an account of plants he found in Kerry the previous year, and also a note on specimens sent from Shetland. The same year he published an account of observations on a rare beetle he found at Killarney biting the corollas of *Erica cinerea* in order to extract the honey, and a list of additions to *Topographical Botany* from counties on the borders of Wales.

But 1885 was his best year for British plants. He started with an excellent illustrated account of *Juncus tenuis*, following this with a note on peloria in *Habenaria bifolia*, and another on a fragment of wood of *Castanea sativa* found in a brick-earth pit between Erith and Crayford, Kent, which he suggested as evidence that the species is native in Britain. He then wrote up *Schoenus ferrugineus* which had been found in Scotland by J. Brebner, and brought *Carex salina* var. *kattgatensis* (now known as *C. recta* Boott) to the notice of British botanists from specimens sent by J. Grant from Caithness. He concluded the year with a note on British *Rubi* he had gathered. In 1886 he recorded *Habenaria albida* from Brecon, where it had been gathered by his father.

On his return to England his time was very fully occupied with work on his *Flora of the Malay Peninsula*, of which publication commenced in 1922, but his interest in British plants soon returned. His publications included interesting accounts of the occurrences of *Plantago cynops* and *Dorycnium gracile* near Meopham, Kent (1920, 1934), and *Tetragonolobus maritimus* from the Berkshire downs (1924), *Cyperus longus* from Holmwood Common, Surrey (1935), *Umbilicus pendulinus* as an epiphyte in south Devon (1928), notes on dispersal including British observations (1934), bracken sporelings in London (1939), and a lengthy paper on *Arum neglectum* which he raised to the status of a species (1938). All papers mentioned in this and the last two paragraphs appeared in the *Journal of Botany* for the years stated.

Many of his personal observations on British plants are recorded in the pages of *The Dispersal of Plants throughout the World*, sandwiched between those on tropical species and records by other botanists. For this reason it is not easy to appreciate how numerous they are, but they range from Scotland to Guernsey though, as might be expected, many were made near Kew, and especially on the banks of the Thames. Ridley complained that his publishers put a limit on the size of his book, and a good deal of his information had to be left out. He continued to accumulate notes on this subject after publication and as recently

as 1947 he wrote to me about observations he had made on the dispersal of seeds through horses used in Kew Gardens.

The volume of work carried out by Ridley was an amazing achievement even when full allowance is made for the exceptionally long period during which he was able to carry it out. His first paper was published in *Haileybury School Natural History Society Report* in 1872; his last, so far as I have been able to trace, in the *Journal of Botany* issued in April, 1944. He is said to have published more than 500 papers, articles and books, totalling some 10,000 printed pages and including giving names to "a few thousand" plants. As a botanist he is to be valued as a pioneer, as one of a group of Victorian botanists describing with all haste the new species being found in such large numbers as new territories were opened up, devoted to their work and producing descriptive accounts available as the basis of more leisurely revisions later on.

Ridley was elected to the Royal Society in 1907 and made a Companion of the Order of St. Michael and St. George in 1911. He was elected a Fellow of the Linnean Society in 1881, and awarded the Linnean Medal in 1950. He joined our Society in 1915, and was elected an Honorary Member in 1955. He was the only centenarian who has ever appeared in our membership list and it is perhaps difficult to appreciate fully the length of time covered by such a life. When Ridley was born the Crimean War was ending and the Indian Mutiny did not break out until eighteen months later. The Botanical Society of London was still in existence, and he was nearly two before its exchange activities were transferred to Thirsk. To a botanist perhaps the best way to appreciate the progress which has been made in Ridley's lifetime is to reflect on a set of the now defunct *Journal of Botany*, of which the first volume appeared when he was 8, and the last number when he was 89. A lifetime lasting for 19 years longer than the *Journal of Botany* witnessed the change from concentration on alpha taxonomy to the wider studies of today. It is an honour to have known a man who had seen so much botanical history in the making.

I am indebted to the notices which appeared in the issue of *The Times* for October 25, 1956, and *Nature*, **178**, 1092, 1956, for some of the facts included in this appreciation. A list of Ridley's publications to 1935 is given in *The Gardens Bulletin (Straits Settlements)*, volume **9**, and several excellent accounts of his work in Malaya were written in honour of his hundredth birthday (e.g. *Nature*, **176**, 1092, 1955).—J. E. LOUSLEY.

PERSONALIA AND NOTICES TO MEMBERS

ANEMONE NEMOROSA L.

Dr. Herrad von Lamprecht, Botanisches Institut der Universität, Düsternbrooker Weg 17, Kiel, Germany, is working on the cyt-taxonomy of *Anemone nemorosa* and would be grateful for rhizomes of the species from British localities. Not more than four rhizomes are required from any one locality.

CARDAMINOPSIS AND ARABIS

Mr. B. M. G. Jones, Dept. of Botany, University College, Leicester, is working on taxonomic problems in *Cardaminopsis* and *Arabis* and would very much appreciate live material or seed, herbarium material or details of localities where the various species grow. European material would also be welcome.

VIOLA, SUBGENUS MELANIUM

Mr. A. Pettet, Dept. of Botany, The University of Southampton, is working on *Viola lutea*, *V. tricolor*, *V. arvensis* and *V. nana* and would be grateful for seed and living material (the latter only in the case of the perennial forms) of these species. Details of the locality (with grid reference, if possible) and a brief note of the habitat should be sent with any material. Where two or more species grow together and there is a suspicion of hybridization, a note to this effect would be appreciated.

POLYGONUM SECT. CENTINODE

Mr. B. T. Styles, University Dept. of Botany, South Parks Road, Oxford, is working on the above section of the genus *Polygonum* in the British Isles. He would be very grateful for both material of, and information on, *P. aviculare* L. (*P. heterophyllum* Lindm.), *P. aquale* Lindm., *P. ruricagum* Jord. ex Bor., *P. calcatum* Lindm. and the sea-forms *P. raii* Bab., *P. maritimum* L. and *P. littorale* Link. Fruiting material would be especially appreciated.

PERMITS FOR VISITING NATURE RESERVES

The Nature Conservancy have now acquired and declared the following Nature Reserves in England and Wales:--Moor House, Westmorland*; Kingley Vale, Sussex; Cavenham Heath, Suffolk; Yarnor Wood, Devon; Ham Street Woods, Kent; Holme Fen, Hunts.; Monks' Wood, Hunts.; Blean Woods, Kent; Woodwalton Fen, Hunts.; Swanscombe

Skull Site, Kent†; Scolt Head, Norfolk; Orfordness-Havergate, Suffolk*; Old Winchester Hill, Hants.; Bridgwater Bay, Somerset*; Castor Hanglands, Soke of Peterborough*; *Arne Peninsula, Dorset*; Blelham Bog, Lancs.; Cwm Idwal, Caerns.; Hartland Moor, Dorset; Axmouth-Lyme Regis Undercliffs, Devon*; Cader Idris, Merionethshire; *Cors Tregaron, Cardiganshire*; Newborough Warren and Ynys Llanddwyn, Anglesey*; Tring Reservoirs, Bucks. and Herts.*; *Hales Wood, Essex*; Coed Rheidol, Cardiganshire*; *Cothill, Berks.*; Fyfield Down, Wilts.*; Lullington Heath, Sussex*; *Morden Bog, Dorset*; North Fen, Lancs.; *Roudsea Wood, Lancs.*; Westleton Heath, Suffolk*; Winterton Dunes, Norfolk*; *Wybunbury Moss, Cheshire*; High Halstow, Kent*; and the following in Scotland:—Beinn Eighe, Ross and Cromarty; *Morton Lochs, Fife*; Tentsmuir Point, Fife; Cairngorms, Inverness-shire and Aberdeenshire; Gleann Dromhan, Isle of Arran*; Noss, Shetland†; Hermaness, Shetland†; Isle of May, Fifet; North Rona and Sula Sgeir; Rassal Ashwood, Ross-shire†; Silverflowe, Kircudbrightshire and Inchadarn, Sutherland*. Permits to collect are required for all Reserves. Permits to visit the whole Reserve are required for those above shown in italic type; permits to visit part of the Reserve (in some cases the whole reserve except along Rights of Way) are required for those above which are followed by an asterisk. Where Reserves in the above list are marked with a dagger intending visitors are requested to contact the Warden who will give them any necessary facilities and advices. The names and addresses of the Wardens can be obtained from the current Annual Report of the Nature Conservancy.

A small pamphlet, *Visiting Nature Reserves*, setting out the considerations which govern the Nature Conservancy's policy in permitting visits, may be obtained from the Conservancy's headquarters at 19 Belgrave Square, London, S.W.1, or from their Scottish headquarters at 12 Hope Terrace, Edinburgh 9.

Applications for permits may be sent to the London headquarters for the English and Welsh Reserves, or to the Scottish headquarters for those in Scotland, or to the Regional Offices of the Conservancy concerned. Visitors who wish their permits to include the right to collect and take away specimens should say so in making application and should specify what it is they wish to collect.

NEWBOROUGH WARREN, ANGLESEY

The Air Ministry have established a range at Newborough Warren but, following representations made at a Public Local Inquiry by this Society and others, have agreed to make advance notices of firing practices available to research workers and students. These notices will be sent to our Local Secretary, Prof. P. W. Richards, Coed Menai, Upper Bangor, Caernarvonshire, and members wishing to visit the Warren are advised to make arrangements with him well in advance of the time of their visits.

THREATS TO BRITISH FLORA

Members are urged to report to Mr. J. E. Lousley, 7 Penistone Road, London, S.W.16, any threats to the British flora. The Council has appointed a Conservation Committee to deal with such matters and every effort will be made "to promote in every way possible the conservation of the British flora".

TOXIC SPRAYS

The Society is collecting information about the effect on native vegetation of toxic chemicals used for spraying crops. The increasing use of weed-killing chemicals on arable land implies a threat to neighbouring uncultivated land or woods since the spray can be carried a considerable distance under suitable conditions. Members who observe damage from this cause are asked to send full details to Mr. J. E. Lousley, 7 Penistone Road, London, S.W.16.

SYSTEMATIC ASSOCIATION

A card index of autecological and/or cytogenetic-taxonomic researches that are being carried out on British flowering plants is maintained by the Association. Copies of the index may be consulted at the Royal Botanic Gardens, Kew, or at the Royal Botanic Garden, Edinburgh. Its purpose is to obviate overlapping between different workers. Members taking up research of this nature are asked to send particulars either to Mr. R. D. Meikle, Royal Botanic Gardens, Kew, Richmond, Surrey, or to Mr. B. L. Burtt, Royal Botanic Garden, Edinburgh 4.

LIBRARY FACILITIES

Members are reminded that, through the kindness of the Council of the Linnean Society of London, they have the privilege of consulting the Library of the Linnean Society at Burlington House, Piccadilly, London, W.1.

ADVERTISEMENTS

A limited number of relevant advertisements will be accepted for the Society's publications as space permits. Enquiries should be addressed to Mr. D. H. Kent, 75 Adelaide Road, London, W.13.

INSTRUCTIONS TO CONTRIBUTORS TO PROCEEDINGS

Papers are invited both from members of the Society and others. They should have a bearing on the taxonomy, distribution or biology of British vascular plants or Charophytes. Papers should be typed, but clearly written MSS. can be accepted. They should be double-spaced and written or typed on one side of the paper only. The form adopted in *Proceedings* should be used for citations and references,

e.g. WALTERS, S. M., 1956, *Selinum carvifolia* (L.) L. in Britain, *Proc. B.S.B.I.*, **2**, 119-122. Full references should be put at the end. Illustrations, which may take the form of line drawings or photographs, will be considered for publication. Twenty-five separates of each paper are given free to the author, and further copies may be obtained on payment; requests for extra copies should be made when proofs are returned. Papers should be sent to the Editor, 75 Adelaide Road, London, W.13.

PAYMENT OF ANNUAL SUBSCRIPTION

Annual subscriptions should be sent to Mr. P. M. Newey, 97A Malden Road, New Malden, Surrey, and not to Mr. E. L. Swann.

LIST OF MEMBERS AND SUBSCRIBERS

(up to and including 1st May 1957)

Members are asked to advise the Hon. Assistant Secretary, D. H. Kent, 75 Adelaide Road, London, W.13, of any corrections to this list.

When the year of attaining membership appears in italics the records show that the member has resigned and rejoined during the period.

Institutions are listed geographically, but it should be noted that many Institutions who do not appear in the list purchase the Society's publications through the Trade.

F = Family Member

J = Junior Member

L = Ordinary Member who has paid Life Composition

S = Subscriber Member

 PATRONESS

H.R.H. THE PRINCESS ROYAL, COUNTESS OF HAREWOOD, Harewood House, Leeds, Yorkshire.

 HONORARY MEMBERS

- 1928 Aellen, Dr. Paul, Mittlere Strasse 139, Basle, Switzerland.
- 1955 Andreas, Dr. Ch. H., Botanisch Laboratorium, Grote Roze-straat 31, Groningen, Netherlands.
- 1922 Baker, Rt. Hon. H. T., P.C., Crabwood, Sparsholt, Winchester, Hants.
- 1952 Böcher, Prof. T. W., Fortunvej 90, Charlottenlund, Denmark.
- 1926 Campbell, Miss M. S., F.L.S., Casa Rossa, Menton-Garavan, A.-M., France.
- 1931 Chapple, J. F. G., F.L.S., The Brackens, Nicholas Way, Northwood, Middlesex.
- 1935 Drabble, Mrs. E., Tregudda, Ayr, St. Ives, Cornwall.
- 1957 Gams, Prof. Helmuth, Botanisches Institut der Universität, Sternwartestrasse 15, Innsbruck, Austria.
- 1955 Hylander, Dr. N., Botaniska Museet, Uppsala 1, Sweden.
- 1955 Jovet, Dr. P., Laboratoire de Phanérogamie, Muséum National d'Histoire Naturelle, 57 Rue Cuvier, Paris 5, France.
- 1955 Lawalrée, Dr. A., 3 Avenue van Elderen, Bruxelles, Belgium.
- 1955 Lid, J., Botanisk Museum, Oslo 45, Norway.
- 1927 Lousley, J. E., 7 Penistone Road, London, S.W.16.
- 1928 Price, W. R., B.A., F.L.S., 64 Elsworthy Road, London, N.W.3.
- 1938 Rechinger, Dr. K. H., Burgring 7, Wien 1, Austria.

- 1920 Swanton, E. W., O.B.E., A.L.S., "Littleton", 3 Derwent Avenue, Whitton, Twickenham, Middlesex.
- 1910 Turrill, W. B., O.B.E., D.Sc., F.L.S., The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey.
- 1937 Vermeulen, Dr. P., Wodanstraat 14, Amsterdam-Zuid, Netherlands.
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- 1957 Jarrett, Miss F. M., M.A., Ph.D., Arnold Arboretum, 22 Divinity Avenue, Cambridge, 38, Mass., U.S.A.
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- 1950 Jermy, A. Clive, B.Sc., A.L.S., Dept. of Botany, The University, Leicester.
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- 1954 Jones, Mrs. D. M., 24 Douglas Road, Harpenden, Herts.
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- 1947 S Kew, Herbarium and Library, Royal Botanic Gardens, Kew, Richmond, Surrey.
- 1950 Kidd, L. N., F.R.E.S., 46 Eton Avenue, Coppice, Oldham, Lancs.
- 1954 Kilby, Dr. B. A., Dept. of Biochemistry, 9 Hyde Terrace, Leeds, 2.
- 1952 Killick, H. J., 42 Maze Green Road, Bishops Stortford, Herts.
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- 1952 Laidlaw, Miss R. G. B., c/o Dr. E. F. Laidlaw, Moniaive, St. Lawrence, Ventnor, Isle of Wight.
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- 1950 Lawrence, Prof. G. H. M., Bailey Hortorium, Cornell University, Ithaca, N.Y., U.S.A.
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- 1949 Laycock, T. R., B.Sc., 3 Bent Street, Longsight, Manchester, 12.
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- 1938 Leather, Miss V. M., M.B.E., Vine Cottage, Ewshott, near Farnham, Surrey.
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- 1954 Lee, W. H., 78 Barton Road, Kettering, Northants.
- 1944 S Leeds Central Library, The City Librarian, Central Library, Leeds, 1.
- 1956 J Legg, Miss S. A., 8B Western Parade, Woodhatch, Reigate, Surrey.
- 1924 S Leicester Museum and Art Gallery, Leicester.
- 1953 Le Mare, Derek V., 18 Astoria Mansions, Streatham High Road, London, S.W.16.
- 1951 Lemmon, R. A., 5 Tinwell Road, Stamford, Lincs.
- 1956 Lennard, Dr. Joseph H., 11 Shotley Gardens, Gateshead, 9, Co. Durham.
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- 1931 L Lewis, J. S., Leckford Abbas, Stockbridge, Hants.
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- 1953 Liger, Dr. J., 52 Rue de la République, Rouen, France.
- 1951 S Lincolnshire Naturalists' Union, (Hon. Secretary, F. T. Baker), City and County Museum, Lincoln.
- 1930 Lindquist, Prof. Bertil, Botanic Garden, Gothenburg, Sweden.
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- 1956 S Littlehampton, Rosemead School (Mrs. N. Willitts), Littlehampton, Sussex.
- 1952 S Liverpool Botanical Society (Hon. Secretary, Inigo Jones), 30 Norris Green Road, West Derby, Liverpool, 12.
- 1954 S Liverpool, The Library, The University, Liverpool, 3.
- 1957 Livesey, Miss A., 28 Main Road, Pinhoe, Exeter, Devon.
- 1955 Lloyd, V. E., M.C., M.B.B.S. (Lond.), 19 Highlands Heath, Portsmouth Road, London, S.W.15.
- 1951 S London, Birkbeck College Library (University of London), Malet Street, London, W.C.1.
- 1914 S London, British Museum (Natural History), Cromwell Road, London, S.W.7.

- 1956 S London, Convent of the Sacred Heart High School, Hammer-smith Road, London, W.6.
- 1951 S London, Forestry Commission, 25 Savile Row, London, W.1.
- 1932 S London, Linnean Society of, Burlington House, Piccadilly, London, W.1.
- 1951 S London, The Headmaster, Mercers' School, Holborn, London, E.C.1.
- 1930 S London Natural History Society, Botanical Section, (Hon. Secretary, F. E. Wrighton), 60 Evelyn Avenue, Ruislip, Middlesex.
- 1950 S London, Nature Conservancy, 19 Belgrave Square, London, S.W.1.
- 1956 S London, The Librarian, Queen Mary College, Mile End Road, London, E.1.
- 1923 S London, Royal Horticultural Society, Vincent Square, London, S.W.1.
- 1951 S London, Science Museum, Exhibition Road, London, S.W.7.
- 1922 S London, South London Botanical Institute, 323 Norwood Road, London, S.E.24.
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- 1956 Luker, A. J., The Grammar School, Steyning, Sussex
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- 1950 S Maidstone Corporation Museum, Dept. of Natural History, St. Faith Street, Maidstone, Kent.
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- 1923 S Manchester Museum, The University, Manchester, 13.
- 1954 Manton, Prof. Irene, Dept. of Botany, The University, Leeds.
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- 1935 S Marlborough, The Wedgwood Herbarium, Marlborough College, Marlborough, Wilts.
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- 1947 Marshall, H. S., F.L.S., c/o The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey.
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- 1930 S Michigan, University of, (General Library), Ann Arbor, Michigan, U.S.A.
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- 1950 S Newcastle upon Tyne, King's College, (The Library), Newcastle upon Tyne, 1.
- 1950 Newey, P. M., 97a Malden Road, New Malden, Surrey.
- 1956 J Newton, Miss Sarah, Thames Bank, Chiswick Mall, London, W.4.
- 1928 S New York, Albert R. Mann Library, Acquisitions Division, Ithaca, New York, U.S.A.
- 1935 S New York Botanical Gardens, (J. W. Robbins, Director), Bronx Park, New York, U.S.A.
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- 1950 S Oldham, Central Public Library, (J. Simpson, Director), Werneoth Park Study Centre, Frederick Street, Oldham, Lanes.
- 1953 O'Reilly, Dr. Helen, Botany Dept., University College, Upper Merrion Street, Dublin, Irish Republic.
- 1926 S Oslo, Universitetets Botaniske Museum, Trondhjemsvegen 23 Oslo, 45, Norway.

- 1952 Oswald, P. H., The Rectory, Angmering, Sussex.
- 1950 S Ottawa, National Museum of Canada, Victoria Memorial
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- 1956 S Ottawa, The Secretary, Royal Society of Canada, National
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- 1940 S Oxford, University of, Dept. of Forestry, (The Librarian),
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- 1932 Palmer, Hon. W. J. L., Headbourne Worthy Grange, Win-
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- 1951 Pankhurst, J. S. R., Roxana, Toftwood, Dereham, Norfolk.
- 1922 S Paris, Bibliotheque de la Faculté de Pharmacie, 4 Avenue de
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- 1956 S Paris, Société de Chimie biologique, 4 Avenue de l'Observatoire,
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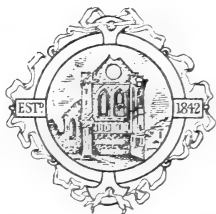
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WEST NORFOLK WILLOWS

By ERIC L. SWANN

“Willows should be particularly studied at three different seasons: the flowering time, the early part of summer, when the young shoots, with their *stipulas* and expanding foliage, are to be observed; and finally when the *leaves* are come to their full size. No botanist, therefore, can be competent to form an opinion about them, unless he resides among the wild ones, for several seasons, or continually observes them in a garden. No hasty traveller over a country, no collector of dried specimens, or compiler of descriptions, can judge of their characters, or essential differences”.

So wrote Sir James Edward Smith in *The English Flora* (1828), vol. IV, page 165, in his introduction to the genus *Salix*. He was a Norfolk man and his work has many references to stations in the west of the county where his friend Crowe had an estate. Although Crowe's willow-garden was at Lakenham in East Norfolk this paper will only deal with those species recorded for West Norfolk and will make some attempt to give a picture of the present-day willow population. Unfortunately Smith did not believe in hybrids and stated his opinion in no uncertain terms: “Full 30 years have I laboured at this task, 10 of them under the instructive auspices of my late friend, Mr. Crowe, in whose garden every willow that could be got was cultivated. . . The plants were almost daily visited and watched by their possessor, whom no character or variation escaped; seedlings innumerable, springing up all over the ground, were never destroyed till their species were determined, and the immutability of each verified by our joint inspection. This was the more material, to set aside the gratuitous suppositions of the mixture of species, or the production of new, or hybrid ones, of which, no more than of any change in established species, I have never met with an instance” (*l.c.*, 164).

Such an observation is difficult to reconcile in these days when every neglected and water-logged gravel pit becomes quickly filled with a multitude of hybrids with usually *S. viminalis*, *S. alba* or *S. cinerea* among the parents.

The banning of imported willows at the time of the Napoleonic wars resulted in serious attention being given to their cultivation in this country. Here, Norfolk was able to provide ideal conditions with its slow-moving streams and fertile soil, and Smith had ideal opportunities for his studies. He himself described no

fewer than twenty-eight out of a total of sixty-four species and Norfolk provided nearly half this total. Salicologists following Smith were very unwilling to differ from one who had devoted so much time to their study and his influence extended over many years. Even to-day, when due allowance is made for the ease with which willows hybridise, Smith's treatment in Sowerby's *English Botany* remains one of the best in English works. As Fraser (1926) stated, "In many cases to-day, Smith's species remain where he left them at the beginning of the nineteenth century except that the *x* denotes that they are hybrids and not true species".

The present-day status of many of the willows, especially the trees, is very difficult to assess. Natural stations are so much confused by plants introduced, both intentionally and unintentionally, in the vicinity of water and in hedgerows, that discrimination is well-nigh impossible in such species as *S. alba*, *S. fragilis*, *S. triandra*, *S. purpurea* and *S. viminalis*. Owing to adventitious roots, any stick put in to mark riverside operations, such as weed-cutting, sites of rat-holes, and eel-traps, very quickly grows into a bush or tree.

LIST OF SPECIES, VARIETIES AND HYBRIDS

SALIX PENTANDRA L. *Bay Willow*. Not a native with us. Until 1950 five female bushes grew in old fen scrub east of Blackborough Priory, near Middleton; Cockley Cley (*E. S. Edces*).

S. ALBA L. *White Willow*. Both native and planted. Common throughout the vice-county in suitable habitats.

Var. *CAERULEA* (Sm.) Sm. *Cricket-bat Willow*. Pyramidal in habit and surpassing *S. alba* in height. Frequently planted by faster-moving streams as at Westacre; West Bilney; and Ryston. Although Smith was not aware of the uses to be made of this plant in the world of sport he had some pertinent observations on this variety: "... so much more valuable for cultivation (than *S. alba*) . . . its qualities are of the highest importance. The superior value of the wood and bark, the rapid growth, as well as handsome aspect, of the tree, its silvery-blue colour, its easy propagation and culture . . . all render it so superior to our Common White Willow . . ." (*l.c.*, 232).

Var. *ELYENSIS* Burt Davy. First described in 1938 from trees found on the Ryston estate. Differs from *S. alba* in its relatively longer catkins and slightly drooping branchlets, and from var. *caerulea* in its one-year old coppice shoots being greenish in spring and winter instead of mahogany-coloured.

Var. VITELLINA (L.) Stokes. *Golden Willow*. Frequently planted for both use and ornament. Field-study has shown that this is not a form brought about by cutting-over or lopping. Admittedly when *S. alba* is lopped many of the new stems are yellow or even reddish but they do not have the varnished or shining appearance of this variety which is distinguishable from half a mile away. The catkin scales are long and narrow; keel-shaped, and shaggy. The ovaries are not abortive and are about as long as the scales. Found at Bawsey; North Wootton; and Gayton.

S. FRAGILIS L. agg. *Crack Willow*. Both native and introduced. Study of the literature has revealed much confusion over the "*fragilis*" group. The specific epithet must have added to the perplexity for the brittleness is certainly neither a specific distinction nor indeed exclusive to this group. Linnaeus (1763) described his tree as "*SALIX (fragilis) foliis serratis glabris ovato-lanceolatis, petiolis dentata glandulosis*". This is vague and does not discriminate with certainty from some allied species. R. D. Meikle informs me (*in litt.*) "Received some specimens of *S. fragilis* from Uppsala, probably derived from the tree which Linnaeus had in mind . . . These Swedish specimens are identical with the *S. fragilis* described by Smith in *English Botany*, edition 1, and illustrated by Sowerby . . . they are distinct from *S. russelliana*, *S. decipiens* (called *S. fragilis* by Floderus) and *S. basfordiana*" (see later).

There are thus four distinct entities all named "*S. fragilis*" at various times by British botanists, and all four are to be found in West Norfolk.

S. FRAGILIS L., sec. Smith, *Eng. Bot.* (*S. alba* × *fragilis* forma *monstrosa* sec. Floderus). *Crack Willow*. Native and frequent. The branches spread at a wide angle (up to 90°) and frequently cross each other, a character easily seen in winter and early spring, and contrasting with the straighter and less angular insertion of the branches of *S. russelliana*. Leaves lanceolate, acuminate, asymmetrical, regularly serrate throughout. Catkins long, arcuate, and with very shaggy scales.

Var. LATIFOLIA Anderss. Introduced. Bears leaves uniformly and constantly wider than *S. fragilis*. Roadside near Roydon Common and "near Islington church, Tilney All Saints" (*R. C. L. Howitt in litt.*).

S. RUSSELLIANA Sm. *Bedford Willow*. Occasional. Introduced. Only female trees seen. Catkins longer and straighter than *S. fragilis*, lacking the very shaggy scales, and with leaves frequently coarsely biserrate. Coalyard Creek, Wolferton; Reffley Marshes, Gaywood.

S. DECIPIENS Hoffm. *White Welsh*, or *Varnished Willow*. Always planted. Smith gives this tree as "cultivated in several osier-grounds of Norfolk" but it appears to have died out as a result of being of little value economically. Recently planted at Larch Wood, Beechamwell. A small tree with mature twigs ochre-yellow and fresh twigs stained with crimson. Leaves are wide, ovate-lanceolate, and quite glabrous from their first unfolding. The male catkins are slender, few in number, and less than one inch long.

S. BASFORDIANA Scaling ex Salter. The following description is taken from Salter (1882), "Under the name *S. basfordiana*, the well-known Willow nurseryman, Mr. Scaling, has for many years distributed a very beautiful Willow which deserves general cultivation. Under the name *S. sanguinea*, Mr. Scaling also sells another Willow having the closest resemblance to the first. The one is male and the other female: and I am satisfied they are the two sexes of the same species. I have not succeeded in finding any scientific description of this Willow, and I propose to describe it now under the appellation given to the male plant, *S. basfordiana*."

When I first received this Willow from Mr. Scaling in 1871, he informed me that he had found it some years before growing in the Forest of Ardennes in the north of France, from whence he subsequently obtained cuttings.

Salix basfordiana belongs to the section of the Willows called "*Fragiles*", which, by the way, very little deserves the appellation: it is especially inapplicable to the species now under consideration. It grows of considerable height in a broad pyramidal shape: the foliage is bright, abundant, and handsome. But the most striking beauty of the tree is the bark, which is brilliant orange passing to red in the terminal twigs, with a shining, polished surface. The colour is very remarkable, and altogether surpasses that of our Golden Osier, *S. vitellina*. The bark of the female plant is rather darker than in the male, especially on the small terminal branches. . . . *Salix basfordiana* has considerable resemblances to three of our native *Fragiles*. The foliage and glossy smoothness of the bark—though not its colour—resemble *S. decipiens*: the female catkins and ovaries are very like those of *S. russelliana*, while the male catkins resemble *S. fragilis*.

The early catkins and the foliage appear together, usually about the third or fourth week of April. The leaves are lanceolate, pointed, slightly serrated, and very glabrous. When the growth is very vigorous large stipules are produced: but they are often entirely wanting. The young twigs and the developing leaves are frequently stained with crimson, as in *S. decipiens*.

PLATE I



Salix basfordiana Sealing ex Salter
Reffley Marshes, Gaywood, W. Norfolk



Salix calodendron Wimm.
Wolferton Marsh, W. Norfolk

Female catkins cylindrical, about $1\frac{3}{4}$ " long. Ovaries adpressed to the axis, as in *S. russelliana*. Scales smooth, very slightly ciliated at the edge, or not at all, about two-thirds the length of the ovary. Germen nearly sessile, lanceolate, smooth, closely resembling *S. russelliana*. Style longer than the bifid stigma.

Male catkins cylindrical, often reaching $2\frac{1}{2}$ " in length. Scale slightly ciliated, about half the length of the stamens. The male catkins are handsome, abundant, pale yellow, with an agreeable perfume, and are much frequented by bees.

The provisional name, "*basfordiana*", has been given to the Willow, after the parish, Basford, Notts., in which Mr. Scaling resides, and where he cultivates an enormous collection of species and varieties of *Salices* with great success".

Salter's observation on the colouration does not apply to west Norfolk trees for whereas *S. vitellina* can be picked out from half a mile away this does not hold for *S. basfordiana*. Salter was writing about trees growing at Basingstoke on clay soil lying immediately on the chalk, but the soil in the West Norfolk stations is sand and gravel. It is suggested that this will account for the lack of colouration compared with the Hampshire specimens.

S. TRIANDRA L. *Long-leaved Triandrous Willow*. Native. Common in carrs and by streamsides. Flowers occasionally a second time in the summer.

S. HOFFMANNIANA Sm. *Short-leaved Triandrous Willow*. "A shrub of more humble growth" (Borrer *in litt.* to Smith). "Several varieties, if not distinct species, are comprehended under the name of *S. triandra*. Of these I venture to separate one as *S. hoffmanniana* . . . The leaves vary from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches in length, are in no respect linear (their sides being nowhere parallel), but either truly ovate, or ovate-lanceolate, with a very taper point" (*l.c.*, 168).

A shrub corresponding to this has been seen at Cranberry Wood, East Winch, which at one time formed part of Crowe's estate.

S. AMYGDALINA Sm. *Broad-leaved Triandrous Willow*, or *Almond-leaved Willow*. Crowe found this at Badley Moor, Dereham, but it has not been refound.

Forms of *S. triandra* are puzzling and it is felt not only that more than one species has been included under this name but also that the 18th and 19th century botanists may have had some justification in subdividing the species.

S. TRIANDRA × *VIMALIS* (*S.* × *MOLLISSIMA* Ehrh.). The parents are frequent components of willow-carrs and the hybrid is occasionally seen as at Reffley Marshes, Gaywood. Walpole St. Peter (*R. C. L. Howitt in litt.*).

S. PURPUREA L. *Bitter Purple Willow*. Native. Frequent. Bawsey; Wolferton; Newton-by-Castleacre; East Winch; Thompson Water; Pentney; Santon.

S. PURPUREA × *VIMINALIS* (*S.* × *RUBRA* Huds.). *Green-leaved Osier*. Native. Occasionally found with parents. Litcham; abundant at Bawsey. In some cases of presumed hybridity confirmation has been made by examination of suitably stained pollen grains. In the present plant the grains were irregular in sizes ranging from 27μ to 19μ with many abortive.

“*S. LAMBERTIANA*” Sm., and “*S. HELIX*” L. Both these species were recorded for Norfolk by Smith but they appear to be names for those forms of the hybrid approaching the parental leaf-forms; “*S. lambertiana*” where *S. purpurea* is dominant, and “*S. helix*” where *S. viminalis* is more evident.

S. FORBIANA Sm. *Fine Basket Osier*. Described by Smith from the plant sent by the Rev. Joseph Forby to Crowe from Fincham. R. D. Meikle (*in litt.*) refers this plant to the ternary hybrid *S. cinerea* × *purpurea* × *viminalis*. In his description Smith notes the resemblance of the fertile catkins to “*S. helix*” but remarks on the widely-differing leaves “approaching to a truly lanceolate form” (evidence of *S. viminalis*) and the “original plant . . . was found now and then, to bear a solitary stamen” (further evidence of hybridity). Search has failed to find it “in several osier-grounds near Lynn”, and it only appears in the north of the vice-county at Holkham in an old osier-carr on the estate of the Earl of Leicester.

S. ACUTIFOLIA Willd. (*S. pruinosa* Wendl.). *Violet Willow*. Alien. Introduced by roadside on Leziate Heath from a neighbouring garden. The very early flowering catkins prove all too attractive to passers-by and the three small trees suffer considerable damage. The description of this handsome species by Fraser (1926) is characteristic of trees left to grow naturally—“The long slender twigs bend or droop downwards with the weight of their own foliage. The leaves are always very narrow, linear-lanceolate, attenuate to a slender point, and regularly glandular-serrate or glandular-crenate. The bark in winter is blackish-violet and in summer is densely pruinose, almost white”.

S. VIMINALIS L. *Common Osier*. Introduced. Grown commercially on a fairly large scale for its long, straight, flexible, and tough branches. The female trees outnumber the males as they are more vigorous in growth and therefore more satisfactory from the grower's point of view. Possibly less variable than any other species but forms with deeply bifid stigmas (var. *intricata* Leeft) are frequently seen.

S. CALODENDRON Wimm. (*S. acuminata* sensu Sm.). *Black Willow*; *Long-leaved Sallow*. Introduced and rare. Variousy regarded as a species or as the hybrid *S. caprea* × *viminalis*. All the West Norfolk trees are female with very large leaves on the sterile branches (some measuring 14 cm. × 5 cm.). Both in flower with the arcuate, densely silky greyish catkins, and in leaf the species has a remarkably distinct appearance. Material has been distributed through the B.S.B.I. Exchange. The plate numbered 16 in Camus (1904) shows the characters of the Norfolk plants. It grows on H.M. The Queen's estate at Wolferton and also surrounds a few cottage-gardens at Holme-next-the-Sea. For a full account of this interesting species see Meikle (1952).

S. CAPREA L. *Goat Willow*. Native. Frequent. It would appear that it is more frequently met with under neutral or alkaline soil conditions, both wet and dry. Frequent in some of the woodlands overlying chalky boulder clay of mid-Norfolk and in some of the small calcareous valley-fens typical of the vice-county.

S. CAPREA × *VIMINALIS* (*S.* × *SERICANS* Tausch) is far less common than *S. cinerea* × *viminalis* as the two parents are not often seen together. Where this does occur, as at West Bilney, on a calcareous fen, the hybrid nature of the scattered bushes is very evident. Flowering is erratic and occurs over a long period; much of the pollen is abortive; there is a considerable range in leaf-shape; and many capsules fail to ripen.

S. CINEREA L. (*S. aquatica* Sm.). *Water Sallow*; *Common Sallow*. Smith's specific epithet, the habitat and frequency he noted, are all as apposite to-day as when he wrote 129 years ago. It is without doubt our most widespread species and is "extremely common in wet hedgerows, woods, swamps, and the banks of ponds or rivers".

S. CINEREA × *VIMINALIS* (*S.* × *SMITHIANA* Willd.). This is probably the most common hybrid and the name "*smithiana*" applied to it by British salicologists for a great many years was given by Willdenow to commemorate our great salicologist.

S. ATROCINEREA Brot. So far as West Norfolk is concerned we do not appear to have any sallows that can justifiably be called *S. atrocineria*. The only hard-and-fast character separating this from *S. cinerea* is the rusty hairs; all other differences are purely relative. As *S. cinerea* is so abundant the variation is considerable and it may well be that we have here an island race or ecogeographical divergence. Buchanan White (1890) suggested that there might well be an insular form of *S. cinerea* in Britain and the differences between it and the continental plant would

become greater by separation. He was not familiar with *S. atrocinerea* as he saw but one plant, although he noticed a difference in the male catkin compared with the British plants of *S. cinerea*. A. & E. G. Camus (1905) state that *S. atrocinerea* has male catkins with their stamens joined together for some distance but none of our plants has this character. Among the synonyms they give appears *S. rubra* × *cinerea* and in such a case connate stamens would be understandable. Linton (1913) considered the two were conspecific but Fraser (1932) forthrightly stated "*S. cinerea* is not British". Since Brotero described his plant from Portuguese material it would appear that it is a member of the Oceanic West European Element and although we can claim some 30% of this element in West Norfolk it is difficult to look upon this species as part of the indigenous willow population.

S. AURITA L. *Round-eared Sallow*. Native. Common. Here again Smith's observations are confirmed by recent field-study. "There are some graduations between the common appearance of this *Salix* and its ultimate very small-leaved variety 'B'.

We meet with a small-leaved form in very wet places. A monoecious form (forma *pseudohermaphrodita* Gagn.) grows on East Winch Common.

S. AURITA × *CAPREA* (*S.* × *CAPREOLA* A. Kerner ex Anders.). A very uncommon plant as the flowering times of the parents are not identical. Possibly one plant of this grows on Roydon Common.

S. AURITA × *VIMINALIS* (*S.* × *FRUTICOSA* Doell). Again a rare plant as the parents rarely grow together. Recorded from Roydon Common.

S. AURITA × *REPENS* (*S.* × *AMBIGUA* Ehrh.). The parents often grow together on heaths, but we have only one undisputed plant of the hybrid—on Roydon Common. On the Continent this hybrid is frequent but it may well be that the difficulty of detecting hybrids here is bound up with the extremely aberrant forms of the "*repens*" group.

S. NIGRICANS Sm. *Dark-broad-leaved Willow*. Smith records this from "Wrongay" Fen. Wormegay Fen is not more than two miles from Cranberry Fen (on Crowe's estate) but to-day is but a small fraction of its former size. It is difficult to think that this Scottish and northern species occurred naturally in Norfolk. We know that Crowe cultivated willows on a large scale "more especially all that could be obtained from any part of Britain, by that unrivalled collector, Mr. Dickson" and it seems probable that this species was one sent from the north.

S. PHYLICIFOLIA L. (*S. croweana* Sm.). *Broad-leaved Monadelphous Willow*. "Discovered by Mr. Crowe, at Cranberry Fen, in the parish of East Winch, and in other parts of Norfolk". Extensive search has been made for this plant, again a strictly northern species, but without success.

S. REPENS L. agg. *Creeping Willow*. Abundant on heaths and in fens. The "*repens*" forms are bewildering in their variation and appear to defy any satisfactory classification. Many answer well to the description of Smith's *S. adscendens* while others may be referred to his *S. argentea*. Very rarely a truly creeping form may be seen, as on wet heath at Grimston Warren, and there is an interesting erect form on the peat overlying glacial gravel at East Winch Common. As defined by Floderus *S. repens* has glabrous ovaries and pedicels, a medium to rather a long style, and two stigmas. Plants with glabrous ovaries are uncommon and the majority have very hairy indumentum.

It would be interesting to attempt a rehabilitation of some of Smith's described forms and particularly to find that curious plant *S. foetida* and its var. *parvifolia* on which he writes that "They are both distinguishable from every other Willow, known to me, by a most nauseous scent, like that of some fresh-water fish . . . This odour becomes powerfully offensive, when fresh specimens have been confined for two or three days in a tin box"!

For the time being we name all our plants of this group, *S. arenaria* × *repens*, teste Floderus.

I should like to record my indebtedness to Mr. R. D. Meikle for his help in reading the manuscript and especially for his assistance with the "*Fragiles*" group.

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ALISMA GRAMINEUM IN BRITAIN

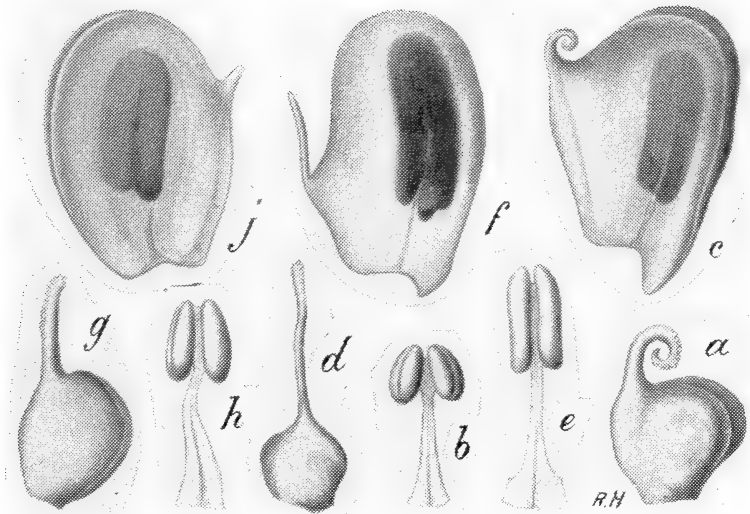
By J. E. LOUSLEY

The discovery by Miss E. J. Gibbons of *Alisma gramineum* Lejeune in Lincolnshire in 1955 has implications of greater importance than the mere addition of a second station for a species already known from England. The plant in the new locality is the deep water submerged form growing in streams and the antithesis of the form previously known from shallow water on the margin of an artificial lake in Worcestershire. Its discovery greatly widens our knowledge of the ecological conditions under which the species can thrive in Britain and establishes its status as a native beyond reasonable doubt.

The species of *Alisma*, like many other aquatics, are extremely plastic, and the characters derived from the flowers and fruits offer the most reliable means of identification. *A. gramineum* is readily distinguished from other species occurring in western Europe by the spirally coiled style and the shape of the achene, which is broadest near the apex (Plate 6). The vegetative characters vary extremely widely with differences in water-level, and while the typical species as it occurs in Lincolnshire, with flowers, fruit and narrow (3-5 mm.), elongated (60-70 cm.) leaves all submerged, can hardly be taken for any other species, the plants growing in shallow water or on mud may be confused with *A. lanceolatum* With., or even *A. plantago-aquatica* L. It was not until Samuelsson published his full revision of the genus in 1932 that this plastic species was properly understood: prior to this descriptions and citation of synonyms were generally unreliable. The distribution of the species as worked out by Samuelsson, with subsequent additions, is known to extend from central Asia through Europe to Holland, Belgium, eastern France and England, with outliers in Tangier (?) and Egypt. In addition there are two areas in North America where plants accepted as conspecific occur, and the subsp. *wahlenbergii* Holmberg ex Samuelsson (1922) ranges over limited areas in Sweden and Finland (fig. 1).

Alisma gramineum Lejeune falls into two subspecies:—(a) subsp. *gramineum* with thick-walled achenes 2 mm. or more in length and (b) subsp. *wahlenbergii* with thin-walled achenes 1.5-2 mm. in length, and with other differences. The known range of the latter round the Gulf of Bothnia and northern side of the Gulf of Finland suggests that it is very unlikely to be found in Britain, and only subsp. *gramineum* (subsp. *arcuatum* (Michalet) Hyland, (1941, 1945, 1953)) will be further considered here. This

PLATE 6



Alisma gramineum—a, ovary; b, stamen; c, achene. *Alisma plantago-aquatica*—d, ovary; e, stamen; f, achene. *Alisma lanceolatum*—g, ovary; h, stamen; j, achene.

From Schotsman, *Ned Kruid. Archief.*, 56. 202. 1949.

occurs in two extreme forms which, following Tournay and Lawalrée (1949) may be distinguished as follows:—

- (a) forma *gramineum* Tournay & Lawalrée (1949) (*A. gramineum* Lejeune (1811); *A. graminifolium* Ehrhardt (app. Steudel, 1821); *A. graminea* C. C. Gmelin (1826); *A. loeselii* Gorski (1830)). Plant submerged with all parts elongated; flowering stem 20-60 cm. long; leaves ribbon-like, 40-60 cm. long and 0.4-1.4 cm. wide but dilated at the base, nerves all parallel.
- (b) forma *arcuatum* (Michalet *sensu stricto*) Tournay & Lawalrée (1949) (*A. arcuatum* Michalet (1854)). Plant not submerged; flowering stem 10-25 cm. tall; leaves with slender petiole 1-6.5 cm. long, with clearly distinct oblong-lanceolate limb 2.5-5.5 cm. long by 0.4-1 cm. broad, with 5-7 subparallel nerves joined by distinct transverse nerves to form a grid.

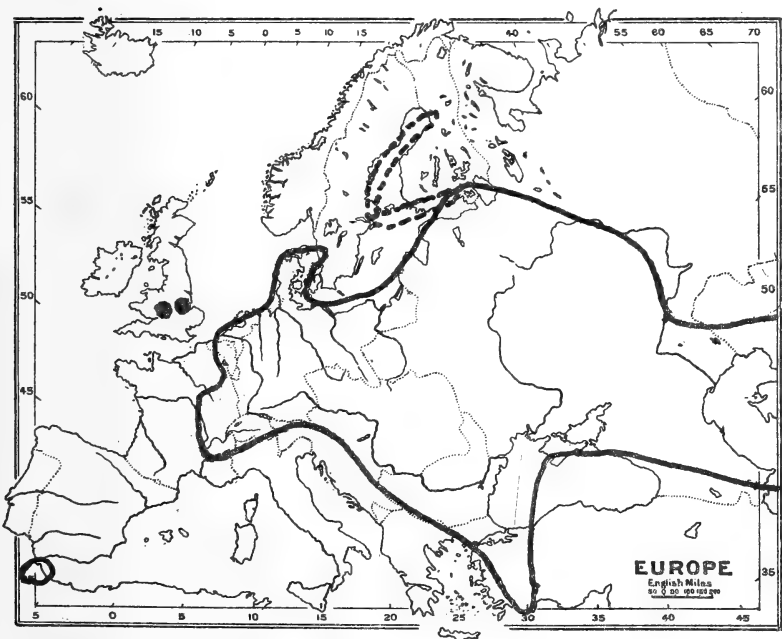


Fig. 1. *Alisma gramineum*—British localities of subsp. *gramineum* in relation to its distribution in Europe and part of North Africa (enclosed in continuous black line), and to the distribution of subsp. *wahlenbergii* (dotted line).

Further synonymy is given by Holmberg (1922), Samuelsson (1932) and Tournay and Lawalrée (1949). Glück (1905), who illustrates plants similar to those from Lincolnshire and Worcestershire, has shown beyond doubt that these forms have no taxonomic significance. The names employed by Tournay and Lawalrée are used here for convenience in drawing attention to the extreme variations. It should be pointed out that the name *Alisma* is to be treated as neuter retaining its Greek gender, and that Lejeune's name antedates C. C. Gmelin's which has been used in British literature.

BRITISH DISTRIBUTION

WORCESTERSHIRE, V.c. 37

Alisma gramineum was first brought to general notice as an English plant when Dr. R. C. L. Burges distributed specimens from Westwood Park Pool near Droitwich through our Exchange Section in 1948 (Lousley, 1950). In all probability it was the plant found by the Worcestershire Naturalists' Club on their visits to the Pool in 1920 and 1930 and reported later as follows:— "*Alisma lanceolatum* (the narrow-leaved water plantain) is here the dominant species and flourishes almost to the exclusion of the common form" (Anon., 1924 & 1932). In the appendix to the *Botany of Worcestershire* the record is repeated (Rea, 1925), and subsequently Rea recorded *Alisma plantago-aquatica* var. *graminifolium* Wahl. (which is *A. gramineum*) from the same place (Rea, 1932, & Anon., 1935). Dr. Burges has specimens of *A. gramineum* which he collected there in August 1939, but of which the significance was not appreciated until nearly ten years later. It seems that the species has been at Westwood since at least 1920, the quantity varying considerably from year to year with the water-level and temperature, and although it has not recently been observed in the abundance in which it was first found, it does not necessarily follow that it is decreasing.

Westwood Park Pool is in a large private park formerly belonging to Lord Doverdale. It is almost certainly artificial: round the edge are scattered groups of introduced shrubs and trees, ornamental water fowl have been kept, and no doubt migrating birds frequent the pond. The habitat is therefore one in which it is very difficult to assess the likelihood of its introduction by human agency or natural means.

At Westwood, *A. gramineum* grows mainly in shallow water at the edge of the Pool. On a visit on September 18, 1949, at a time when the water-level was very low, the plant was most abundant in a few inches of water associated with *Elodea palustris* (L.) Roem. & Schult. (abundant), *Polygonum amphibium* L., *Iris pseudacorus* L., *Elodea acicularis* (L.) Roem. & Schult. and *Elatine hydropiper* L. It extended into a zone of

deeper water with *Polygonum amphibium* L. and *Potamogeton natans* L., and on to exposed mud with *Lycopus europaeus* L., *Juncus effusus* L., *Mentha aquatica* L., and *Carex acutiformis* Ehrh. Dr. Burges tells me that other species sometimes associated with it include *Limosella aquatica* L., *Rumex maritimus* L., and a prostrate form of *Chenopodium rubrum* L. The pH of mud round the roots was 6.4 (Johnson's test papers).

At this station the plants are 7-25 cm. tall with the flowering heads standing well above the surface of the water, and only the lower parts submerged. The leaves are linear, often only 2 cm. wide but sometimes expanded at the top into a blade about 2.5 cm. long and 5-6 mm. wide. The Westwood plant is forma *arcuatum* of Tournay and Lawalrée, though the petioles are often longer than the measurements given in their description. Dr. Burges tells me that he has found plants just coming into flower as early as July 1 but they are at their best in late July and early August. Schotsman (1950) states that in Holland the flowers of *A. gramineum* open between about 6 and 7.15 a.m., and this may well be true also of the Westwood plants since it is rarely possible to find petals during the afternoon. The fruits ripen in mid-September when stems of the fruiting heads become arcuate and often become buried in the mud.

SOUTH LINCOLNSHIRE, V.c. 53

Alisma gramineum was discovered in the river Glen at Surfleet by Miss E. J. Gibbons on September 3, 1955, in the course of a field meeting organised by the Lincolnshire Naturalists' Union, and she immediately sent me a specimen for confirmation (Gibbons & Lousley, 1956). Five days later I joined Miss Gibbons and Mr. and Mrs. R. C. L. Howitt at Surfleet and, after examination of the locality where the plant had been found first (where we were joined for a short time by Mr. D. McClintock), we traced its distribution in the river Glen downstream to the bridge where the stream becomes tidal, and upstream to above Surfleet village, —a distance of over two miles. It was also seen in the Blue Gowt Drain for a short distance above its junction with the Glen. These localities are marked "A" and "B" on figure 2. Subsequently Miss S. R. Amner, then living at Spalding, found it in two places in Vernatt's Drain ("C"), and in Clink's Drain ("D"). It will be apparent from the map that this distribution cannot be explained by water-carriage from a single recent introduction, though it could have been so spread by water-fowl. The area has been reclaimed from the sea within historic times, but, subject to this, the evidence suggests that *A. gramineum* has been here for a long period, and may safely be accepted as native. The submerged plant is extremely difficult to see except in bright sunlight and it may well have been overlooked in similar habitats elsewhere.

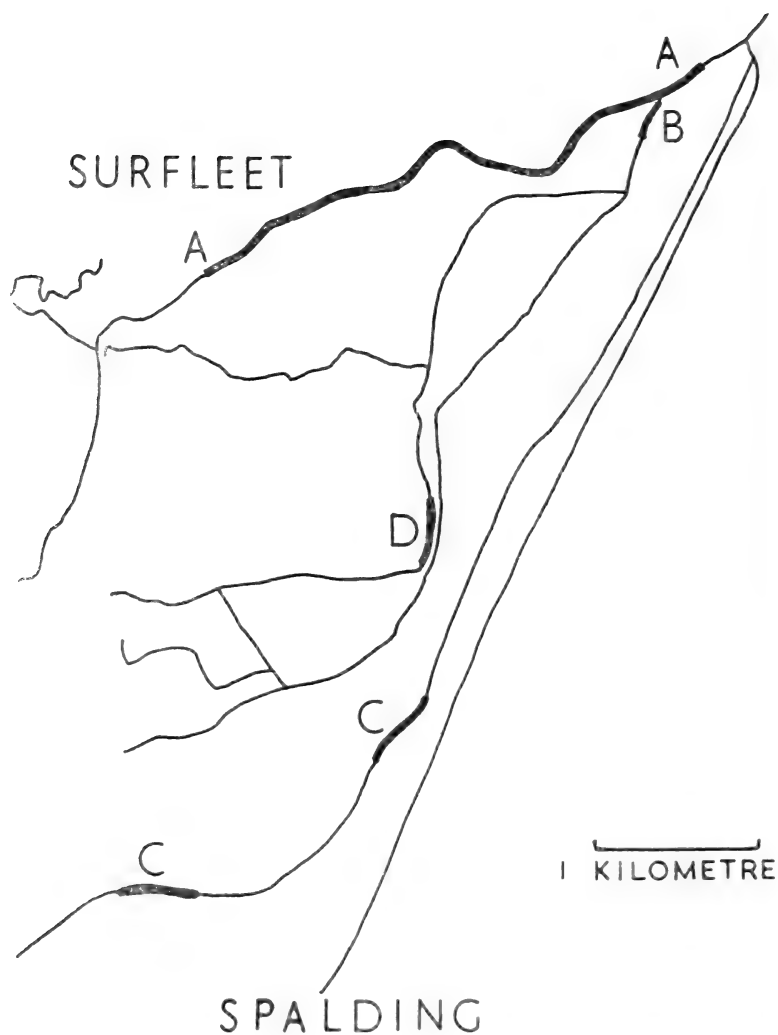


Fig. 2. *Alisma gramineum*. Distribution in S. Lincolnshire as observed in 1955. A-A, river Glen. B, Blue Gowt Drain. C-C, Vernatt's Drain. D, Clink's Drain.

In the river Glen at Surfleet it grows in about 2-4 ft. of water (the river here has a soft muddy bottom), and, with rare exceptions, the plants flower and set fruit well below the surface of the water. They are associated with the following species:—

Abundant—*Potamogeton perfoliatus* L.

Frequent—*Ranunculus circinatus* Sibth., *Callitriche stagnalis* Scop., *Potamogeton pectinatus* L., *P. pusillus* L., *P. friesii* Rupr., *Myriophyllum alterniflorum* DC.

Local—*Groenlandia densa* (L.) Fourr., *Potamogeton crispus* L.

Occasional—*Sagittaria sagittifolia* L., *Hippuris vulgaris* L., *Zannichellia palustris* L.

Rare—*Sparganium* sp., *Elodea canadensis* Michx.

A. gramineum in this locality agrees closely with Tournay and Lawalrée's description of forma *gramineum* with its tall elongated flowering stem, and ribbon-like leaves up to 60 cm. in length. It is the *Alisma graminifolium* Ehrh. forma *angustissimum* Aschers. & Graebn. (1897) which Glück (1905) has shown to be a state dependent on the water level. In some of the other Surfleet localities I understand that it grows in shallower water and the flowers sometimes rise above the surface.

We now have in this country the two extreme forms of *A. gramineum*, one completely submerged and the other subterrestrial.

OTHER RECORDS

Young (1936, p. 144) gives *Alisma plantago-aquatica* var. *graminifolium* Wahl. for Fife, v.c. 85, from "(1) Lindores Loch, and (6) Lochgelly Loch (G.W.)". West (1910) refers three times (pp. 81, 160, 161) to a submerged form of *Alisma plantago-aquatica* in Loch Gelly, and describes it as having "delicate linear-lanceolate leaves floating on the surface, and linear submerged ones". There are numerous sheets in his herbarium at the Sir John Cass College, London, with printed labels "Scottish Lake Survey (Pullar Trust)" relating to the work which was the subject of his paper, but they do not include plants from Loch Gelly or elsewhere answering to the above description. This could refer to *A. gramineum* but in the absence of specimens, or confirmation by rediscovery, the evidence is insufficient. Young's record for Lindores Loch was his own. This locality was also discussed by West (1910, p. 148) who mentions *Alisma plantago-aquatica* without comment. From its continental distribution one would not expect *A. gramineum* to occur as far north as Scotland and it seems likely that in applying the name to West's Loch Gelly plant, and to his own from Lindores Loch, Young was in error.

Attention must also be drawn to R. S. Adamson's suggestion of *A. arcuatum* Michx. for a plant he gathered at Tring, Herts. (Adamson, 1921). I have only seen inadequate specimens (Herb. Cantab.) but it seems that these are *A. lanceolatum*.

A. gramineum is therefore reliably recorded from Britain only from Westwood Pool in Worcestershire and Surfleet in Lincolnshire. It seems virtually certain that the fruits of allied species of *Alisma* are distributed by ducks—either by passing through their intestines or by adhering to their feathers (Ridley, 1930, pp. 490, 545). There is therefore likely to be constant introduction of the fruits of *A. gramineum* into this country from abroad, and dispersal of fruits from the localities in England already known. The discovery of the Surfleet localities has drawn attention to a habitat of a type which was previously unsuspected here for this species and where it is easily overlooked. Careful search in similar habitats elsewhere, and especially on the east coast, is likely to be rewarded with additional records.

In conclusion I would like to express my thanks to Dr. R. C. L. Burges and Miss E. J. Gibbons for the great help they have given me in connection with the Worcestershire and Lincolnshire localities respectively, and to Dr. H. D. Schotsman for lending the original drawings for reproduction in Plate 6.

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THE DEVELOPMENT OF ORCHID POPULATIONS IN CLAYPITS IN COUNTY DURHAM

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INTRODUCTION

Changes, qualitative and quantitative, are always taking place in the general composition of a flora. At the present time considerable attention is being paid to modifications of the British flora that either appear to have occurred recently, or are still going on (cf. Lousley, 1953). Some reasons for these changes are, that during the past sixty years large areas of this country have undergone great alteration by the bringing of marginal lands into cultivation, by tree planting, by quarrying and coal mining, and in numerous other ways. The results of these disturbances have been two-fold, because, (a) certain habitats have been completely changed (e.g. by drainage) and the characteristic vegetation exterminated, (b) the formation of new types of habitats has facilitated the creation of many large thriving colonies of plants formerly very restricted in numbers.

County Durham, particularly the eastern half of the county, has not escaped these alterations to the countryside; indeed, in some districts the changes are as drastic as any to be found elsewhere in Britain. A new plant habitat is produced when clay, used in brickmaking, is extracted from the glacial deposits covering a large part of Durham. In the course of investigations into factors controlling the spread of plants from the surrounding countryside into the claypits at Birtley, some attention was given to the rapid local build-up of colonies of the dactylorchids *Dactylorchis fuchsii*, *D. purpurella* and their hybrids.

HISTORICAL

To appreciate fully the direction of migration and the extent of the influx of these orchids into the claypits it is essential to consider their past history in the Birtley area.

The earliest local record for the occurrence of the orchid now known as *D. purpurella* was made in 1896, when it was found growing on the sides of the railway cutting at Vigo (see fig. 1). It was stated that about 50 plants grew here. In parenthesis it is interesting to note that this plant was then locally called 'wild gladiolus'. To the north of Birtley a few scattered plants were found in 1909, along the Leybournhold Gill (LG in fig. 1) just before it passes under the main-line railway. Later, in 1928, a large colony grew in the meadow between the quarry (Q) and the

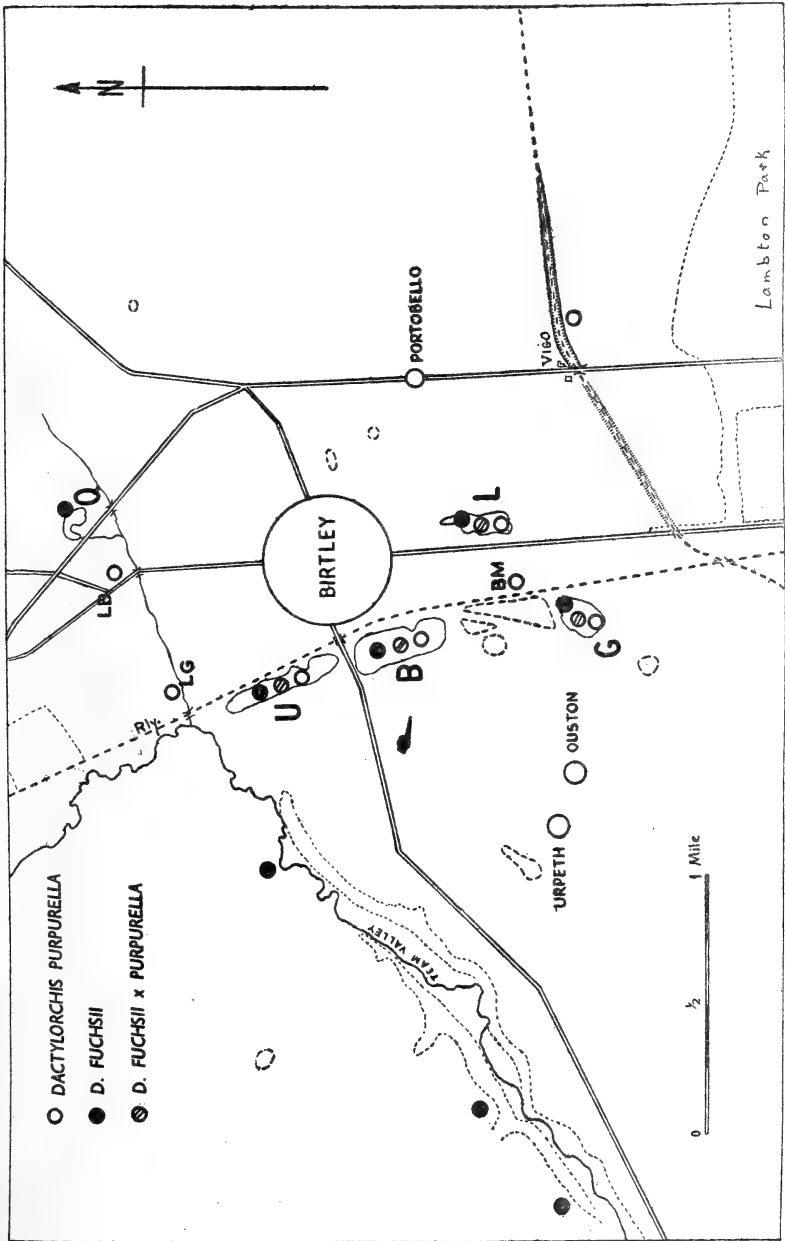


Fig. 1. Distribution of *Dactylorhiza purpurella*, *D. fuchsii* and *D. fuchsii* x *purpurella* in the Birtley area.

Longbank (LB). In the two latter localities, *D. purpurella* had died out by 1930, and it has not appeared there since. Similarly, the station for the plant at the south end of Birtley Marshes (BM), first recorded in 1925, continued to exist for a few years, but, when the marsh was drained and the stream canalised early in 1930, the plant vanished.

Thus, between 1930 and 1940 it appears that the only local station for the species was at Vigo, i.e. about one mile to the east of the open ground in the clay-fields at Birtley Grange (G) and Leaffield (L). The yearly average number of plants seen over the past three years at Vigo has been twelve; this represents about a quarter of the number said to exist sixty years ago.

At the beginning of the present century *Dactylorchis fuchsii* was found in groups of a few dozen plants at several points in the damp ground of the Team Valley below the Forge (see fig. 1). It is just possible that these colonies persist today in much reduced numbers, although careful searching has so far failed to bring them to light. However, a single plant was found in 1940 in a new locality about a mile lower down the Valley from the former colonies. In 1903, between twenty and thirty plants were discovered by the Brooms Burn, north of Urpeth, where they grew for about ten years and then gradually died out. Similarly a colony of about twenty plants was first recorded north of the quarry (Q) in 1903 and these also had died out by 1925. A most careful search in these places in recent years has failed to reveal a single specimen of this orchid.

Thus, it appears that in the past 50 to 60 years plants of both *D. purpurella* and *D. fuchsii* have existed in small numbers in places around Birtley. It is certain that by 1940 *D. purpurella* had died out, or had been exterminated, in all its former known localities except on the railway bankside at Vigo. The disappearance of *D. fuchsii* is equally certain, and in 1940 its only known locality was in the Team Valley, a mile and a half to the west of the Birtley brickyards. The evidence strongly favours the view that in 1940 these orchids, far from increasing their range and numbers, were just managing to hold their own in the Birtley area.

THE SPREAD OF ORCHIDS TO THE CLAYPITS

Between 1940 and 1942 these attractive plants appeared for the first time in the Grange claypit (G) (see fig. 1). They excited keen interest, more especially when later what was clearly a hybrid was also found. Between 1942 and 1949 the orchids had spread to the St. Bede (B), Team Valley (U), and Leaffield (L) claypits, and to several suitable places elsewhere.

The clay workings at the Grange brickyard are in the form of a shallow oval basin with a uniform depth of about forty feet

and a diameter of about two hundred yards. The clay was worked down to the present level in two "cuts" each one removing a twenty foot layer of clay from the whole area. The second of these cuts was started from the south in 1936 and finished at the north end of the basin in 1942. In that year a few plants of *D. purpurella* were seen for the first time on the lower slopes at the south end, i.e. on ground first laid bare six years previously. No orchids were found on the upper slopes which carried an almost closed community in which *Agrostis tenuis*, *Arrhenatherum elatius*, *Dactylis glomerata*, *Equisetum arvense*, *Festuca ovina* and *Lotus corniculatus* were prominent members; neither were any found on the practically bare clay on the bottom of the pit, nor in the dense hawthorn scrub formed over the very old workings at the west side of the basin.

The absence of the orchids from the upper slopes, which in 1936 carried an open plant community (mainly *Agrostis tenuis*, *Holcus lanatus* and *Tussilago farfara*), suggests that until about 1940 they were not extending their range with anything like the vigour they showed later. In view of the conclusions that have been made about the pattern of the invasion by the two species (see below) it would seem that by the time the orchid invasion had gathered impetus in 1942 the upper slopes were too densely populated with tall grasses such as *Dactylis glomerata* and *Arrhenatherum elatius* to provide a suitable habitat. In contrast, the lower slopes carried the very open-type community mentioned above, so that there was no competition factor controlling the establishment of orchids. By 1945 there were numerous plants of *D. purpurella* on the slopes and a few had started invading the bottom of the claypit at the south end.

D. fuchsii began to invade the brickyard in similar manner, and by 1948 hundreds of both species and their hybrids were growing all over the bottom of the pit, extending to within 50 yards of the last area to be worked out at the north end. This area of clay, uncovered in 1942, was carefully examined in 1949, when the average number of flowering orchid plants in a ten-yard square was found to be 27; this total was comprised of almost equal numbers of the two parents with a few hybrids (see Table 1). As time went on the taller growing, more vigorous hybrids were found to survive and increase in number amongst the vegetation more readily than the lower growing *D. purpurella*. This thinning out process so far as *D. purpurella* was concerned was noticed in all the other clay pits examined. Amongst the hybrids many forms were to be seen, ranging from almost pure *D. purpurella* plants through distinct intermediate plants to specimens of almost pure *D. fuchsii*. In 1953 there was no doubt that the hybrid was very rapidly gaining ground, as the average counts in a ten-yard square shows (see Table 1).

TABLE 1.

Species	Number of plants			
	1949	1951	1953	1954
<i>Dactylorchis fuchsii</i>	11	20	28	30
<i>D. purpurella</i>	12	14	10	8
<i>D. fuchsii</i> × <i>purpurella</i>	4	31	154	181

It is interesting to note that at the present time in the closed scrub communities along the west side, and along the upper slopes of the south, east and north sides, only a few orchids are to be found, even at what might well be the peak of the invasion pressure. It appears that generally no orchid plants, not even the hybrids, establish themselves in tall-growing vegetation in claypits.

A similar successful colonisation of recently bared clay also occurred at the St. Bede's brickyard (B) (see fig. 1). This working runs north and south, is about seven hundred yards long, and has a fairly uniform width of about two hundred yards. The clay was taken off, starting from the north end, and by 1928 the working face was at about mid-point of the yard.

The portion of ground cleared in 1930 has not been disturbed in any way since, so that when the first orchids were discovered growing on it in 1942 it had been open to plant invasion for twelve years. It then carried the typical open community described above, and it would appear from our present knowledge of the conditions necessary for the germination and establishment of *Dactylorchis purpurella* and *D. fuchsii* (see below) that in 1942 the habitat was most suitable. No plants were found on the younger ground to the south or in the more mature grassland and scrub farther north. Thus, the distribution of the earliest invading plants followed the same pattern as the one described for the Grange claypit. On the '1930 ground' the orchid population, comprising *D. purpurella*, *D. fuchsii* and every conceivable intermediate form, increased rapidly in numbers between 1942, when the parent plants were first discovered there, and 1952. At the present time although the ground still carries hundreds of orchids per ten-yard square there are signs that the numbers are no longer increasing; in fact as taller-growing grasses such as *Arrhenatherum elatius* and *Dactylis glomerata* spread into the area from adjacent ground to the north, the dominance of the orchids might be expected to decline. In view of the well-known characteristic of British orchids of fluctuating in abundance from year to year, a discussion of the results of fixed quadrat counts would be out of place for at least another three years. The fact that only a few scattered plants of the hybrid have ever been found growing on ground where there was a complete cover of

vegetation (in 1942) shows the difficulty orchids have in moving to closed communities on clay soils, and hints that as time passes they may be gradually eliminated from habitats in which they were pioneers.

In 1939 the St. Bede's claypit reached its present southern limit, except for a block of clay 60 yards wide \times 10 yards deep \times 6 yards high. Work was stopped in December 1939 when the kilns and drying sheds were required for the manufacture of war materials, and the clay-field lay undisturbed from then until October 1946. Pumping of water, however, took place at intervals to prevent severe flooding. During the seven years, 1939-46, the characteristic early colonising vegetation (see p. 357) moved in on both the bottom and sides of the claypit from the north right down to the last working face at the south end.

In 1946, just before this last block of clay was taken out, the orchid population in the yard as a whole was as follows: on the '1930 ground' 400 yards to the north there were hundreds of all three plants; towards the south end the numbers fell off progressively until one reached the working face where only a few scattered plants occurred.

In June 1951, i.e. five years after this last block of clay was removed, the slopes carried an average of six orchids to a ten-yard square and in the bottom there was only an occasional plant. The ratio on the slopes was three plants of the hybrid *D. fuchsii* \times *purpurella* to two plants of *D. purpurella* to 1 plant of *D. fuchsii*. Altogether there were 29 orchids in the portion stripped in October 1946. Fixed quadrats were laid down here, but unfortunately those on the bottom were wiped out when the present method of working the clay was being tested. However, those on the slopes have been regularly observed and gave the counts listed in Table 2.

TABLE 2.

Species	Average number of plants per ten-yard square quadrat				
	1951	1952	1953	1954	1955
<i>Dactylorhiza fuchsii</i> ...	1	11	15	19	23
<i>D. purpurella</i> ...	2	4	5	5	8
<i>D. fuchsii</i> \times <i>purpurella</i> ...	3	20	43	64	106

Precisely the same general pattern of build-up of the orchid population has occurred in the other two neighbouring clay-fields, the Leafield (L) and the Union (U) (see fig. 1), so that the tentative conclusions now drawn are based on observations made simultaneously at four similar areas all within one mile of each other.

DISCUSSION

It appears that shortly before 1942, for reasons not clear at present, the dactylorchids, *D. purpurella* and *D. fuchsii* burst out from their stations a mile to the east, and a mile and a half to the west respectively, of the Birtley claypits. This occurrence is all the more remarkable because it is certain that the same habitat conditions, existing in the years just before 1942, had existed in some parts of all these clayholes almost continuously from 1920 onwards. One could have expected the appearance of the orchids earlier, but the fact remains that the first plants appeared in 1942. The possibility that these rare and striking plants could have been overlooked must not be entirely discarded, although, for several reasons, this contingency is thought to be most unlikely.

The second important fact arising out of this study concerned the condition of the substratum on which the orchids were first able to grow from wind-borne seeds into flowering plants. This event took place, either on gentle slopes, or on well-drained sites at the bottom of the claypits where the ground was about 10 years old and the plant cover was between 45% and 55%. Briefly, it appears that young orchid seedlings would enjoy at least three advantages here. (a) There would be some protection from the effect of the sun's radiation, (b) the soil texture would be more open, and hence warmer in spring than raw clay, and (c) the presence of organic matter in the soil and the resultant bacterial or fungal activity could have resulted in a supply of suitable carbohydrates to the young seedlings. In any case, the magnificent sight of thousands of orchids crowding the ground in June and July emphasises the suitability of the habitat.

When a visit is made to the claypits during the short period in which the earlier-flowering *D. purpurella* and the later-flowering *D. fuchsii* are in full bloom together, the existence of an extensive array of different hybrid forms is immediately apparent. These hybrids vary from plants scarcely distinguishable from one parent, through a long series of intermediates, to those closely resembling the other parent. It appears that the orchid populations in the Birtley claypits are in fact hybrid swarms, built up as a result of F_1 plants back-crossing with the parents. This view is strengthened by the knowledge that the F_1 plants produce healthy capsules from which seeds are dispersed in the normal way.

It can be strongly argued that the important result of hybridisation of the two species is to prolong the life of the population in the claypits. The hybrids are taller and more vigorous than the parents, and they can thus compete more successfully with the grasses and the hawthorn scrub. It is particularly noticeable that as the tall grasses invade the '1930

ground' (see above) the parent species, *D. purpurella* and *D. fuchsii* are the first to disappear, while the hybrid continues to flourish. Again, when orchid plants are found at scattered points in the hawthorn scrub, having arrived there long after the community was closed, they always prove to be the hybrids and never one of the parent species.

It is interesting to speculate upon the reason for the ease with which the hybrids can exploit recently exposed ground (as distinct from that favoured by the parent). This could be explained on the basis of the process of introgressive hybridisation throwing up a very large number of segregates. Since each will have particular physiological requirements at least some of them could find tolerable habitats at points on newly turned up clay. As Anderson (1949) has argued, for *Iris* species, the success of these orchid populations may be due to hybridisation between closely related species, followed by the habitat selecting from large numbers of plants which embrace a wide range of ecological tolerances.

Clearly, the value of any account that deals with changes in the vegetation of a given area depends on accurate and detailed observations over a long period. I am extremely grateful to Professor J. W. Heslop-Harrison, F.R.S., who has worked in the Birtley area for more than fifty years, for allowing me to use his field notebooks as an aid to this investigation. My thanks are also due to Messrs. W. Blythe and R. Harris who helped me to date the clay workings.

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A NEW HABITAT FOR *OSMUNDA REGALIS* L.

By P. JANE WARWICK

(Botany Department, University of Birmingham)

During a visit to Lancashire in November 1956 when observations were made on a number of coal-shale tips, *Osmunda regalis* L. was found on one such area near Wigan.

Information from the literature shows that although this species was once widespread in Lancashire, it has now become almost extinct there as a natural species. More recent accounts of its localities include a report in 1933 by Green (1933) for Simonswood Moss, and by Wheldon and Wilson (1907) for Ashfield. Lacey (1954) reported that although this species was looked for in the Chorley district, it had not been found. This report would seem to cover the tip in question and reference is made to the vegetation of tips.

This new locality for *Osmunda regalis* L. seems also to be a new habitat. Clapham, Tutin and Warburg (1952), in common with other authors, describe the usual habitat as fens, bogs, and wet heaths and woods on peaty soil, but in this case, the plant was found high up on a north-facing slope on the shale. The fact that a number of plants bearing fertile as well as sterile fronds were present, suggests that the fern was well established.

The surrounding vegetation as far as could be ascertained in November, consisted of *Pteridium aquilinum*, *Deschampsia flexuosa* and *Hieracium* spp. The tipping on the site ceased in 1933, and compared with other tips of the same age the colonisation is advanced. There is, however, slightly more vegetation on the area surrounding the *Osmunda*, and investigation of this part of the tip showed it to be undergoing slow combustion, the soil being warm just below the surface. Some preliminary chemical and physical investigations were made on spoil samples from the burnt and unburnt areas to see if the burning of the spoil material made a more suitable habitat for the *Osmunda*. A rough determination of particle size showed that the ratio of particles over 0.5 mm. in diameter to those smaller than this figure was 19:1 in the unburnt and 15:5 in the burnt spoil.

The water-holding capacity was determined according to Piper (1942), which is an adaptation of a method described by Keen and Raczkowski (1921). The only difference in the determination carried out on the spoil was that only the fraction which passed through the 2-mm. sieve was used, since many of the larger

particles exceeded the size of the box. The value for the unburnt spoil of 69.023 per cent is exceeded by that for the burnt spoil by over twenty per cent, the latter having a water-holding capacity of 92.83 per cent of the oven-dry spoil.

The pH was determined by the glass-electrode method. The total exchangeable bases were determined by two methods. The first was described by Russel (1950) using the ammonium-acetate leachate, and the second was described by Brown (1943), and uses the pH correlation with base exchange of a normal acetic acid solution. The phosphate was determined in a Morgan's extract using the method of Wolf (1944). Potassium and calcium were determined in an acetic-acid extract on the flame photometer. The values obtained from these determinations were low for both samples although they were slightly higher for the burnt sample.

The results appear in the following table:—

Sample	Ratio Particles above 5 mm. particles below	Total exchange- able bases m.e./100 g. (Russel)	Total exchange- able bases m.e./100 g. (Brown)	pH	Phosphate p.p.m.	Potassium p.p.m.	Calcium p.p.m.
Unburnt	19/1	2.9	2.9	4.20	20	115	225
Burnt	15/5	3.33	3.6	4.08	30	165	600

These results indicate a change in the shale on burning to give a more favourable habitat for plant life in general. The increase in water-holding capacity, total exchangeable bases and individual cations is probably due to the oxidation of the coal in the tip to give humic acids. Their colloidal properties would increase the values of the two former measurements, and their acidic nature would set free the cations. Phosphate is known to be low in shales and coal (Nagelschmidt, 1943), and the slight increase in the burnt sample is not particularly significant.

Peat, the common habitat for *Osmunda regalis*, is characterised by a high base-exchange capacity (Lyon and Buckman, 1937). The oxidation of coal particles, however, cannot be paralleled to the formation of peat though the end products have some similar properties. It is suggested, therefore, that the burnt coal-waste cannot be compared to peat and it is likely that the occurrence of *Osmunda regalis* on the tip is due to lack of competition. It is probable that it has established itself on burnt material rather than on unburnt, because of the slightly higher nutrient status and water-holding capacity of the former.

ACKNOWLEDGMENTS

The writer thanks Dr. W. J. Rees who supervised this work, Dr. G. J. Lawson for advice on matters relating to coal, the Lancashire County Council Planning Department, who facilitated her visit to Lancashire, and the Nature Conservancy for financial provision.

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See note on name Brickwade in
card-catalogue, British Bound Collections -
correct name is Bricknede see
Caucasic sp. Vol. 1. -
AN INTERESTING 19TH CENTURY HORTUS SICCUS 365
Charlotte Bricknede

AN INTERESTING 19TH CENTURY HORTUS SICCUS

By DOUGLAS H. KENT

During the autumn of 1956 the Reference Librarian at Willesden Central Library, London, N.W.10, drew my attention to an old Hortus Siccus in the possession of the library. The collection was contained in 4 volumes, 18" x 13½" in size, bound in green leather, and consisted of several thousand plants of which c.200 were localised. The compiler of the collection is, as yet, unidentified, but the specimens are dated between 1820 and 1836. In addition, there were, loosely inserted, a few foolscap sheets bearing specimens all dated 1787, and all unlocalised.

The collection was undoubtedly made in the Sawbridgeworth area of Hertfordshire, and about 36 plants are localised from there, while about 12 specimens bear localities from adjacent areas in Essex. Some of the former are apparently first records for the county, predating those given in Pryor's *Flora of Hertfordshire*; a list of these is given below.

Contributors to the collection are Miss Praed, Trevethow, Cornwall (Cornish plants, 1828-29), Major Harding, Ilfracombe * (Devon plants, 1836), Charlotte Brickwade (Essex plants, 1830-33), Thomas Rivers (Herts plants, 1828-29), Rowland Gardiner Alston (Herts plants), Emma Maria Alston (*Cochlearia officinalis* from Cumberland) and Daniel Sweeting French (Cambridge and Norfolk plants, 1828). Many specimens are also contributed by "J.B.", and the initials "H.B.", "J.B. Junr." and "S.M." also occur. These individuals have yet to be identified, though it seems probable that "H.B.", "J.B.", and "J.B. Junr." were * members of the Brickwade family. There are also about 36 plants, gathered in 1836, from the Harrogate area of Yorkshire.

The Hortus Siccus was presented to the Willesden Libraries some years ago by a Mr. W. J. Fordham, whose father purchased it from a bookseller c.1914. By kind permission of Mr. J. T. Gillett, Borough Librarian of Willesden, the collection has now been transferred to the British Museum (Natural History).

FIRST RECORDS FOR HERTFORDSHIRE PRE-DATING THOSE GIVEN IN PRYOR'S *FLORA OF HERTFORDSHIRE*

SISYMBRIUM OFFICINALE (L.) Scop. Hedge next to the Town Field, Sawbridgeworth, 1828.

MALVA MOSCHATA L. Near Hyde Hall, Hunsdon Mill, 1827, "J.B."

M. NEGLECTA Wallr. Gathered in Redrick Lane (Pishobury), 1828, "S.M."

- GERANIUM DISSECTUM L. Saye's Coppice, 1828.
G. MOLLE L. Shrubbery, Pishobury, 1828.
AGRIMONIA EUPATORIA L. Redrick Lane (Pishobury), 1827.
SORBUS AUCUPARIA L. From the gate leading to Rowney Farm
(Pishobury), 1829, "R.G.A."
OENANTHE AQUATICA (L.) Poir. From the water at Pishobury,
1828.
CIRSIUM ACAULON (L.) Scop. Downs, Pishobury, 1827.
SILYBUM MARIANUM (L.) Gaertn. Hertford, 1828, "J.B."
CAMPANULA GLOMERATA L. Field next to Rowney Wood
(Pishobury), 1829.
CUSCUTA EPILINUM Weihe. Upon flax in Mr. Brickwell's field,
1831.
EUPHORBIA PLATYPHYLLOS L. Near Avis's House, Allen's Green,
1827.

PLANT RECORDS

Compiled by E. C. WALLACE

Records are for the year 1956 when no date is given.

The following signs are used:—

- § before the *B.P.L.* number: to indicate that the paragraph contains information necessitating a correction to an annotated copy of the *Comital Flora*.
- † before the *B.P.L.* number: to indicate that the plant is not a native species in the British Isles.
- † before the record: to indicate a species which, though native in some parts of the British Isles, is not so in the locality recorded.
- * before the record: to indicate a new vice-county record, not published previously to this issue of the *Proceedings*.
- ‡ before the record: to indicate a record additional to an annotated copy of *Comital Flora*, but published elsewhere prior to the issue of the *Proceedings* in which it appears.
- [] enclosing a record: to indicate doubt as to the validity of the record, either of identification or locality.

It will be useful if, in future, National Grid Co-ordinates, made as accurate as is thought advisable, are added to all records.

§2/2(2). *THALICTRUM MINUS* subsp. *ARENARIUM* (Butcher) Clapham. *95, Elgin; sand dunes, Findhorn, 1950, becoming rare; sand dunes, Lossiemouth, near Covesea Lighthouse, M. McCALLUM WEBSTER.

4/1. *ADONIS ANNUA* L. 12, N. Hants.; VI (1) plentiful on the border of a cornfield near Whitchurch, M. EDMUNDS and J. OUNSTED.

§6/20. *RANUNCULUS FLUITANS* Lam. *43, Radnor; in river Dulas at Llanfihangel-Helygen, V. GORDON.

§6/22. *RANUNCULUS TRICHOPHYLLUS* Chaix. *43, Radnor; wet floor of quarry by roadside, Llanbadarn-Fynydd, R. LEWIS, F. H. PERRING and B. M. STURDY.

§6/24. *RANUNCULUS AQUATILIS* subsp. *AQUATILIS*. *95, Elgin; pool by sea, Lossiemouth Golf Course: 109, Caithness; pool by northern edge of Killiminster Moss, M. McCALLUM WEBSTER, both det. R. W. BUTCHER as *R. aquatilis* subsp. *heterophyllus* var. *submersus*.

§6/25. *RANUNCULUS AQUATILIS* subsp. *PELTATUS* (Schrank) Syme. *96b, Nairn; pool by road in Dallaschyle Wood, Cawdor, Loch Flemington, M. McCALLUM WEBSTER, det. R. W. BUTCHER.

§6/26. *RANUNCULUS AQUATILIS* subsp. *PSEUDOFUITANS* (Syme) Clapham. *95, Elgin; burn at Darnaway Castle: H.14, Leix; river at Riverstown, M. McCALLUM WEBSTER, both det. R. W. BUTCHER as *R. pseudofuitans*.

§11/1. *AQUILEGIA VULGARIS* L. *†106, E. Ross; Brahan Woods, near Conon Bridge, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

†14/1(2). *ACONITUM NAPELLUS* L. agg. 95, Elgin; Greshop Wood, Forres, garden escape, 1950, M. McCALLUM WEBSTER

19/1c. *NYMPHAEA OCCIDENTALIS* (Ostenf.) Moss. 101, Kintyre; Loch-an-Arramb, Stronachullin, Knapdale, A. G. KENNETH, det. E. C. WALLACE.

§21/4. *PAPAVER LECOQII* Lamotte. *†43, Radnor; railway line, Pen-y-Bont, R. C. L. HOWITT.

†31/3. *CORYDALIS CAVA* (L.) Schweigg. & Koerte. 90, Angus; a patch in Scone Wood, U. K. DUNCAN, J. GRANT ROGER and D. McCLINTOCK.

§32/8. *FUMARIA MARITINII* Clavaud. †4, N. Devon; market garden, South Tawton, O. Greig (1956, *Rep. & Trans. Devon. Asscn.*, 88, 227).

§35/1(2). *RORIPPA MICROPHYLLA* (Boenn.) Hyland. *95, Elgin; common in most parishes in Moray: *109, Caithness; Loch Watten. M. McCALLUM WEBSTER, det. A. MELDERIS.

§35/2. *RORIPPA SYLVESTRIS* (L.) Bess. *109, Caithness; Buckies Farm, Halkirk, M. McCALLUM WEBSTER, conf. A. MELDERIS

36/5. *BARBAREA INTERMEDIA* Bor. 73, Kirkcudbr.; roadside N. of New Abbey towards Carsthorpe, D. McCLINTOCK. H.39, Antrim; Quin's Farm, Three Islands, J. McK. MOON and D. McCLINTOCK.

37/1. *ARABIS HIRSUTA* (L.) Scop. *96, Easternness; shingle of river Ness, Inverness, M. McCALLUM WEBSTER.

†37/9. *ARABIS ROSEA* DC. 95, Elgin; appeared in policies of Blackhills House near Elgin, M. McCALLUM WEBSTER, det. A. MELDERIS and S. M. WALTERS.

§39/2. *CARDAMINE AMARA* L. *95, Elgin; banks of Mosset Burn, Forres, 1950, M. McCALLUM WEBSTER.

§44/1. *EROPHILA VERNA* (L.) Chevall. *96, Easternness; Kingussie; Drumnadrochit, M. McCALLUM WEBSTER.

§†45/1. *ARMORACIA RUSTICANA* Gaertn. Mey. & Scherb. *95, Elgin; waste ground, Forres, M. McCALLUM WEBSTER.

†49/3. *SISYMBRIUM ALTISSIMUM* L. 83, Edinb.; abundant on rubbish-tip, Lasswade, 1953→, E. B. BASDEN, det. at ROYAL BOT. GARD., EDINBURGH. 88, Mid Perth; rough ground, Perth Harbour: 96, Easternness; rough ground, The Longman, Inverness, M. McCALLUM WEBSTER, conf. A. MELDERIS.

†49/4. *SISYMBRIUM ORIENTALE* L. 94, Banff.; allotment at Aberlour: 95, Elgin; rough ground, Rothes; station yard at Blacksboat and Forres: 96, Easternness; rough ground near docks: 96b, Nairn; rough ground near harbour, Nairn, M. McCALLUM WEBSTER.

§50/1. *ERYSIMUM CHEIRANTHOIDES* L. *43, Radnor; plentiful in oat field near Carmel, V. GORDON.

§†54/2. *BRASSICA NAPUS* L. *43, Radnor; waste ground, Frank's Bridge, R. C. L. HOWITT.

§54/13. *BRASSICA NIGRA* (L.) Koch. *†95, Elgin; rubbish-tip, Forres, M. McCALLUM WEBSTER, det. A. MELDERIS.

†54/16. *BRASSICA JUNCEA* (L.) Coss. 95, Elgin; distillery yard, Rothes, M. McCALLUM WEBSTER, det. A. MELDERIS.

§60/2. *CORONOPUS SQUAMATUS* (Forsk.) Aschers. †95, Elgin; farmyard at Cullerne House, Findhorn, 1953, M. McCALLUM WEBSTER. But see *Top. Bot.*

†70/1. *NESLIA PANICULATA* (L.) Desv. 95, Elgin; goods yard, Forres station, M. McCALLUM WEBSTER.

†76/2. *RAPISTRUM ORIENTALE* (L.) Crantz. 45, Pembs.; railway siding, Fishguard Harbour, one plant: H.31, Louth; several plants in a disused yard, Drogheda, D. McCLINTOCK.

†76/4b. *RAPISTRUM HISPANICUM* var. *HIRSUTUM* (Cariot) O. E. Schulz. 95, Elgin; Carron Distillery, M. McCALLUM WEBSTER, det. A. MELDERIS.

†82/2. *CHORISPORA TENELLA* (Pall.) DC. 26, W. Suffolk; waste ground near Lakenheath, 1953, D. DUPREE, det. A. MELDERIS.

§85/2. *RESEDA LUTEA* L. *43, Radnor; disturbed roadside near Clyro, V. GORDON.

92/2. *DIANTHUS DELTOIDES* L. 17, Surrey; heathy turf, Folly Hill, N. of Ewhurst, D. McCLINTOCK.

§96/4. *MELANDRIUM NOCTIFLORUM* (L.) Fr. *95, Elgin; rough ground, Carron Distillery and railway station, M. McCALLUM WEBSTER, det. A. MELDERIS.

§102/6. *ARENARIA LEPTOCLADOS* (Reichb.) Guss. 64, Mid W. Yorks.; railway track between Ripley Valley and Nidd Bridge stations, F. E. BRANSON, det. and comm. F. W. ADAMS. *101, Kintyre; banks of burn, Aros Moss, near Machrihanish Airport, M. H. CUNNINGHAM, det. E. C. WALLACE.

†102/14. *ARENARIA BALEARICA* L. 83, Edinb.; Kevock, near Lasswade, J. F. BASDEN, det. Dr. H. R. FLETCHER. 95, Elgin; wall by entrance gates to Newton House, Alves, M. McCALLUM WEBSTER.

103/2. *SAGINA SUBULATA* (Sw.) C. Presl. *109, Caithness; railway line at Autnabreac, M. McCALLUM WEBSTER, conf. A. MELDERIS.

§†108/1. *MONTIA SIBIRICA* (L.) Howell. *44, Carms.; bank of Afon Bran, Llanfair-ar-y-Bryn, F. H. PERRING, I. M. VAUGHAN and J. WILLE. 83, Edinb.; Kevock, near Lasswade; Roslin; Heriot, E. B. and J. F. BASDEN.

§†108/2. *MONTIA PERFOLIATA* (Willd.) Howell. 83, Edinb.; Mortonhall, Liberton, E. B. BASDEN. †95, Elgin; a common weed in Moray, M. McCALLUM WEBSTER. But see Burgess, *Flora*, 95.

§112/13. *HYPERICUM* × *DESETANGSII* Lamotte. *43, Radnor; near river Wye, Boughrood, J. F. and P. C. HALL.

§116/1. *LAVATERA ARBOREA* L. *†95, Elgin; plentiful on sea wall of Findhorn village prior to storms of 1953—now rare, M. McCALLUM WEBSTER.

§117/1. *MALVA MOSCHATA* L. *96, Easternness; rough ground, Ardesier, M. McCALLUM WEBSTER.

§†117/9. *MALVA PARVIFLORA* L. *95, Elgin; rough ground, Carron Distillery, M. McCALLUM WEBSTER, det. A. MELDERIS.

§†127/6. *GERANIUM ENDRESSII* Gay. *95, Elgin; edge of main road near Lossie Bridge, Elgin, M. McCALLUM WEBSTER.

†127/12. *GERANIUM PUSILLUM* L. *43, Radnor; by the railway line, Llangunllo, J. F. and P. C. HALL and F. H. PERRING; old quarry, Llandrindod Wells, V. GORDON.

†127/16. *GERANIUM MACRORRHIZUM* L. 106, E. Ross; near Evanton, garden escape, B.S.B.I. FIELD MEETING, det. J. E. LOUSLEY, comm. U. K. DUNCAN.

§†133 3. *IMPATIENS PARVIFLORA* DC. Coombe, D. E. (*J. Ecol.*, **44**, 701-713, 1956) gives British distribution as V.-cc. 1, 6-9, 11, 13, 14, 16-34, 37-41, 48, 50, 52-59, 61, 63, 64, 67-70, 72, 73, 77, 82, 83, 90, 91, 95. *43, Radnor; by river Wye near Clyro, C. GOODMAN.

§138/1. *FRANGULA ALNUS* Mill. *43, Radnor; near Llanbadarn, Miss D. E. DE VESIAN.

†142/3. *ACER PLATANOIDES* L. 83, Edinb.; many trees along Heriot Water valley, E. B. BASDEN, det. Dr. H. R. FLETCHER.

176/7. *VICIA BITHYNICA* (L.) L. †24, Bucks.; waste ground, Burnham Beeches, A. F. WOOD, conf. R. A. GRAHAM.

§†178/1. *LATHYRUS LATIFOLIUS* L. *43, Radnor; waste ground, Frank's Bridge, R. C. L. HOWITT.

178/25b. *LATHYRUS MONTANUS* var. *TENUIFOLIUS* Garcke. 83, Edinb.; on open slopes on hills, Heriot, E. B. BASDEN, det. Dr. H. R. FLETCHER.

†179/2. *GLYCINE MAX* (L.) Merr. 16, W. Kent; by B.O.C.M. silos, Erith: 61, S.E. Yorks.; B.O.C.M. Olympia sidings, D. McCLINTOCK.

184/12. *FILIPENDULA VULGARIS* Moench. 14, E. Sussex; Buxshall's Hills, Lindfield, not on chalk, 1955, R. C. PALMER.

†185/156. *RUBUS SPECTABILIS* Pursh. 83, Edinb.; Dreghorn Park, near Colinton, 1949, E. B. BASDEN, det. W. C. R. WATSON: Heriot, in great quantity, E. B. BASDEN, det. at ROYAL BOT. GARD., EDINBURGH.

§186/1. *DRYAS OCTOPETALA* L. †94, Banff; very locally on the eastern Cairngorms within Banffshire, on moist granitic rocks at elevations between 3,000 and 3,200 ft., J. Grant Roger (1957, *Trans. & Proc. Bot. Soc. Edinb.*, 37, 132).

†189/11. *POTENTILLA NORVEGICA* L. *95, Elgin; station yard, Knockando, M. McCALLUM WEBSTER, det. A. MELDERIS.

190/1. *ALCHEMILLA VESTITA* (Buser) Raunk. 101, Kintyre; grassy seashore verge near Peninver, E. Kintyre, M. H. CUNNINGHAM, det. S. M. WALTERS.

§190(2)/2. *APHANES MICROCARPA* (Boiss. & Reut.) Rothm. *46, Cards.; two miles E. of Tregaron, F. H. PERRING, det. S. M. WALTERS.

†192/1. *ACAENA ANSERINIFOLIA* (J. R. & G. Forst.) Druce. 13, W. Sussex; pathside in woods, South Lodge, Lower Beeding, R. C. PALMER. 96, Easternness; forming a well-established patch, 50-60 sq. yds. in extent, below *Pteridium* and *Rubus* near Dochgarroch, on forest road above Loch Ness, N. M. PRITCHARD and J. G. NEWBOULD.

193/1. *POTERIUM SANGUISORBA* L. †95, Elgin; well established on railway embankment between Spyne and Lossiemouth, 1952, R. RICHTER, comm. M. McCALLUM WEBSTER.

195/13×5. *SORBUS ARIA* × *AUCUPARIA*. 94, Banff; with both parents in a small wood S. of Cairnfield House, Clochan, M. McCALLUM WEBSTER, det. E. F. WARBURG.

199/17. *SAXIFRAGA GRANCLATA* L. 90, Angus; a few plants in Scone Wood, U. K. DUNCAN, J. GRANT ROGER and D. McCLINTOCK.

†202/1. *TOLMIEA MENZIESII* (Pursh) Torr. & Gray. 83, Edinb.; an established patch by side of Heriot Water, E. B. BASDEN, det. Dr. H. R. FLETCHER.

210/1. *UMBILICUS RUPESTRIS* (Salisb.) Dandy. 17, Surrey; wall at Folly Hill, N. of Ewhurst, D. McCLINTOCK.

‡211/7. *SEDUM ALBUM* L. *94, Banff; bank near buildings, Banff: *95, Elgin; rubbish-tip, Findhorn: *96, Easternness; bank near cottages, Croy, M. McCALLUM WEBSTER.

[213/3. *DROSERA INTERMEDIA* Hayne. 69, Westm.; deliberately planted on Potter Fell, N. of Kendal, teste Mrs. E. HYDE.]

‡217/4. *CALLITRICHE PLATYCARPA* Kütz. ‡3, S. Devon; Gidleigh-Throwleigh, in Forder Brook, at 800-900 ft., O. Greig and W. Keble Martin; Moretonhampstead, in Wray Brook, O. Greig, both det. A. R. Clapham (1956, *Rep. & Proc. Devon. Assocn.*, 88, 227-228). *47, Montg.: Caersus, 1955, E. MILNE-REDHEAD.

‡220/3. *EPILOBIUM HIRSUTUM* L. ‡95, Elgin; runnel to sea between Spey Bay and Portgordon: by railway bridge over river Spey between Garmouth and Spey Bay, M. McCALLUM WEBSTER. But see Burgess. *Flora*, 12. *106, E. Ross; near Muir-of-Ord, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

220/5×10. *EPILOBIUM ADNATUM* × *MONTANUM*. 24, Bucks.; garden shrubbery, Bourne End, 1954, A. F. WOOD, conf. G. M. ASH.

‡220/8. *EPILOBIUM ROSEUM* Schreb. *94, Banff; foot of wall, Macduff, M. McCALLUM WEBSTER, conf. G. M. ASH.

220/9. *EPILOBIUM LANCEOLATUM* Seb. & Mauri. 24, Bucks.; roadside bank, Bourne End, A. F. WOOD, conf. G. M. ASH.

220/10×4. *EPILOBIUM MONTANUM* × *PARVIFLORUM*. 24, Bucks.; garden shrubbery, Bourne End, A. F. WOOD, conf. G. M. ASH.

‡239/2. *ERYNGIUM MARITIMUM* L. *106, E. Ross; near Rosemarkie, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN.

‡253/2. *BERULA ERECTA* (Huds.) Coville. ‡49, Caerns.; Traeth Mawr meadows near the Glas Lyn estuary, A. CONOLLY. Remove ? from C.F.

§257/1. *MYRRHIS ODORATA* (L.) Scop. *107, E. Sutherland; several clumps by road S. of Helmsdale, M. McCALLUM WEBSTER.

§258/1. *CHAEROPHYLLUM AUREUM* L. *21, Middx.; naturalised and abundant in the grounds of Buckingham Palace, J. C. CODRINGTON, D. H. KENT, J. E. LOUSLEY and D. McCLINTOCK.

§276/3. *PASTINACA SATIVA* L. *48, Mer.; Merioneth end of Y Cob Causeway, Glas Lyn estuary: †49, Caerns.; Portmadoc gasworks; Y Cob Causeway, on railway track, A. CONOLLY. *†95, Elgin; yard at Rothes distillery, M. McCALLUM WEBSTER, conf. A. MELDERIS.

†276/5. *PEUCEDANUM OSTRUTHIUM* (L.) Koch. 94, Banff; about the crofts of Birkenbush and Blairmain, S. of Aberlour: 109, Caithness; roadside at Inver, near Dunbeath, M. McCALLUM WEBSTER.

†277/1. *HERACLEUM MANTEGAZZIANUM* Somm. & Levier. 93, N. , Aberd.; well established for over 30 years on banks of river Deveron, near Turriff: 94, Banff; banks of river Deveron, near Banff, M. McCALLUM WEBSTER.

†287/1. *SAMBUCUS RACEMOSA* L. 83, Edinb.; Heriot, abundant, E. B. BASDEN, det. Dr. H. R. FLETCHER.

287/2e. *SAMBUCUS NIGRA* var. *VIRIDIS* Ait. 83, Edinb.; quite common around Lasswade and Kevock, and in Dalkeith Park, 1953, E. B. BASDEN, det. Dr. J. M. COWAN.

§291/5. *LONICERA XYLOSTEUM* L. *†106, E. Ross; Brahan Woods, near Conon Bridge, 1956, B.S.B.I. FIELD MEETING, comm. U. K. DUNCAN, conf. J. E. LOUSLEY.

§304/4. *VALERIANELLA CARINATA* Lois. *49, Caerns.; weed in Aberdunant Hall garden, Prenteg, near Portmadoc, A. CONOLLY.

§320/2. *ERIGERON ACER* L. *43, Radnor; old quarry, Dolyhir, D. BAYLIS, D. E. DE VESIAN and F. H. PERRING.

†320/16. *ERIGERON MUCRONATUS* DC. 22, Berks.; on river wall, Abingdon, J. E. LOUSLEY and D. McCLINTOCK. H.22, Meath; walls, Kilsheelan, D. McCLINTOCK.

†333/1. *INULA HELENIUM* L. 45, Pems.; Rose Park Farm, about 5 miles N. of Tenby, D. McCLINTOCK. 101, Kintyre; established by Bellochroy Burn, W. Kintyre, M. H. CUNNINGHAM, det. E. C. WALLACE.

†353/6. *BIDENS FRONDOSA* L. 35, Mon.; on wharf, and in Kingsway, Newport, 1954, D. McCLINTOCK. 61, S.E. Yorks.; Olympia Sidings, Selby, D. McCLINTOCK, conf. J. E. LOUSLEY.

‡354/2. *GALINSOGA CILIATA* (Raf.) Blake. *13, W. Sussex; Crawley, 1955: 14, E. Sussex; Lindfield, 1953, R. C. PALMER. 16, W. Kent; garden weed, Elmstead Woods, Miss A. MILLS; Sevenoaks, Mrs. BLAXLAND, comm. D. McCLINTOCK. 23, Oxon.; Henley on Thames, Miss MACAULEY, comm. D. McCLINTOCK. *24, Bucks.; rubbish-tip, Burnham Beeches, A. F. WOOD, conf. R. A. GRAHAM. ‡31, Hunts.; garden weed, Offord Darcy, L. W. Angell (1956, *Ann. Rep. Hunts. Fauna & Flora Soc.*, 9, 16). ‡63, S.W. Yorks.; Templenewsam, common, R. S. R. Fitter (1957, *The Nat.*, 1957, 28).

§368/3. *ANTHEMIS ARVENSIS* L. *94, Banff; field at Clochan: 95, Elgin; Blacksboat, Forres and Asliesk: 96, Easternness; roadside verge, Ardesier: 96b, Nairn; field near Gollanfield, M. McCALLUM WEBSTER, conf. A. MELDERIS.

§368/4. *ANTHEMIS COTULA* L. *95, Elgin; yard at Carron distillery, M. McCALLUM WEBSTER, det. A. MELDERIS.

§379(2)/1. *HOMOZYNE ALPINA* (L.) Cass. *110, Outer Hebrides: South Uist, D. H. N. SPENCE, *et al*, conf. E. C. WALLACE.

383/10e. *SENECIO VULGARIS* var. *RADIATUS* Koch. 4, N. Devon; car park at Bideford: 41, Glam.; Barry Docks: H.39, Antrim; Carrickfergus; Whiteabbey, D. McCLINTOCK.

†383/26. *SENECIO SMITHII* DC. 93, N. Aberd.; two small colonies by burn $\frac{1}{2}$ mile E. of Ardmiddle School, M. McCALLUM WEBSTER, conf. A. MELDERIS. 112, Zetland; established by loch at Gruna Sound, West Burra, R. C. PALMER.

†385/2. *CALENDULA ARVENSIS* L. S.; Guernsey; thick on a rubbish-tip, S. of Fort Doyle; in a field (of *Iris xiphioides*) S. of Mont Cochon. Mrs. F. LE SUEUR and D. McCLINTOCK.

§396/1b. *CIRSIUM ERIOPHORUM* subsp. *BRITANNICUM* Petrak. *+43. Radnor; old quarry, Dolgylhir, D. BAYLIS, D. E. DE VESIAN and F. H. PERRING.

§396/3. *CIRSIUM HETEROPHYLLUM* (L.) Hill. *101, Kintyre; fairly widespread on high ground N.E. of Loch Arail watershed by Achaish Road, Knappdale, A. G. KENNETH, det. M. H. CUNNINGHAM.

§409/1. *CICORIUM INTYBUS* L. †95, Elgin; fields about Forres, M. McCALLUM WEBSTER. Remove from brackets in *C.F.*

‡416 10. *CREPIS VESICARIA* subsp. *TARAXACIFOLIA* (Thuill.) Thell. *94, Banff; rough ground by river Deveron, Banff: *96, Easternness; rough ground on The Longman, Inverness, M. McCALLUM WEBSTER.

419. *HIERACIUM* det. by P. D. SELL and C. WEST except where otherwise stated.

419/71(2). *HIERACIUM SAXORUM* (F. J. Hanb.) Sell & West. 95, Elgin; shingle of river Findhorn, N. of Greshop, Forres: 109, Caithness; 1 mile W. of Dunbeath on limestone outcrop by river, M. McCALLUM WEBSTER.

419/99(2). *HIERACIUM GLEVENSE* (Pugs.) Sell & West. 6, N. Som.; side of towpath below Leigh Woods, 1954, B. Miles (1956, *Proc. Bristol Nats. Soc.*, 29, 103).

419/132. *HIERACIUM CAESIOMURORUM* Lindeb. 95, Elgin; banks of Findhorn river at Logie, M. McCALLUM WEBSTER.

419/220. *HIERACIUM LATOBRIGORUM* (Zahn) Roffey. 94, Banff; near Bridge of Aron: 95, Elgin; railway embankment, Knockando, M. McCALLUM WEBSTER.

419/223. *HIERACIUM SUBCROCATUM* (E. F. Linton) Roffey. 96b, Nairn; railway bank, Auldearn, M. McCALLUM WEBSTER.

419/255. *HIERACIUM COLLINIFORME* (Naeg. & Peter) Roffey. *96, Nairn; Holme Rose, Croy, M. McCALLUM WEBSTER.

‡419/257. *HIERACIUM BRUNNEOCROCEUM* Pugs. *95, Elgin; fixed dunes, Culbin State Forest, 1950; railway embankment, Cromdale, M. McCALLUM WEBSTER.

‡435/4. *CAMPANULA RAPUNCULOIDES* L. *43, Radnor; yard of Downton Farm, J. F. and P. C. HALL.

†435/9. *CAMPANULA MEDIUM* L. 17, Surrey; road bank, Farnham by-pass: 24, Bucks.; railway bank N. of High Wycombe, D. McCLINTOCK.

‡441/1. *ARCTOSTAPHYLOS UVA-URSI* (L.) Spreng. *101, Kintyre; by Stronachallin burn, $\frac{1}{2}$ mile down from Loch-an-Arramh, Knapdale, A. G. KENNETH, det. E. C. WALLACE.

†463/3. *LYSIMACHIA PUNCTATA* L. *42, Brecon; woodland by Lake Hotel, Llangammarch Wells, R. C. L. HOWITT. *94, Banff; ditch by roadside $1\frac{1}{2}$ miles N. of Grange station, M. McCALLUM WEBSTER, det. A. MELDERIS.

†463/8. *LYSIMACHIA CILIATA* L. *43, Radnor; Tyn-yr-yinn, R. C. L. HOWITT.

465/1. *TRIENTALIS EUROPAEA* L. 64, Mid W. Yorks; on large humus-covered rock, Sormires Wood, Bampsthwaite, F. E. BRANSON.

§467/1. *ANAGALLIS TENELLA* (L.) L. *43, Radnor; around the lake, Pen-y-bont village, R. C. L. HOWITT; banks of Nant Gwynllyn, N.W. of Rhayader, V. GORDON.

473/2. *VINCA MINOR* L. †83, Edinb.; by Maiden's Bridge, Dalkeith, 1950, E. B. BASDEN.

478/4. *CENTAURIUM PULCHELLUM* (Sw.) Druce. 52, Anglesey; near the shore at Penmon Point, R. H. ROBERTS.

§486/1. *POLEMONIUM CAERULEUM* L. †95, Elgin; roadside 1 mile N. of Rothes, 1952, M. HUNTER, comm. M. McCALLUM WEBSTER. But see Burgess, *Flora*, 21.

§491/1. *CYNOGLOSSUM OFFICINALE* L. *43, Radnor; old quarry, Dolyhir, D. BAYLIS, D. E. DE VESIAN and F. H. PERRING.

§506/1. *MYOSOTIS SCORPIOIDES* L. *95, Elgin; Mosset burn, Forres: *107, E. Sutherland; flush by sea, Helmsdale, M. McCALLUM WEBSTER.

§517/2. *SOLANUM NIGRUM* L. *96, Easternness; garden weed, Inverness, M. McCALLUM WEBSTER.

†520/2. *LYCIUM HALIMIFOLIUM* Mill. 46, Cards.; Aber Arth, J. F. and P. C. HALL.

§532/7. *CHAENORHINUM MINUS* (L.) Lange. *94, Banff.; railway line, Grange station: *95, Elgin; railway line between Elgin and Moss-towie: *96b, Nairn; railway line. Auldearn, M. McCALLUM WEBSTER.

§532/25. *KICKXIA ELATINE* (L.) Dum. *43, Radnor; cornfield, Bough-rood, J. F. and P. C. HALL.

§†537/2. *MIMULUS MOSCHATUS* Dougl. ex Lindl. *93, N. Aberd.; burn near Ardmiddle, Turriff: *94, Banff.; ditch near Clochan, M. McCALLUM WEBSTER.

543/8. *VERONICA ANAGALLIS-AQUATICA* L. 83, Edinb.; stream at Mortonhall, Liberton, 1953, E. B. BASDEN, det. at ROYAL BOT. GARD., EDINBURGH.

§545/18. *EUPHRASIA CONFUSA* Pugsl. *43, Radnor; Afon Claerwen valley, R. LEWIS; Llanbadarn-Fynydd, F. H. PERRING, both det. P. F. YEO.

§545/19. *EUPHRASIA ROSTKOVIANA* Hayne. *43, Radnor; Nant Brithgwm, W. of Phrygaregg Rest; Bachel Brook, Llananno; near Bettws Cottage, Bettws Disserth, R. LEWIS. Glynllyn valley, near Rhayader, V. GORDON.

§545/19(4). *EUPHRASIA ANGLICA* Pugsl. *43, Radnor; Abbey Cwmhir, D. E. DE VESIAN. Cwm Ifon; Hundred House Common, F. H. PER-RING. Near Dolbedirne, Newchurch, C. GOODMAN. All det. P. F. YEO.

§548/7. *RHINANTHUS BOREALIS* (Sterneck) Druce. *105, W. Ross; alpine ledges at 1,800 ft., Kintail, M. McCALLUM WEBSTER, det. E. F. WARBURG.

§549/2. *MELAMPYRUM ARVENSE* L. *62, N.E. Yorks.; neglected orchard, Common Farm, Wilberfoss, one plant, M. E. THOMPSON and C. M. ROB.

550/7. *OROBANCHE HEDERAE* Duby. 52, Anglesey; parasitic on ivy on low cliffs, Ynys Llanddwyn, R. H. ROBERTS.

550/10. *OROBANCHE MINOR* Sm. 64, Mid W. Yorks; clover field between Boston Spa and Tadcaster, F. E. BRANSON, conf. C. M. ROB.

[†551/2. *LATHRAEA CLANDESTINA* L. 82, Haddington; by side of Birns Water near junction with Tyne Water, Spilmersford, near Pen-caitland—destroyed by the 1948 floods, E. B. BASDEN, det. A. J. WILMOTT.]

§†558/4. *MENTHA SPICATA* L. *43, Radnor; waste ground, Frank's Bridge, R. C. L. HOWITT. *94, Banff; lane leading to Aultmore, S. of Clochan, M. McCALLUM WEBSTER, det. R. A. GRAHAM.

558/6. *MENTHA* × *PIPERITA* L. 83, Edinb.; S. of Parsonspool Bridge, Bonnyrigg, 1955, E. B. BASDEN, det. R. A. GRAHAM.

†558/15. *MENTHA REQUIENII* Benth. 13, W. Sussex; naturalised by paths in woods near Newell's School, Lower Beeding, 1955, R. C. PALMER.

§†565/1. *MELISSA OFFICINALIS* L. *43, Radnor; by river Wye, below the Vicarage, Boughrood, J. F. and P. C. HALL.

577/4. *STACHYS* × *AMBIGUA* Sm. 45, Pembs.; bank near Fish-guard Harbour, D. McCLINTOCK, conf. S. M. WALTERS.

600/13. *CHENOPODIUM GLAUCUM* L. 13, W. Sussex & 14, E. Sussex; Crawley, in both v.c.c.: 14, E. Sussex; shingle spit, Rye Harbour, 1955, R. C. PALMER, det. J. P. M. BRENNAN.

†600/36. *CHENOPODIUM CAPITATUM* (L.) Aschers. 31, Hunts.; in a field, dressed some years ago with "shoddy", Offord Darcy, L. W. ANGELL, det. J. P. M. BRENNAN, comm. J. L. GILBERT.

§615/15. *POLYGONUM AEQUALE* Lindm. *95, Elgin; farmyard, Culherne House, Findhorn, M. McCALLUM WEBSTER, det. J. E. LOUSLEY.

†615/20(2). *POLYGONUM CAMPANULATUM* Hook. f. 95, Elgin; banks of river Lossie, Elgin: 96, Easternness; roadside between Croy and Culloden, 1953, M. McCALLUM WEBSTER, det. at KEW.

†615/31. *POLYGONUM POLYSTACHYUM* Wall. ex Meisn. 94, Banff.; roadside opposite cottages near Aberlour, M. McCALLUM WEBSTER, det. A. MELDERIS. 101, Kintyre; established along roadside near Kielonan, E. Kintyre, M. H. CUNNINGHAM, det. at ROY. BOT. GARD., EDINBURGH.

†615/32. *POLYGONUM CUSPIDATUM* Sieb. & Zucc. 95, Elgin; naturalised by Muckle burn, Forres, and in many other places, M. McCALLUM WEBSTER, det. A. MELDERIS.

†615/33. *POLYGONUM SACHALINENSE* F. Schmidt. *43, Radnor; waste ground, Pen-y-bont village, R. C. L. HOWITT.

‡617(2)/1. *KOENIGIA ISLANDICA* L. ‡103, Mid Ebudes; N. end of Maol Mheadhonach on the Ardmeanach peninsula, R. W. M. CORNER (1957, *Trans. & Proc. Bot. Soc. Edinb.*, 37, 129).

618/16(2). *RUMEX TENUIFOLIUS* (Wallr.) Löve. 95, Elgin; St. John's Meads, Darnaway, 1953, B.S.B.I. FIELD MEETING, conf. J. E. LOUSLEY, comm. U. K. DUNCAN. Plentiful on shingle of Findhorn river N. of Greshop Wood; sandy fields, Rosehaugh Farm, Alves: *97, Westernness; between Dalwhinnie and Ben Alder Lodge, M. McCALLUM WEBSTER.

‡625/1. *HIPPOPHAE RHAMNOIDES* L. 82, Haddington; Aberlady; Bilsdean Creek, Dunglass, E. B. BASDEN. *†94, Banff.; planted near Cullen: *†95, Elgin; planted at Seapark, Kinloss; several bushes on railway embankment near Lossiemouth, M. McCALLUM WEBSTER.

‡628/2. *EUPHORBIA DULCIS* L. *95, Elgin; banks of burn, Altyre: *96, Easternness; banks of river Ness, Inverness, M. McCALLUM WEBSTER, det. A. MELDERIS. 96b, Nairn; 1 mile S. of Nairn, on Cambridge Road, J. B. SIMPSON, comm. M. McCALLUM WEBSTER.

‡628/9. *EUPHORBIA VIRGATA* Waldst. & Kit. S.: *Jersey; in grass E. of Pulente, D. McCLINTOCK.

‡628/16. *EUPHORBIA LATHYRUS* L. *†95, Elgin; appears annually as a garden weed at Greshop House, Forres; one plant on waste ground at Garmouth station, M. McCALLUM WEBSTER.

‡650/1. *SALIX PENTANDRA* L. *109, Caithness; lane leading to Tod-holes near Halkirk, M. McCALLUM WEBSTER, det. R. D. MEIKLE.

‡650/4. *SALIX TRIANDRA* L. ‡95, Elgin; banks of river Lossie, Bishopsmill, M. McCALLUM WEBSTER, det. R. D. MEIKLE. But see Burgess, *Flora*, 28.

§650/5×6. *SALIX PURPUREA* × *VIMINALIS*. *94, Banff; Gollachy burn near Portgordon, M. McCALLUM WEBSTER, det. R. D. MEIKLE.

650/9×12. *SALIX AURITA* × *NIGRICANS*. 93, N. Aberd.; banks of river Deveron, Huntly, M. McCALLUM WEBSTER, det. R. D. MEIKLE.

§650/19. *SALIX RETICULATA* L. †108, W. Sutherland; on certain crags between 1,400 ft. and 1,700 ft. on Ben Hope, R. E. C. FERREIRA (1957, *Trans. & Proc. Bot. Soc. Edinb.*, 37, 132).

§653/2. *CERATOPHYLLUM DEMERSUM* L. †46, Cards.; Maes Llyn pool, Tregaron Bog, A. O. CHATER (1957, *Nature in Wales*, 3, 438).

§†656/1. *ELODEA CANADENSIS* Michx. †95, Elgin; Sanquhar loch, Forres, 1950, M. McCALLUM WEBSTER. But see Burgess, *Flora*, 29. *96b, Nairn; Loch Flemington, 1955, M. McCALLUM WEBSTER.

§†656(3)/1. *LAGAROSIPHON MAJOR* (Ridl.) Moss. S.; *Jersey; plentiful in the quarry pond in Portelet Holiday Camp, Mrs. F. LE SUEUR and D. McCLINTOCK. Plentiful in a quarry pond at Mont Madd, Mrs. F. LE SUEUR.

§674(3)/1. *COELOGLOSSUM VIRIDE* (L.) Hartm. *47, Montg.; meadow above stream, Dylife, 1954, A. O. CHATER.

676/2. *IRIS FOETIDISSIMA* L. 49, Caerns.; near Menai Straits, between the two bridges, R. H. ROBERTS.

[†680/1. *SISYRINCHIUM BERMUDIANA* L. 69, Westm.; deliberately sown in various localities on the limestone hills to the W. of Kendal, teste Mrs. E. HYDE.]

†684/3. *NARCISSUS* × *BIFLORUS* Curt. S.; Jersey; a few plants E. of La Pulente, D. McCLINTOCK.

§691/2. *POLYGONATUM MULTIFLORUM* (L.) All. *†93, N. Aberd.; a few plants by roadside two miles E. of Craigston Castle, far from habitation, M. McCALLUM WEBSTER.

§†702/8. *ALLIUM CARINATUM* L. *95, Elgin; plentiful by roadside at Broom of Moy, and by banks of the Muckle Burn, 1948: *96b, Nairn; by banks of river Nairn, S. of Nairn, M. McCALLUM WEBSTER.

§702/11. *ALLIUM SCHOENOPRASUM* L. *†95, Elgin; shingle of river Spey at Kingston, Miss G. HAINES, comm. M. McCALLUM WEBSTER.

†702/19. *ALLIUM PARADOXUM* (Bieb.) G. Don. 81, Berwick; open wood above Coldstream Bridge, D. McCLINTOCK.

§†708/2. *LILIUM PYRENAICUM* Gouan. *43, Radnor; waste ground, Frank's Bridge, R. C. L. HOWITT.

§719/8. *LUZULA SPICATA* (L.) DC. *95, Elgin; shingle of river Spey, Kingston, 1948, M. McCALLUM WEBSTER.

‡723/1. *ARUM ITALICUM* Mill. ‡44, Carms.; near Laugharne, J. F. Thomas, conf. A. E. Wade (1957, *Nature in Wales*, **3**, 399).

§737/28. *POTAMOGETON PECTINATUS* L. *43, Radnor; pond by Hindwell Farm, Walton, J. F. and P. C. HALL.

§739/1. *ZANNICHELLIA PALUSTRIS* L. *43, Radnor; pond by Hindwell Farm, Walton, J. F. and P. C. HALL.

§748/2. *RHYNCHOSPORA ALBA* (L.) Vahl. *43, Radnor; streamside Nant-y-Blymbren, near Penygarrag Reservoir, Mr. and Mrs. R. C. L. HOWITT and V. GORDON.

753/19×21B. *CAREX HOSTIANA* × *LEPIDOCARPA* subsp. *SCOTICA*. 109, Caithness; in flushes N.E. side of Loch Calder, Thurso, with both parents, M. McCALLUM WEBSTER, det. E. W. DAVIES.

§753/43. *CAREX BUXBAUMII* Wahlenb. ‡97, Westernness; marshy moorland at about 800 ft. within the parish of Urquhart and Glenmoriston, 1954, Dr. D. S. Kettle, comm. J. Grant Roger (1957, *Trans. & Proc. Bot. Soc. Edinb.*, **37**, 132).

§753/47. *CAREX AQUATILIS* Wahlenb. *95, Elgin; abundant on both banks of river Spey from Kingussie to Fochabers, M. McCALLUM WEBSTER, det. E. C. WALLACE.

§753/61. *CAREX PAIRAEI* F. W. Schultz. *87, W. Perth; Blairlogie, A. A. SLACK.

758/3. *SPARTINA TOWNSENDII* H. & J. Groves. 48, Mer.; Glas Lyn estuary below Y Cob causeway, A. CONOLLY and J. G. PACKER.

§780/2(2). *AGROSTIS GIGANTEA* Roth. *95, Elgin; Greshop Wood, M. McCALLUM WEBSTER.

§791/3. *DESCHAMPSIA SETACEA* (Huds.) Hack. *49, Caerns.; wet hollow, heath near Nevin, south-west Lley, A. CONOLLY and P. M. SMITH, det. A. MELDERIS.

§791/3. *HELIOTOTRICHON PRATENSE* (L.) Pilg. ‡31, Hunts.; Woodwalton Fen, M. E. D. POORE (1956, *J. Ecol.*, **44**, 465).

§809/3. *KOELERIA GRACILIS* Pees. *95, Elgin; sandy ground, Greshop Wood, Forres, 1953, B.S.B.I. FIELD MEETING, comm. M. McCALLUM WEBSTER.

§824/2(2). *POA ANGUSTIFOLIA* L. ‡31, Hunts.; grassland by roadside, near Alconbury Weston, 1938, C. E. Hubbard (*Hb. Kew*) (1956, *Ann. Rep. Hunts. Fauna & Flora Soc.*, 9, 18).

§824/5. *POA PALUSTRIS* L. 22, Berks.; river wall, Abingdon, J. E. Lousley and D. McClintock. *35, Mon.; wharfside, Newport, 1954, D. McClintock.

§824/10. *POA COMPRESSA* L. ‡95, Elgin; dry bank at Knockando railway station, M. McCallum Webster, conf. A. Melderis. But see Burgess, *Flora*, 37.

§825/2×3. *GLYCERIA* × *PEDICELLATA* Townsend. ‡48, Mer.; a large patch, and a smaller one, in a marshy place by the shore at Talybont, 1955, P. M. Benoit, det. M. Borrill (1957, *Nature in Wales*, 3, 399).

§826/4. *FESTUCA PRATENSIS* Huds. *95, Elgin; field at St. John's Mead, Darnaway; Carron distillery, M. McCallum Webster, det. A. Melderis.

§826/6. *FESTUCA HETEROPHYLLA* Lam. *13, W. Sussex; edge of woods near Job's Castle, Lower Beeding, R. C. Palmer, det. C. E. Hubbard.

826/7×829/1. *FESTUCA RUBRA* × *LOLIUM PERENNE*. 70, Cumberland; meadow in front of Chapel Field House, Borrowdale, near Keswick, Miss G. A. Hayes, det. A. Melderis, com. E. B. Bangarter.

§826/18. *VULPIA MYUROS* (L.) C. C. Gmel. ‡46, Cards.; railway sidings, Aberystwyth, A. O. Chater (1957, *Nature in Wales*, 3, 438).

§826(3)/1. *CATAPODIUM RIGIDUM* (L.) C. E. Hubbard. *43, Radnor; old quarry, Dolyhir, D. Baylis, D. E. de Vesian and F. H. Perring.

+827/13(2). *BROMUS CARINATUS* Hook. & Arn. 88, Mid Perth; path leading to river Tay, Kinnoull, M. McCallum Webster, det. A. Melderis.

§827/19(2). *BROMUS LEPIDUS* Holmb. *43, Radnor; E. of Abbey Cwmhir, D. E. de Vesian. *109, Caithness; roadside at Inver, near Dunbeath; rough ground, Loch Watten, M. McCallum Webster, conf. A. Melderis.

§828/2. *BRACHYPODIUM PINNATUM* (L.) Beauv. 14, E. Sussex; Buxhall's Hill, Lindfield, away from chalk, R. C. Palmer. *†106, E. Ross; Cromarty, B.S.B.I. Field Meeting, com. U. K. Duncan.

§829/2. *LOLIUM TEMULENTUM* L. ‡95, Elgin; rubbish-tips, Forres and Elgin, M. McCallum Webster, conf. A. Melderis. But see Burgess, *Flora*, 38.

§830/2. *AGROPYRON PUNGENS* (Pers.) Roem. & Schult. *48, Mer.; Glas Lyn estuary below Y Cob causeway, A. CONOLLY and J. G. PACKER.

§835/1. *HORDEUM SECALINUM* Schreb. *42, Brecon; Pentre-Bach, J. F. and P. C. HALL.

§851/5B. *ASPLENIUM ADIANTUM-NIGRUM* subsp. *ONOPTRIS* (L.) Heuff. *47, Montg.; rocky place, c. 400 ft., Breidden Hill, 1955. E. K. HORWOOD, det. E. W. DAVIES. This subspecies has previously been recorded from south and west Ireland, and is not certainly known from England. This Welsh locality is an interesting northward extension of its range. T. G. TUTIN.

§856/1(2). *DRYOPTERIS BORRERI* Newm. *95, Elgin; Loch Romach, 1955, M. McCALLUM WEBSTER.

856/8. *THELYPTERIS PALUSTRIS* Schott. 52, Anglesey; Cors Goch, near Berllech, W. S. LACEY, comm. NAT. MUS. WALES.

864/1. *OSMUNDA REGALIS* L. 49, Caerns.; Cors Geirch, near Rhydyclafog, Lleyn Peninsula, 1955, W. S. LACEY, comm. NAT. MUS. WALES. 52, Anglesey; Cors Goch, 1954, W. S. LACEY, comm. NAT. MUS. WALES.

§872/3. *NITELLA FLEXILIS* Ag. *96b, Nairn; loch at Achaureat, S. of Cawdor, J. B. SIMPSON, det. G. O. ALLEN, comm. M. McCALLUM WEBSTER.

ABSTRACTS FROM LITERATURE

Compiled by DOUGLAS H. KENT

Thanks are due to E. B. Bangerter and A. E. Wade for their assistance.

SYSTEMATIC, ETC.

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562(3). *CALAMINTHA*.—See 562. *SATUREJA*.

563. *CLINOPODIUM*.—See 562. *SATUREJA*.

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Sesleria varia var. *calcarea* is redescribed as *S. deyliana* Löve and Löve, nom. nov. The recent uniting of *Callitriche hamulata* and *C. pedunculata* is not supported by cytological observations, since the former has $2n=38$ and 40, while the latter has $2n=20$.—[D.H.K.]

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effect of the very cold spell in France in Feb.-April 1956 on the flowering time of seven species, *Galanthus*, *Tussilago*, *Mahonia*, *Syringa*, *Convallaria*, *Geranium robertianum* and *Papaver rhoeas*, is analysed and discussed.—[E.B.B.]

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FIELD MEETINGS, 1955

MAY 14th, 1955. FLANDERS MOSS, STIRLING

Leader: B. W. RIBBONS

Coach parties from Glasgow and from Falkirk met at South Flanders Farm for this Junior Field Meeting, which was attended by pupils from seven Secondary Schools and a number of other individuals to a total of about sixty. Mr. Ribbons was assisted by Prof. K. W. Braid, Dr. D. Patton and Mr. R. Mackechnie. Prof. Braid outlined the history of the area, explaining how the Peat Moss had followed the ancient felling of the oak forest, and how later clearances in the eighteenth century had produced the fertile acres of the Carse of Stirling. The area of peat had now dwindled to a few square miles. Mr. Ribbons described the botany of the Moss and indicated the plants and plant communities to be looked for. As few of those present knew the common moorland and bog plants the day was devoted to studying them.

The part of the Moss visited is a large raised bog on carse clays near the port of Monteith. *Calluna vulgaris*, *Eriophorum vaginatum* and *Scirpus cespitosus* are abundant, and in many parts, especially among birch scrub, *Polytrichum commune* is dominant. *Andromeda polifolia* and *Vaccinium oxycoccos* are plentiful and *Drosera rotundifolia*, *Narthecium ossifragum* and *Myrica gale* are locally common. Other mosses included *Sphagnum rubellum*, *S. papillosum* and *S. cuspidatum*.

The Leader wishes to thank his helpers for the part they played in making the meeting a success.—B. W. RIBBONS.

JUNE 11th to 18th, 1955. DUNFANAGHY, CO. DONEGAL

Leader: Miss P. H. KERTLAND

On Saturday, June 11th, 23 members and friends gathered at Arnold's Hotel, Dunfanaghy, Co. Donegal. Dunfanaghy, lying near the shore of a narrow inlet of Sheep Haven, is screened on the north side by the Ards quartzite peak of Horn Head, rising to 835 ft., and southwards, first by low foothills, which towards the south-west rise in successive peaks, of which Muckish and Errigal (2468 ft.), the highest mountain in Donegal, are prominent and further south by the Derryveagh Mountains, the main band of Donegal granite, which corresponding with the Scots Dalradian, stretch from north-east, separating the area we were to visit from the main mass of South Donegal.

Those of us who had arrived early went out to explore the shore and the eastern dunes. Almost immediately we were rewarded by the discovery of a fine group of orchids in full bloom, including *Dactylorhiza*

purpurella and *D. incarnata* subsp. *coccinea* (coll. E. M. Rosser, det. V. S. Summerhayes) and a cream-coloured form of *Ranunculus bulbosus*. The Dunfanaghy area was explored further during the week, as time allowed, other interesting records made being:—*Cardamine pratensis* (fl. pleno), *Montia fontana* subsp. *variabilis*, *Trifolium dubium* var. *pygmaeum*, *Aphanes microcarpa*, *Euphrasia confusa* f. *albida* and *Dactylorhiza fuchsii* subsp. *hebridensis* (all coll. and det. N. D. Simpson). *Veronica catenata* and *Polypodium vulgare* (tetraploid form) were also seen. By the evening all had arrived and were greeted by the leader and our host; the leader then outlined a provisional programme which, despite unfavourable weather, was carried out in its entirety.

After a free morning on Sunday we set off after lunch for the lake and dunes to the west of Dunfanaghy; the lake, formerly brackish, is now fresh water enclosed by blown sand. While some recorded species with industry, others noted with interest a hedge of *Fuchsia magellanica* by the roadside, and primroses, not two or three, but clusters, flowering very belatedly owing to the cold winter. The dunes themselves produced no surprising records, being poor in species, in comparison with our west coast dunes. We did however note many familiar plants, including *Euphorbia portlandica*, *Viola tricolor* subsp. *curtisii*, *Erodium cicutarium*, *Anagallis tenella*, *Sedum acre*, *Selaginella selaginoides*, *Glaux maritima* and *Botrychium lunaria*.

On Monday we travelled by coach to the foot of Muckish, there splitting into groups and so covering a wide area during the ascent. On the way we passed a quartzite quarry producing sand for glass manufacture. At the base of the mountain a small clump of *Cladium mariscus* was discovered by Mr. Stelfox, and nearby, at the roadside, a patch of *Epilobium pedunculare* was seen. While we ascended the lower slopes the small, white flowers of *Saxifraga stellaris*, the wet, glossy-green leaves of *S. spathularis* and the golden sheen of *Chrysosplenium oppositifolium* first caught the eye, by a mountain stream, drenching, as it fell, dark green patches of the leafy liverwort *Jubula hutchinsiae*, tucked beneath overhanging rock ledges with purple-red patches of *Pleurozia purpurea*. Above Lough Naboll, at a height of about 900 ft. Mr. Simpson found *Asplenium marinum*, and at about 1200 ft. on the north-east terrace Miss Duncan made a notable rediscovery, that of *Saussurea alpina*, confirming an old record. Over the wide, flat top, lay a low scrub of *Salix herbacea*, with *Carex bigelowii*, *Nardus stricta*, *Armeria maritima* and *Rhacomitrium lanuginosum*, and boulder-strewn ground with *Hymenophyllum wilsoni* growing in well-protected hollows. As we descended a cloud bank wreathed the summit. Near the foot, a lake yielded *Littorella uniflora* and, nearby, *Pinguicula lusitanica* was found.

On Tuesday, a day of driving rain, the coach took us far to the south-west, to The Rosses, a curious lake-studded area remarkable, geologically, for the ring formation of older granite rocks (Granodiorite) which surrounds newer granites of varying types.

Pausing at Lough Ibby fragments of *Naias flexilis* were obtained with a grapple; *Potamogeton perfoliatus* and *P. gramineus* (coll. E. M. Rosser, det. J. E. Dandy and G. Taylor) were also gathered, and nearby *Orchis mascula* and *Dactylorhiza maculata* subsp. *ericetorum* were seen. The coach then continued to Lough Mullaghderg, stopping between dunes and lough. Near the lake shore here, just above sea-level, grew *Juniperus communis* and *Arctostaphylos uva-ursi*. On the dunes were seen *Arabis hirsuta* and two interesting eyebrights, *Euphrasia occidentalis* var. *calvescens* (coll. and det. U. K. Duncan, conf. E. F. Warburg) and *E. brevipila* × *nemorosa* (coll. U. K. Duncan, det. E. F. Warburg). Other species noted were *Saxifraga tridactylites* and *Valerianella locusta* at Kincasslagh Head (coll. N. D. Simpson), *Dactylorhiza maculata* subsp. *ericetorum*, ranging in colour from white to mauve, and with leaves spotted and unspotted, *D. purpurella* (coll. E. M. Rosser, det. V. S. Summerhayes) and *Platanthera bifolia* (coll. E. M. Rosser, conf. V. S. Summerhayes).

On the following day the weather improved as we left for Dunlewy and the Poisoned Glen. This Glen lies at the edge of the main band of Donegal granite, stretching from Glen in the north-east to Ardara and Travenagh in the west. In a peaty bog by the side of Lough Dunlewy the leader showed *Erica mackaiana* and the hybrid *E.* × *praegeri* (*E. mackaiana* × *tetralix*), and at the head of the lough, near the foot of Errigal, *Sisyrinchium bermudiana* in flower was an interesting sight. After lunch most of the party left for the Poisoned Glen, two members remaining to climb Errigal where, on the rock-strewn summit, *Vaccinium vitis-idaea* was seen, just below the ridge. Hopes of confirming the old record of *Chamaenerion angustifolium* were not realised though the view from the summit of the moraine-blocked lakes of Dunlewy and Nacung and the Poisoned Glen rewarded the climb. Rain and mist rolling downwards hastened the descent over the sliding scree of the northern slope between two walls of solid rock, in one of which a natural 'window' afforded a glimpse of the lower bulk of Muckish and of Lough Altan, but *Sedum rosea* and *Saxifraga stellaris* were observed on the way and *Arctostaphylos uva-ursi* near the foot.

Meanwhile, the main party in the Poisoned Glen searched for *Trichomanes speciosum*, finally seen by Mr. Simpson and Dr. Williams in an inaccessible crevice; so it was re-discovered after more than fifty years. During the day *Hymenophyllum wilsonii* was also seen, as were the three spp. of *Drosera*, *Leucorchis albida*, *Festuca vivipara* and *Osmunda regalis*.

In sunshine on Thursday morning the coach set off for the Fanad Peninsula, east of Dunfanaghy, stopping first at Lough Fern to see *Trollius europaeus*, rare in Ireland. Near Milford, at the head of the long, narrow sea-inlet of Mulroy Bay, Miss Parkes gave a brief talk on the interesting sea-weed flora of the bay. A further stop was made at Lough Magheradrumman, where *Potamogeton filiformis* (coll. Miss Isherwood, det. J. E. Dandy and G. Taylor) and *Tolypella glomerata*

(coll. Miss Muirhead and Mr. Simpson) were seen. By Lough Kinney. Miss Duncan collected *Equisetum* × *litorale* (det. A. H. G. Alston) and in the nearby lough were seen *Myriophyllum alterniflorum* var. *americanum* (coll. and det. N. D. Simpson), a new record for the lough, and *Potamogeton crispus* (coll. E. M. Rosser, det. J. E. Dandy and G. Taylor). In the surrounding area *Veronica filiformis*, *Sparganium erectum* subsp. *neglectum* and *Rosa pimpinellifolia* were seen; other interesting discoveries were a plant of *Myrica gale* bearing both male and female catkins, by the leader, and *Petasites albus* found by a stream on the coast by Miss Duncan. Near Lough Kindrum were seen pink-flowered forms of *Veronica officinalis*, *Hieracium caledonicum* (coll. N. D. Simpson, det. P. D. Sell and C. West) and *Rosa canina* var. *globularis* (coll. Miss Isherwood, det. R. Melville).

A short journey on the following day took us to Ards, where the plantations were visited by permission of the Irish Forestry Commission. A walk through these dark coniferous plantations, with *Lobularia pulmonaria* on tree stumps, produced *Neottia nidus-avis*, *Orobanche alba* (coll. Miss Muirhead) and *O. minor* var. *compositarum*. We also saw *Pernettya mucronata* and *Leycesteria formosa*, together with very fine *Epilobium pedunculare*. Reaching the shore we found *Arctostaphylos uva-ursi* among the rocks just above high tide level, with *Asplenium adiantum-nigrum* and, nearby *Listera ovata* (coll. E. M. Rosser, conf. V. S. Summerhayes). Other Ards records of interest were *Luzula multiflora* var. *pallescens* (coll. U. K. Duncan, det. N. D. Simpson), *Dryopteris aemula*, and *Cirsium* × *forsteri*, found by Mr. Stelfox on the headland, 3 to 4 miles from Ards House.

Leaving Ards we returned via Lackagh Bridge, where Miss Duncan found *Aphanes microcarpa* (conf. S. M. Walters), to Dunfanaghy. There Miss Kertland was thanked for her inspiring leadership, which for many of us had provided a happy introduction to Ireland, and Mr. Arnold for his kindness during our stay.

At this point I should like to add my own special thanks to Miss Kertland and all the collectors and referees who have provided data for this report.—E. M. ROSSER.

FIELD MEETINGS, 1956*

JANUARY 7th and 14th, 1956. SOUTH LONDON BOTANICAL
INSTITUTE

Applications for this Junior Meeting exceeded actual attendances. Messrs. Lousley and Woodhead and Mrs. Welch showed us the library, herbarium and other facilities of the Institute. Coloured photographs of flowers, lent by Messrs. Miles and Andrews, were shown. Total attendances were 56 members and visitors from 12 schools.—A. W. WESTRUP.

APRIL 11th, 1956. CHIPSTEAD VALLEY

Leader: Miss B. M. C. MORGAN

In this Junior Field Meeting a large party of 68 was led by Miss Morgan with the assistance of Dr. Prime, Mrs. Welch and Miss Franks. Most of those present were from schools affiliated to the Society, 8 schools being present including a coach-load from the Ursuline High School, Ilford. The early date and the lateness of the season limited the number of plants seen in flower. Several species of violets, including a good display of *Viola hirta*, were most noteworthy.—A. W. WESTRUP.

MAY 19th to 21st, 1956. BUCKINGHAM

The meeting was intended to study the distribution of the British Flora in N.E. Oxfordshire, N. Buckinghamshire and S. Northamptonshire but initially, for the leader, it seemed to be a study of the distribution of British botanists. Buckingham is a small and quiet town and was quite unable, at Whitsuntide, to accommodate all the 24 people who wished to join the meeting. Not only were we divided between three hotels in the town but some stayed in Tring and another at Brackley. Yet a third group slept in their own beds in London or in Oxford and travelled to the centre daily. But a 'Maps' meeting can swallow such apparent inconveniences and turn them to advantage. We were amply supplied with vehicles and having made up our teams of three on the Friday night in the lounge of the 'Swan and Castle', squares were allotted convenient to the overnight roost. Only good weather was needed for all to run sweetly, and this we received in abundance—three fine hot days. Thus within the short span available we covered 23 squares, all at well over the 200 species mark.

*Field Meetings arranged by the Committee for the Scottish Flora are indicated by †.

It was perhaps early in the year to expect a very great number of species to be recorded but in fact about 550 were seen by one party or another. The failure to note one or two arable weeds like *Anagallis arvensis*, *Kickxia elatine*, *Kickxia spuria*, and *Stachys arvensis* would probably not have occurred a couple of months later, and though some of the earlier orchids such as *Orchis mascula*, *Orchis morio*, and *Platanthera chlorantha* were in flower neither *Anacamptis* nor *Gymnadenia* was seen.

The geology of the area gives rise to nothing which is particularly exciting and in certain parts, notably the Aylesbury Plain, produces territory which is downright dull. Nevertheless, we found ourselves, as indeed is always the case, at the limit of range of particular species. *Umbilicus rupestris* is probably extinct or introduced east of Northampton but was found in the Bugbrooke area S.W. of the town during the week-end. It was the same Northamptonshire square which produced *Equisetum sylvaticum*, a species either extremely rare or extinct in the neighbouring shires of Oxford, Buckingham, Bedford and Huntingdon. Pteridophytes in general were interesting.

Ophioglossum was vulgar in the extreme and *Ceterach* was noticed with surprising frequency and even, by the Hon. Gen. Sec., at speed. *Polypodium* too was seen in three separate localities, yet it is very rare now in Bedfordshire and almost extinct in Cambridgeshire.

Railway enthusiasts were rewarded with miles of disused track and *Cerastium semidecandrum* and *C. atrovirens* had obligingly responded to this *ersatz* environment.

Perhaps the most satisfying find of the meeting was *Carex vulpina* in a new Oxfordshire station, even though it was discovered by the home team: the most bizarre was certainly *Ribes alpinum* near Brackley to which a 'G' was hastily added; the most beautiful to me were the sheets of *Saxifraga granulata* in a sandy meadow by a lazy meandering stream—thick as daisies and twice as lovely. The lasting memory however is of the square in Buckingham at the day's end, studded with hot and cheerful botanists, clambering in and out of cars, clutching vacua and vascula in one hand, map and card in the other, and outbidding each other for the day's total across the sunlight.—
F. H. PERRING.

†MAY 26th and 27th, 1956. DALMELLINGTON

Leader: R. MACKECHNIE

This meeting, held during the last week-end in May, was attended by Miss Biggar, Castle Douglas, and Miss North, Carnforth.

On Saturday morning we visited Bogton Loch, examining the vegetation on its south-eastern shore, and later moving along the River Doon to Bogton Plantation, which is in part deciduous. It soon became apparent that in a late spring such as this had been, the end of May was rather early for a mapping visit to this upland area. Nevertheless, 120 records were made, including the following:—

Trollius europaeus, *Nuphar lutea*, *Viola lutea*, *Salix phylicifolia*, *Menyanthes trifoliata*, *Carex caryophyllea*, *C. aquatilis* and *Helictotrichon pubescens*.

In the afternoon we moved on to the southern end of Ness Glen, and walked through this attractive ravine by which the River Doon leaves Loch Doon. Despite flood damage, the valley provided 108 species, the most noteworthy being:—

Hymenophyllum wilsonii, *Asplenium adiantum-nigrum*, *A. viride*, *Thelypteris phegopteris*, *T. dryopteris*, *Ranunculus auricomus*, *Rubus saxatilis*, *Geum* × *intermedium*, *Aphanes microcarpa*, *Saxifraga hypnoides*, *S. umbrosa*, *Agropyron caninum* and *Melica uniflora*.

Saturday's recording had all been done within one 10 km. square, so on Sunday we thought it advisable to visit areas to the east and south. In the morning we marked our cards on Glenmuck Craig and by Loch Muck—both in the south-west corner of a square which is almost entirely moorland. 83 species were recorded, the following among them:—

Selaginella selaginoides, *Thelypteris dryopteris*, *Subularia aquatica*, *Polygala vulgaris*, *Saxifraga hypnoides*, *Veronica scutellata*, *Lobelia dortmanna*, *Orchis mascula* and *Carex dioica*.

Later in the day we drove south to Loch Doon Castle—removed from its island site in the loch and now re-erected on the western shore. This large moorland loch has little in the way of shore vegetation, and the most interesting of the 70 species we saw were in the neighbourhood of the Castle itself. These were:—

Phyllitis scolopendrium, *Thelypteris oreopteris*, *Ranunculus lenormandii*, *Aphanes microcarpa*, *Myrica gale*, *Salix viminalis* and *Antennaria dioica*.

The thanks of the Committee are due to Miss Biggar and Miss North for their help; the latter in particular, in addition to making the long journey north from Carnforth, placed her car at the party's disposal during the meeting. We should also like to record our indebtedness to Mr. A. T. Bulkeley Gavin, of Craigengillan Estate, for readily-given permission to explore his property.—R. MACKECHNIE.

MAY 26th, 1956. WEST WITTERING

This Junior Field Meeting was attended by a party of 30 from 7 schools. They visited the saltmarsh and dunes under the guidance of Messrs. Buckle and Westrup with the assistance of Mr. Ounsted. There was a good display of sea-side plants including various sand-binding grasses such as *Elymus arenarius*. Drift-line plants including *Atriplex laciniata*, and saltmarsh plants, notably *Inula crithmoides*, *Spartina townsendii* and *Suaeda maritima* were seen. Also notable were the arable weeds *Myosurus minimus*, *Ranunculus sardous* and *R. parviflorus*, all within a few yards of the sea.—A. W. WESTRUP.

JUNE 2nd, 1956. KENFIG BURROWS

Leader: A. E. WADE

A party of 38 from 13 Grammar Schools attended this Junior Field Meeting which was held in collaboration with the Junior Section of the Cardiff Naturalists' Society. Interesting plants seen included *Dactylorhiza incarnata*, *Viola tricolor* subsp. *curtisii*, *Littorella uniflora*, *Rosa pimpinellifolia*, *Juncus acutus* and *Botrychium lunaria*.—A. W. WESTRUP.

 †JUNE 15th to 17th, 1956. PEEBLES

Leader: P. S. GREEN

This week-end field meeting was arranged primarily to help with the recording of plants for the Distribution Maps Scheme in the relatively little botanised Peebles district. It was attended by eight people, of whom only five attended for the full week-end. These five assembled in the evening of Friday, 15th June, and rough plans for the days' excursions were discussed and explained together with the use of the cards used in the mapping scheme.

On Saturday morning the party proceeded to the grounds of Portmore House near Eddleston where recording was commenced in woodland and roadside habitats. Amongst other plants a very good hybrid swarm between *Geum rivale* and *G. urbanum* was observed with both parents and a full range of intermediates. A rather fine tree of *Acer campestre* was seen by the side of a field, a portion of which was extremely marshy and supported a good assemblage of carices:—*Carex curta*, *C. disticha*, *C. echinata*, *C. flacca*, *C. nigra*, *C. ovalis* and *C. rostrata* being found together with *Montia fontana* subsp. *fontana*. In the afternoon a visit was made to Portmore Loch which is used as a reservoir, and where the water surface was particularly low due to the prolonged drought. Considerable quantities of *Littorella uniflora* and *Alopecurus geniculatus* were found in flower, growing on the gravelly side of the loch, with occasional cushions of *Montia fontana* subsp. *fontana* and *Stellaria alsine*, those by flushes being particularly large and luxuriant. The latter species appeared to occur in two forms, one more or less straggling and the other in small rounded compact cushions. Heavy cold rain brought the afternoon's field work to an end and the party returned to Peebles for tea and to dry out. After tea a short, but profitable, visit was made to an area by the Leithen Water to the north of Innerleithen. Here in the marshy pools and flood banks, and by the roadside, the following interesting species were recorded:—*Aira caryophyllea*, *A. praecox*, *Aphanes arvensis* sens. str., *A. microcarpa*, *Arenaria leptoclados*, *Carex demissa*, *C. ovalis*, *C. pulicaris*, *Epilobium pedunculare*, *Juncus kochii*, *Linum catharticum*, *Sedum villosum* and *Teesdalia nudicaulis*.

Whilst waiting for two members to join the party for the day on Sunday, a visit was made to the banks of the River Tweed near Inner-

leithen. The following were among the species observed:—*Cardamine amara*, *Montia sibirica* (*Claytonia alsinoides*), *Cochlearia officinalis* and *Mimulus guttatus*. The party then visited The Glen, halting on the way to examine an area of dry heath where *Aphanes arvensis* sens. str. and *Helianthemum chamaecistus* were recorded, the latter growing rather unexpectedly mixed with *Calluna vulgaris*, *Erica cinerea* and *Teucrium scorodonia*. Loch Eddy, at the head of The Glen, was then visited and after lunch the party followed the course of a hill burn running from the moorland and through a larch plantation. In the plantation were several fine stands of ferns, in particular *Dryopteris dilatata*, *D. borrieri* and *Thelypteris dryopteris*, whilst *Corydalis claviculata* was re-found where it was last recorded in 1858. Large groups of *Mimulus luteus* growing by the burn outside the plantation made a fine show and exhibited considerable variation in the extent of the red blotching on the corolla. Some meadows, a large pond and a small wood were then examined near the entrance to The Glen estate after which the party dispersed without returning to Peebles in order that those who had come from some distance could return home that day.

The week-end field meeting proved a most enjoyable one and although the party was so small and the general impression of the flora, despite the variety of habitats visited, was one of relative poverty in species representation, almost 600 records were made for the map scheme during the two days.—P. S. GREEN.

JUNE 16th and 17th, 1956. EXMOOR

The disappointing attendance (only 8 members) at Minehead made it impracticable to carry out the plan to cover six 10 kilometre grid squares for the Distribution Maps Scheme. The party was divided into two instead of three groups, and records were made in four squares, two of which were well covered with about 400 species in each. The leaders were able to do further work on all six squares later in the season.

The area provides a great variety of habitat, with an altitude range from sea level to 1700 feet on Dunkery Beacon. The rocks of the highland zone are Devonian grits and slates, while those of the lowland zone include Triassic sandstones, conglomerates and marls, Rhaetic and Lower Lias clays and limestones, as well as superficial deposits derived from the older rocks. The poor soil on the grits supports heather moor, bog and dry oakwood, while the slate country is mainly hill pasture with some arable and State forests. The Mesozoic rocks give rise to soils which are, locally, highly calcareous. Pasture and woods occupy the heavier soils, and there is a fair proportion of arable on the lighter ones. The maritime habitats include cliffs, shingle, salt-marsh, fixed dunes, grassland and scrub.

The district having been well worked in the past, notably by Mr. N. G. Hadden, who assisted the leaders on this occasion, the only vice-comital records appear to be *Bromus lepidus* and three garden escapes:

Cotoneaster simonsii, *Leycesteria formosa* (abundantly naturalised near West Porlock) and *Polygonum polystachyum* (established near a hill farmhouse).

Among other interesting species noted were:—

HIGHLAND ZONE:

Corydalis claviculata, *Empetrum nigrum*, *Geum rivale* with *G. × intermedium*, *Lycopodium clavatum*. *Meconopsis cambrica*, *Melittis melissophyllum*, *Sibthorpia europaea*.

LOWLAND ZONE:

Inland—*Alchemilla vestita*, *Berberis glaucocarpa* (well established, but erroneously recorded as *B. aristata* in Herb. Druce), *Geranium versicolor*, *Inula helenium*, *Lathyrus nissolia*, *Melissa officinalis*, *Platanthera chlorantha*, *Vicia sylvatica*.

Maritime—*Alopecurus bulbosus*, *Anthemis nobilis*, *Artemisia absinthium*, *Catabrosa aquatica*, *Elymus arenarius*, *Hippophae rhamnoides*, *Hypochoeris glabra*, *Lavatera arborea*, *Moenchia erecta*, *Parapholis strigosa*, *Rosa pimpinellifolia*, *Senecio cineraria*, *Silene conica*, *Trifolium scabrum*, *T. striatum*, *Triglochin maritima*, *Trigonella ornithopodioides*, *Zannichellia palustris*.—A. D. & O. M. HALLAM.

†JUNE 30th to JULY 7th, 1956. CROMARTY

Leader: Miss U. K. DUNCAN

The party was a small one, only six members attending. On Sunday, July 1st, they were joined by Miss A. Cameron, a local botanist from Fortrose, and proceeded to Lochluichart and the valley of the Black Water near Garve, where the record-cards for the 10-km. squares 28/36 and 28/46 were completed as far as possible in the short time at their disposal. The day was overcast with frequent showers and members were glad to take the opportunity of tea at Garve Hotel after six hours of mapping. No notable finds were made, and experience was to show that the mountain squares were botanically poor in comparison with the coast ones. It was regretted that members did not have time to see *Betula nana* which grows on the south side of Lochluichart.

The following day, Monday, July 2nd, was that arranged for the joint meeting with the Inverness botanists, and our party proceeded to the meeting place (the lochs above Milton near Drumnadrochit) to find only two people from Inverness could join us. These explained that the day chosen, an Inverness holiday, had proved unfortunate because most people had made other plans for this day long beforehand. The eight botanists present split up into two parties to work the 10-km. squares 28/43 and 28/53. The party proceeding to Loch nam Faoileag, Lochan an Torre Buidhe, etc., paid particular attention to an outcrop of carboniferous limestone in the vicinity. The

most interesting finds were a quantity of *Carex lasiocarpa* and *C. serotina*, and members admired a small form of *Nymphaea alba* which was just coming into flower. The other party contributed *Carex laevigata* from the woods to the south of the area, as their most notable find. Eventually the members attending had tea at a restaurant in Beaulieu on their way home.

On Tuesday, July 3rd, the party drove to Fortrose, where they were joined by Miss A. Cameron, whose knowledge of the Black Isle was to be invaluable to us on this occasion. A start was made to squares 28/65, 28/75 and 28/76. *Corallorhiza trifida* was visited at Munloch, and *Oxytropis halleri* high up on the cliffs near Cromarty. The flora of the Black Isle was found to be so varied and interesting that it was unanimously agreed to return there on Friday, the day for which no arrangements had previously been made.

The next day, Wednesday, July 4th, members (joined by three local botanists) went first to Evanton, where a walk up the river Skiack gave data for squares 28/56 and 28/66. Here everyone was interested in a species of *Geranium* (not yet identified) which had escaped from a cottage garden. This was the day on which Mrs. Munro Ferguson had invited all nine of us to lunch, and members much appreciated the large meal she provided and the walk through her garden afterwards. A species of *Omphalodes* was found to have taken root by the roadside near by, where it was beginning to spread. Having been given permission to drive up to Loch Glass, four car-loads proceeded in this direction (we had been joined by some friends of Mrs. Munro Ferguson) until the state of the road obliged us to continue the rest of the way on foot. Here we continued our work on square 28/56. The shore of Loch Glass itself proved uninteresting, but members of the party were delighted to find a colony of *Listera cordata* in a wood by the river Glass. Up till now the weather had been broken, with frequent showers which kept the grass wet, but on Thursday, July 5th, it broke down entirely and it was found to be impossible to carry out the programme for the day, which had consisted of an exploration of the upper part of Strathconon. A profitable day was, however, spent in the comparative shelter of the woods in the lower part of the glen, and visits were made to the Falls of Rogie, Loch Achilty (where *Lobelia dortmanna* was seen) and the woods of Brahan, ending with tea at Brahan with Mrs. Stewart Mackenzie, who had very kindly invited four of us. Brahan woods were especially interesting botanically, and *Acorus calamus*, *Doronicum pardalianches* and a shrub believed to be *Lonicera xylostemum* had become well established. Also worthy of note was the abundant *Carex vesicaria* in boggy parts of the wood. On this day we had Miss McCallum Webster as one of our party and her experience in mapping was a great help to us. Our squares were 28/45 and 28/55. Friday, July 6th, in contrast to the previous day, was warm and sunny, and our return visit to the Black Isle was a pleasant one. Our party was augmented by Miss A. Cameron and a friend who served as our guides in a long walk by the cliffs at Rose-

markie where *Saxifraga hypnoides* was seen at sea level and many plants were added to square 28/75. Meanwhile two of the party had proceeded to Munloch and the region of North Kessock for additions to squares 28/65 and 28/64. Unfortunately, they missed *Saxifraga hirsuta* which is naturalised in woods in that area, and also *Goodyera repens* which grows in the pine-woods, but were able to report an increase in plants of *Artemisia absinthium* along the coast.

Members met at the W.R.I. hut in Muir of Ord each evening during the week, when they compared record-cards and specimens.

A number of plants were collected during the meeting, including some belonging to critical genera (*Alchemilla*, *Euphrasia*, etc.), and it is hoped that when these have been checked up further records may be added to the lists for East Ross.—U. K. DUNCAN.

JULY 7th to 9th, 1956. WEST CUMBERLAND

Leader: Dr. D. RATCLIFFE

This was a 'Mapping Meeting'. On Friday evening a party of nine met at the Tullie House Museum, Carlisle, by the kindness of Mr. E. Blezard, the Curator, who had put out the *Flora of Cumberland* (1898), C.T.W., etc., for our use, and showed us the Herbarium in the next room. Unfortunately Dr. Ratcliffe could not be present until later, but he had sent a list of under-botanised areas and places where old records needed checking.

On Saturday morning four cars set out independently and one party visited limestone pavement at Blindcrake Clints, where *Cocloglossum viride* and *Gymnadenia conopsea* were seen. Dr. Ratcliffe and another party were in the same 10 km. square (35'13) working Ward Hall Common and Tallentire Hill, also on limestone but largely rough pasture showing few calcicoles. The day's total for this square was 293. The old records of *Primula farinosa* and *Actaea spicata* were not confirmed, but *Plantago maritima* was seen on an inland roadside near Moota Hill. Meanwhile another party was in square 35'02 listing 171 on limestone crags and grassy moorland. In the afternoon all the parties visited the coast at various points in 35'03 and a total of 170 was recorded, including *Rhynchosinapis monensis* and *Crambe maritima*, but no *Mertensia*.

On Sunday three cars set off for Ennerdale Water and though the clouds were low among the hills, the rain was not heavy. One party listed at the west end of the lake and found *Rumex alpinus*, another along the northern shore and the third in the swamp at the east end where *Utricularia intermedia* and *Vaccinium oxycoccos* were seen, and in the wood along the south shore where *Hymenophyllum wilsonii* abounded on the block scree, but no calcareous outcrop was discovered. *Ceterach* was noted on a roadside wall near Moockerkin Tarn (35'02). Later, Dr. Ratcliffe's party visited fens, woods and the sea shore at Beckermet and Braystones in 35'00 and listed 173 for that square.

On Monday the cars had to begin their journey home, leaving two members who visited the coast by bus. The amount of country sampled seemed lamentably small, mainly owing to lack of time, as the squares worked were a long way from Carlisle. However, each party recorded some plants not seen by either of the others.—B. WELCH.

JULY 13th, 1956. EPPING FOREST.

Leader: Miss H. FRANKS

For this Junior Field Meeting, Miss Franks, greatly assisted by Mrs. Boardman, led a party of 51 from 7 schools to compare the varied types of woodland in the forest. Apart from a large variety of woodland plants the most notable species found were the pond plants *Ranunculus lingua* and *Hottonia palustris*.—A. W. WESTRUP.

JULY 14th, 1956. MILLERSDALE

Leader: Miss L. W. FROST

This Junior Field Meeting was led by Miss Frost, assisted by Mrs. West and Messrs. Minns and Westrup. 50 students from 12 schools ranging from Newcastle-under-Lyme to Doncaster attended. Magnificent displays of *Geranium sanguineum* and *Silene nutans* marked the slope below the cliffs, while *Aquilegia vulgaris*, *Thalictrum minus*, *Arenaria verna* and *Alchemilla vestita* were perhaps the most notable plants on the hillside to the south. A fine show of *Hieracium* spp. and *Gymnadenia conopsea* was seen in the quarry and *Botrychium lunaria* was noted as we descended to the station.—A. W. WESTRUP.

JULY 17th, 1956. RUNNYMEDE

Leader: A. W. WESTRUP

Dr. Prime and Mrs. Welch assisted Mr. Westrup in leading a party of 76 from 11 schools in this Junior Field Meeting. Unfortunately the meadows had been cut for hay, but most of the characteristic plants were still to be found round the hedges. Apart from various grasses such meadow species as *Silvaum silaus*, *Succisa pratensis*, *Tragopogon pratensis* subsp. *minor* and *Allium vineale* (with good bulbils and flowers) were seen, while the hedgerow gave a display of masses of *Cuscuta europaea* on hops and nettles. Pond flowers, in very good show, included *Oenanthe aquatica*, *O. fistulosa*, *Sium latifolium*, *Stellaria palustris*, *Butomus umbellatus*, *Alisma lanceolatum*, *A. plantago-aquatica*, *Sagittaria sagittifolia* and *Mimulus guttatus*.—A. W. WESTRUP.

JULY 20th to 23rd, 1956. SOUTH WALES

Leaders: GORDON T. GOODMAN and JOHN HAYWARD

The meeting was arranged in order to give members an opportunity to visit some of the well-known sand dunes of South Wales. It was also hoped to make a series of plant-lists for the Distribution Maps Scheme in order to bring existing records up to date.

On Friday evening, July 20th, thirty-five members and several guests gathered at the Assembly Room of the University College of Swansea and were welcomed by Professor H. E. Street. The Council of the College very kindly provided coffee and biscuits. During the evening several members showed interest in the Maps Scheme exhibit—"Some Maps and their Meaning," and there were a number of offers to help make species-lists for the grid-squares of the areas to be visited. The leaders briefly outlined the programme for the next three days and copies of maps of the various dune systems, together with brief floristic notes, were distributed.

SATURDAY, JULY 21st, WHITEFORD BURROWS, GOWER PENINSULA

This is a small sandy peninsula about a mile long, jutting out northwards into the Burry Estuary, with its westerly flank exposed to the prevailing winds off the Bristol Channel and its easterly side bordered by a salt marsh. Permission to visit the Burrows had been very kindly given by Capt. N. S. Kinnersley, and the party left Swansea by motor coach at 10 a.m.

Skirting the western edge of the salt-marsh, the party stopped to look at *Althaea officinalis* which is spreading along the upper reaches of small creeks. The first large sandy slack to be reached was surrounded by well-developed hillocks of *Salix repens*, and here *Bromus ferronii*, *Carex flacca*, *C. serotina*, *Juncus acutus*, *Marrubium vulgare*, *Viola tricolor* subsp. *curtisii* and *Vulpia membranacea* were seen growing between patches of *Sagina nodosa* and *Anagallis tenella*. Moving on to a larger, grassy slack, the party spread out to look at the various features of interest before lunch. *Dactylorhiza fuchsii* and *D. incarnata* subsp. *coccinea* had finished flowering, but carpets of *Epipactis palustris* in full bloom gave the floor of the slack a whitish appearance. The genus *Juncus* was well represented, *J. acutus*, *J. articulatus*, *J. bufonius*, *J. effusus*, *J. inflexus*, *J. maritimus* and *J. subnodulosus* being present. *Moerckia flotowiana* and *Petalophyllum ralfsii* were plentiful, growing with *Aneura* spp. near the clumps of rushes. The dunes surrounding the slack were colonised by *Ligustrum vulgare*, *Clematis vitalba* and *Oenothera ammophila*.

A small dune hollow, with a curiously mixed vegetation of *Alisma plantago-aquatica*, *Anagallis arvensis*, *Cerastium atrovirens*, *Scirpus maritimus* and *Typha latifolia*, was crossed in cutting eastwards across the peninsula to a pathway bordering the salt-marsh. A number of marsh and dune species grew at this spot, including *Gentianella amar-*

ella, *Geranium sanguineum*, *Scirpus cernuus*, *S. setaceus*, and *Rosa pimpinellifolia*, and a few plants of *Liparis loeselii* var. *ovata* were discovered. Some of the more energetic members went across to the seaward edge of the marsh to see various edaphic habitats of *Spartina townsendii*, whilst others walked westwards through the dunes to look at the young pines planted in the sand. On the way back to the coach, the well-marked strand zone and foredunes along the western edge of the Point were examined and the party returned via Cwm Ivy Tor (Limestone cliff) where *Anacamptis pyramidalis*, *Silene gallica* and *Thalictrum minus* were seen.

In the evening, the record collectors met at the laboratories of the Botany Department to check material. Tea was provided by the Department. A total of 338 species was recorded from the day's excursion.

SUNDAY, JULY 22nd, PENDINE AND LAUGHARNE BURROWS

Access to the Burrows was readily given by the Ministry of Supply who spared no effort to be of help at all times in making arrangements for the visit. At Pendine the coach party met members and friends who had travelled by private car, and examined the western edge of a large pool about half a mile long, set in the centre of the Burrows; after lunch, they moved eastwards along the southern shore of the pool. A very varied and luxuriant flora of hygrophilous and aquatic species was seen, including *Carex distans*, *C. extensa*, *C. hirta*, *C. otrubae*, *C. panicea*, *Eleocharis palustris*, *Hippuris vulgaris*, *Myriophyllum spicatum*, *Oenanthe lachenalii*, *Ophioglossum vulgatum*, *Ranunculus baudotii*, *Scirpus tabernaemontani*, *S. lacustris* and *Rumex hydrolypathum*. In some places *Scutellaria galericulata* and *Lysimachia nummularia*, in great luxuriance, formed what was almost a sward. The easternmost fringe of the pool was surrounded by a dense, severely wind-cut Alder scrub which gradually thinned out into low sandy hillocks where *Erigeron acer*, *E. canadensis*, *Filago germanica* and *Malva sylvestris* were found.

Continuing eastwards along the seaward side of the burrows, the party examined a mixed salt-marsh community. *Limonium binervosum* and *Ranunculus sceleratus* were common on or near the marsh whilst *Triglochin maritima* and *T. palustris* grew close together in many places. On its seaward side, the marsh was largely composed of unusual, low sandy hummocks of *Puccinellia maritima* which were coalescing as they gathered blown sand. *Parapholis strigosa* was also abundant. Shortage of time prevented the party from examining in detail a very large, sheltered dune slack, and the *Botrychium lunaria* which grew in it was not seen on this occasion. In the evening, records and material were checked and sorted and the western grid square at Laugharne was allocated 272 species, but shortage of time had prevented more than 113 records being collected in the eastern square.

MONDAY, JULY 23rd, KENFIG BURROWS

Several members and friends—from the Botany Department, University College of Wales and Monmouthshire, Cardiff; National Museum of Wales; and the Swansea Scientific and Field Naturalists' Society—joined the group on its last day.

The party spent most of the morning investigating the flora around Kenfig Pool where *Baldellia ranunculoides*, *Littorella uniflora*, *Lotus uliginosus*, *Oenanthe fistulosa*, *Ophioglossum vulgatum* and *Trifolium fragiferum* were seen in abundance. Westwards, towards the sea, the abundance of *Liparis loeselii* var. *ovata* in most slacks was very striking. After lunch, exploration of the large slacks yielded *Epipactis palustris* var. *ochroleuca* growing in patches and readily distinguishable from the surrounding carpet of *E. palustris*. A few plants of *Epipactis helleborine* and, in another spot, *E. phyllanthes*, were seen on dry sandhills. Two large hummocks were covered with a luxuriant growth of *Anaphalis margaritacea*. After some search, fairly large quantities of *Monotropa hypophegea* were discovered growing on eroding *Salix repens* hummocks. *Moerckia flotowiana* and *Petalophyllum ralfsii* were again common, together with *Riccia* spp. and *Preissia quadrata*.

Near the site of the ancient borough of Kenfig (now inundated by sand) a very fine stand of *Gymnadenia conopsea* was seen. Passing a small Willow-Alder thicket alongside the Afon Kenfig, where *Stachys palustris* was recorded, the party spent some time examining the banks of the stream and the aquatic flora. *Callitriche platycarpa* and *C. obtusangula* were found. The day's records yielded 217 species from the western and 153 species from the eastern grid squares.

Dr. Young thanked the leaders on behalf of the Society. Special thanks are due to Mr. R. W. David, Miss E. J. Gibbons and Dr. D. P. Young for help in checking specimens during the evening sessions in the laboratories.—GORDON T. GOODMAN.

AUGUST 4th to 11th, 1956. LLANDRINDOD WELLS

Leader: F. PERRING

The party met, eighteen strong, at the Mostyn Hotel, Llandrindod Wells, on Friday evening, the 3rd August, 1956. Though numbers dropped to fourteen after the week-end, we were able to send groups into thirty 10-kilometre squares during the week and many useful records were made for the Distribution Maps Scheme. Besides this we concentrated our efforts on Radnorshire (v.c. 43) and were able to make 33 new records for the county; we also made 5 new records for the adjacent counties of Brecon, Carmarthen and Cardigan. Some other records made were N.C.Rs. but neither specimens nor exact localities are available so they will not be published. However, because of the possibility that the species do occur, a list is given at the end of this

report with the 10-kilometre grid reference as a guide to those who may have time to search in the future.

The topography of the area is sufficiently variable to provide an interesting range of habitats. Llandrindod Wells is a red brick spa which rises from a flat upland plain through which the River Ithan flows to join the Wye at Newbridge-on-Wye. On all sides the hills rise to a height of about 1,500 feet though reaching over 2,000 feet in the Radnor Forest to the east. Westwards lies a remarkable upland plateau dissected only by the lovely Elan Valley and many small streams. It is notable for its extreme loneliness; several hundred square miles of green sheepwalks unbroken by houses, trees or prominent hills, except on rare occasions, and almost completely without passable roads. Thus, to reach Tregaron, under 25 miles away in a direct line, meant a two hour drive either via Llandovery or the Devil's Bridge. Some of the cars covered 600 miles during the week. South and east runs the Wye Valley: the Wye flows rapidly between tree-decked banks — always picturesque, spanned by some fascinating and fearsome bridges.

The geology was more exciting in theory than in practice. Little could be hoped for from the Ordovician and Silurian slates but a number of Dolerite intrusions occur in the immediate neighbourhood of Llandrindod Wells; none however appeared to be very base-rich except of course for Stanner Rocks. Some silurian limestone occurred near Stanner—at Dolyhir, a mile or two to the west of the *locus classicus*, and this did produce a number of calcicolous species undiscovered elsewhere. However, the absence from the total list of species recorded of *Anthyllis vulneraria*, *Blackstonia perfoliata*, *Centaurea scabiosa*, *Euonymus europaeus*, *Helictotrichon* spp., *Koeleria gracilis*, *Pastinaca sativa*, *Plantago media* and *Scabiosa columbaria*, emphasises the generally acidic character of the terrain.

The plan of activity followed that now familiar to those who attend 'Map Meetings'. We had an average of five or six cars out each day —each with a different square to patrol and three pairs of eyes for spotting. However, to break up the week, we took time off to visit some localities of particular interest—en masse. The first such joint excursion was to Boughrood to look for *Potentilla rupestris* and *Allium schoenoprasum* on the rocky banks of the Wye. Though some doubt has been cast on the status of the former at this locality it must be stated that we found a flourishing colony on what appears to be a permanently open habitat from which it seems just as likely to have spread onto the adjacent railway line as vice versa. This species was also the object of special search on 'rocks of the Llandeilo series' from which it was reported by Ley many years ago. The search was fruitless, though the discovery of *Dianthus deltooides* set the heart thumping. The area is full of possible places and further searching is justified.

A second excursion was made to Stanner. Nearly all the specialities were rediscovered though the *Scleranthus perennis* colony was seen in very small quantity. It is to be hoped that no collections are made in that spot for years to come.

Lastly a small party joined Mrs. Vaughan for a magnificent walk through the 'Kite country' in north east Carmarthen. Here relict sessile oak woods of great magnificence and upland grasslands decked with *Vicia orobus*, *Trollius europaeus*, *Genista tinctoria* and *Viola lutea* occur.

From the week in general it is difficult to select outstanding finds without mentioning each of the 38 new county records. Some species were remarkably abundant, the lovely large-flowered Eyebright *Euphrasia rostkoviana* for example, and *Circaea intermedia* in many woods; *Veronica agrestis* was more frequent than *V. persica*, and the majority of the Watercress was the hybrid *Nasturtium officinale* × *microphyllum*: *N. microphyllum* was not recorded and *N. officinale* only in the extreme east around Stanner and Boughrood.

It was not only in the critical genera that new records occurred and many must emphasise that the area has been underworked in the past. The following native species have probably been growing at their present localities for centuries: *Frangula alnus*, *Anagallis tenella*, *Hordeum secalinum*, *Ranunculus fluitans*, *Rhynchospora alba*, *Cynoglossum officinale*, *Catapodium rigidum*, *Erigeron acer*, *Cirsium eriophorum*. There were of course other species which are known to be spreading and which may have reached the area only recently: under this heading we may include *Veronica filiformis* (v.c. 42 and 43) *Impatiens parviflora* (v.c. 43) and *Montia sibirica* (*Claytonia alsinoides*) (v.c. 44).

Outside the realms of N.C.Rs. there were also excitements—both presences and absences. The discovery of *Lilium martagon* in a damp wood near Llangwyrfon, and *Pilularia globulifera* covering the bottom of a pond near Boughrood, come high on the list. Some of the absentees have already been mentioned. but other notable omissions include *Ballota nigra*, *Galium mollugo*, *Glyceria maxima*. *Myrica gale*, *Ononis repens*, *O. spinosa*, *Parietaria diffusa*, *Picris echioides*, *Silaum silaus*, *Sison amomum*, *Solanum nigrum*, *Thalictrum flavum*, *Typha angustifolia*, *Verbena officinalis* and *Veronica anagallis-aquatica* agg.

I would like to record my thanks, on behalf of the Maps Scheme, to all those who took part and worked so hard during the week. The weather was not at its kindest and with less strong determination such a fine total of new records could not have been attained. In particular I wish to acknowledge the help which it has been to me in writing this report to have had the comments of Mr. A. E. Wade, who scrutinised our records with such care, and the detailed notes of those who collected specimens and exact localities for so many interesting plants.

NEW COUNTY RECORDS—UNVERIFIED

- v.c. 42. Brecon—*Phleum nodosum* (22/83).
 v.c. 43. Radnor—*Bromus thominii* (32/17). *Lamium hybridum* (32/26).
Melilotus alba (32/05), *Ranunculus "sphaerospermus"*
 (32/15), *Salix triandra* (32/07), *Symphytum* ×
uplandicum (32/26), *Viola reichenbachiana* (32/04).
 v.c. 46. Cardigan—*Bromus lepidus* (22/76).

AUGUST 7th to 20th, 1956. OBERGURGL, AUSTRIA

Joint Leaders: JOHN OUNSTED and Dr. C. T. PRIME

The Junior Residential Meeting for 1956 took place at Obergurgl, Austria, 29 members being present. Apparently this is the first time that an official Field Meeting of the Society, whose purpose is the study of the British Flora, has actually taken place outside Britain. The choice of a site so far away nevertheless proved itself justified. About 500 species were seen and about a third of these are on the British List. It was particularly helpful for students to be able to see and collect a large number of plants too rare in this country to be shown to such large gatherings, and too scattered to be found at all in such a short time. All those listed below were in sufficient abundance for us to come across them without specific directions. In addition to this it was possible to study many interesting ecological problems, including, in this glaciated region, many relevant to the history of our own Flora but no longer to be seen in Britain, such as succession on young glacial moraines. Again, it was valuable to members to be able to study species closely related to well-known British plants, but recognised as specifically distinct, such as *Tragopogon orientalis*, *Taraxacum alpinum*, *Scleranthus polycarpus*, *Galium anisophyllum*, *Prunella grandiflora*, *Campanula scheuchzeri* and *Cerastium strictum*.

The party was comfortably accommodated at the Bundessportheim und Alpine Forschungsstelle of Innsbruck University. This inexpensive and comfortable Field Research Station lying 6,000 ft. above sea level at Obergurgl in the Tirol provides the amenities of library, laboratory, lecture room and bedrooms for staff as well as the normal hostel type accommodation. Surrounding mountains rise above 10,000 ft., with perpetual snow fields above the upper limits of vegetation. We had readily obtained permission to hold our own course there independent of the official courses appearing in the University's annual programme. It is appropriate to say, however, at this point, that we had one stroke of exceptional good fortune which guaranteed the success of the Meeting. There happened to be also staying at the Heim Dr. Helmuth Gams, Professor of Botany at the University of Innsbruck, a man of immense erudition who knows the Tirolean mountains as if they were his own back garden. With the greatest kindness he joined us on most of our expeditions, suggesting the best spots to visit, helping us with the identification of non-British species, drawing our attention to matters of interest in every field of natural history and folk lore, and generally enriching our minds from the rare treasury of his own. Our gratitude to him and to Frau Gams, who also accompanied us on our outings, cannot be too strongly expressed.

We were lucky again in that Obergurgl must have been one of the few places to enjoy a fortnight of continuously perfect weather in the August of 1956. We were thus enabled to make full day excursions whenever we chose and we did in fact do so almost every day. Our

botanical searches were conducted at three different levels with quite different results: around and above the village itself at 6,000 to 10,000 ft.; in the pine woods lower down the valley near Sölden at 3,000 ft., to which we made a day excursion by bus; and at Oetzal where the valley joins the Inn valley at about 1,500 ft., where we simply had an hour's botanising while waiting for the train. We had about nine day excursions on foot from the village and in them covered all the main valleys and their branches, and the more accessible cols and summits of the district as well as going up to three different glaciers. At this height the higher meadows had not yet been mown, so we were able to study a full range of the alpine flora proper, and we found we were by no means too late in the season provided we went sufficiently high. The pinewoods at Sölden were characterised by a more northern type of flora with *Limnaea borealis* and *Moneses uniflora*. To our surprise in the lowest region visited, round the station, the first plants we found were Breckland species such as *Medicago falcata* and *Descurainia sophia*. We later learned, however, that this is officially recognised and described as the Steppic element in the Austrian flora, characterising a region where there is a dry climate, as the high mountains on the south and west protect it from rain.

Among interesting ecological studies we were able to make with the help of Professor Gams and of his assistants were observations on the effect of grazing by different species of animals and on the effect of wind exposure and snow cover, as well as upon the more obvious effects of the nature of the sub-soil. It seemed curious that the effect of this last appeared not to be in these Alps always the same as we should have expected in Britain. *Arctous alpinus*, for example, appeared in a calcareous valley and *Silene vulgaris* was a curiously conspicuous feature of the *Vaccinietum*.

All members of the group considered that the expedition had been most successful in its aim to enhance their knowledge of the British flora by studying the flora of an alpine region. The facilities provided by the Bundessportheim were admirable for the purposes of a junior meeting, the scenery was beautiful, and quite apart from the botany there were good opportunities for friendly contact with people of other nations, and for a certain amount of sight-seeing, including a day in Innsbruck on the way home.

As well as repeating their thanks to Professor Gams, the joint leaders would like to thank Miss H. Franks for looking after the ladies of the party, Mr. A. W. Westrup who, as Secretary of the Junior Membership Committee, undertook the whole burden of organising the administration of the meeting, including travel, bookings, etcetera, and Mr. J. Beetham for much help on the mountaineering side and for the excellent photographs which he took. Some of these photographs illustrated a full-page article which was published in *The Times Educational Supplement* of October 12th, 1956.

LIST OF SOME BRITISH SPECIES SEEN NEAR THE VILLAGE OF OBERGURGL,
6,000-10,000 ft.

Sibbaldia procumbens, *Saxifraga aizoides*, *S. stellaris*, *Peucedanum ostruthium*, *Silene nutans*, *Veronica fruticans*, *Gentiana nivalis*, *G. verna*, *Salix herbacea*, *Lycopodium alpinum*, *Phleum alpinum*, *Homogyne alpina*, *Melampyrum sylvaticum*, *Bartsia alpina*, *Polygonum viviparum*, *Rumex arifolius*, *R. alpinus*, *Juniperus communis* subsp. *nana*, *Cerastium alpinum*, *C. cerastoides*, *Loiseleuria procumens*, *Potentilla crantzii*, *Erigeron borealis*, *Ribes spicatum*, *Stellaria nemorum*, *Leucorchis albida*, *Ajuga pyramidalis*, *Botrychium lunaria*, *Juncus alpinoarticulatus*, *J. trifidus*, *J. filiformis*, *Carex lepidocarpa*, *Dactylorhiza incarnata*, *Cardamine amara*, *Epilobium alsinifolium*, *Polygonatum verticillatum*, *Cryptogramma crispa*, *Polystichum lonchitis*, *Athyrium alpestre*, *Luzula spicata*, *Pinguicula alpina*, *Lycopodium selago*, *Convallaria majalis*, *Dryas octopetala*, *Astragalus alpinus*, *Arabis alpina*, *Oxytropis halleri*, *O. campestris*, *Minuartia verna*, *Poa laxa*, *P. alpina*, *Carex capillaris*, *Selaginella selaginoides*, *Maianthemum bifolium*, *Cotoneaster integerrimus*, *Gnaphalium norvegicum*, *Lloydia serotina* and *Draba aizoides*

LIST OF SOME BRITISH SPECIES SEEN IN THE NEIGHBOURHOOD OF SÖLDEN
c. 3,000 ft.

Pyrola minor, *Asplenium septentrionale*, *Sedum album*, *S. dasycphyllum*, *Moneses uniflora*, *Orthilia secunda*, *Linnaea borealis*, *Cicerbita alpina* and *Listera cordata*.

LIST OF SOME BRITISH SPECIES SEEN IN THE NEIGHBOURHOOD OF OETZTAL,
c. 1,500 ft.

Setaria viridis, *Medicago falcata*, *Nepeta cataria*, *Pimpinella major* and *Descuriania sophia*.—J. OUNSTED.

AUGUST 25th, 1956. GUILDFORD

Leader: P. F. YEO.

A party of thirteen met at 11 a.m. at Guildford Station for this meeting intended for the study of *Euphrasia*. Unfortunately, Mr. Buckle, who earlier had kindly helped to survey the ground to be visited, was unable to be present.

The first spot to be visited was Farley Heath, five miles South-east of Guildford. This is an extensive heath, mostly bracken-dominated, with grassy paths. A small but numerous colony of *Euphrasia anglica* was seen here. This species is the only one in southern England with a dense covering of long glandular hairs on the leaves and calyx, and therefore its recognition presents no difficulty in that area. The other characters of the species were pointed out, as also were those normally common to all British species, such as the crisped deflexed hairs of the stem and the purple lines and yellow spots on the corolla. At this

locality the plants tended to have wiry purplish stems and narrow leaf- and calyx-teeth, suggestive of introgression from another species, though no other species was seen. More convincing evidence of this process, which takes place from tetraploid into diploid species, was mentioned. Attention was drawn to the short-grass habitat which is favoured by *E. anglica*, and to which it is adapted by its very short lower internodes; if the main stem is damaged by grazing few axillary buds will be lost. *E. anglica* starts flowering early and this was seen to be the case from the number of fruiting nodes below the flowers open at the time. This particular colony also demonstrated another feature of *Euphrasia* biology, namely the gregariousness of the plants; here they covered only a few square yards, in which they were quite dense, and outside which they abruptly disappeared; being annuals growing in a more or less closed community, the plants apparently require to grow with a high density in order to survive from year to year. Small isolated colonies are normally dense; larger populations may produce zones of scattered individuals. Members had several questions on the biology of the species, and in answer to these the life cycle was described, and what is known of the breeding system was outlined. The party then moved on to Winterfold Heath, two miles to the south. Here the late-flowering *E. nemorosa* was seen in rather long grass on a disused ride in felled woodland, again on acid soil. The population was much larger than that at Farley Heath and did not give the impression of being a precarious relic on the verge of extinction. The variation in appearance due to different degrees of luxuriance, which is in turn much affected by the hosts to which the plant is attached, was pointed out. At this locality there was a rather rich flora which prompted the question, "I wonder who is doing this square?"

After lunch we proceeded to Friday Street, where, on a piece of rough grassland, there was an abundant population of *E. nemorosa* and a very minute (and again dense) one of *E. anglica*. The former had larger flowers and coarser, sharper, leaf teeth than at Winterfold Heath, and the latter had curiously untypical ovate leaves which were possibly the result of introgression from *E. nemorosa*. As the ground is now planted with conifers the *E. anglica*, at least, will probably disappear in due course.

Finally, the Juniper Bottom area of Box Hill was visited. Here, on the chalk slope, the large-flowered, small-leaved *E. pseudokerneri* was seen. This is the latest species to start flowering. By following a path round the foot of the chalk hill, where the chalk appears to give way to clay, *E. anglica*, the less calcicole species, was seen growing with *E. pseudokerneri*, which is confined to chalk and oolitic grassland. *E. anglica* here appears to be more typical than at the other two places visited. In the valley east of Juniper Top there is a field where *E. anglica* and *E. nemorosa* were seen growing together. It was hoped that a little further on hybrids between *E. nemorosa* and

E. pseudokernerii would be found, but at this point a thunderstorm drove us to shelter, and when it abated the meeting dispersed, after passing a fine population of *Epipactis helleborine* in the woods.—P. F. YEO.

†SEPTEMBER 7th to 9th, 1956. HAWICK

Leader: J. GRANT ROGER

Eight of us took part in the field work—Mr. and Mrs. Howitt, Mrs. Mallinson, Miss Biggar, Miss Read, Mrs. Littlewood, Miss Beattie and myself. We marked cards in eight squares in the region about Hawick but mainly south of the town as far as Hermitage in Liddisdale. To the north-east we went as far as Jedburgh. We spent the whole of Saturday in the field and most of Sunday—Miss Beattie and I returning to Edinburgh in the evening. I consider that a good deal of useful work was done and that it was useful for us to meet in an area where there has not been much botanical activity in the past.—J. GRANT ROGER.

REVIEWS

Flora van Nederland. By S. J. VAN OOSTSTROOM. Pp. 890, with 1038 black-and-white drawings in the text. P. Noordhoff N.V., Groningen, 1956. Price 11.50 fl.

This is the 14th edition of H. Heukel's "Flora van Nederland", first issued as a serial publication between 1908 and 1911, the work having now been completely revised and brought up to date by Dr. S. J. Van Ooststroom. In the introductory chapters the plant-geography of the various districts of the Netherlands is briefly outlined by Prof. Ir. J. L. Van Soest, and the more important plant associations of the country are given under the classification described by Westhoff, Dijk, Passchier and Sissingh in 1946. A comprehensive glossary of the terms used in the *Flora* is included, and this is followed by artificial keys to the identification of families and genera. Also included is a key, by Dr. B. K. Boom, for the identification of genera of trees and shrubs by leaf characters.

The *Flora* is arranged, with modifications, in the familiar method of European floras, commencing with the Pteridophyta and continuing through the Gymnospermae to the Angiospermae. Full and careful descriptions are given, not only of the native and adventive species, varieties and hybrids known to occur in the Netherlands, but also of the many cultivated plants grown in Dutch gardens and parks. The more important taxa are well illustrated by excellent detailed black-and-white drawings. Status, habitat preference and flowering period is given for each species, and a very useful feature is that numerous relevant references to Dutch botanical literature are included. Artificial keys to genera are also given under each family.

Most of the scientific names used will be familiar to British botanists but there are a few changes due to reasons of nomenclature, and a number of other changes which can be attributed to revised views on taxonomy. In the first class *Sedum boloniense* Lois. replaces *S. sexangulare* auct., non L. ? and *Senecio tubicaulis* Mansf. replaces *S. palustris* L. In the latter class *Stellaria neglecta*, *S. pallida*, *Sagina ciliata*, *Arenaria leptoclados*, *Trifolium hybridum*, *Lotus tenuis*, *Vicia angustifolia*, *Rhinanthus stenophyllus* and *Luzula multiflora* are reduced to subspecific rank. At the same time, a number of genera, including *Cardaria*, *Descurainia*, *Chamaenerion*, *Chamaepericlymenum*, *Ramischia*, *Moneses*, *Chaenorhinum* and *Gentianella* are not kept up. These changes, however, are entirely a matter of personal opinion, possibly based on the author's study of the flora of western Europe.

Towards the end of the book is an index to the principal authors of scientific plant names, including short biographical data.

Dr. Van Ooststroom is to be congratulated on producing a descriptive Flora of such a high standard of accuracy, and the publishers are to be commended for the excellent production and tasteful binding of the work. It forms a most useful addition to the knowledge of the flora of the European mainland and should be in the hands of all botanists interested in the flora of western Europe.—D. H. KENT.

Grønlands Flora. By TYGE W. BÖCHER, KJELD HOLMAN and KNUD JAKOBSEN. Pp. 313, with 54 text figures and two coloured plates by Ingeborg Frederiksen, and a folding map. P. Haase and Sens, København. Price 28 Danish kroner (approximately 30/-).

This excellent, well-illustrated and beautifully printed flora is obviously indispensable for anyone visiting Greenland. It fits easily into the pocket and has clear keys and concise descriptions admirably adapted for field use; in addition it gives a good idea of habitat and distribution both within Greenland and in the northern hemisphere in general.

Most British botanists will, I imagine, be surprised to find that the Greenland flora totals something like 500 native species of flowering plants and pteridophytes, nearly half of which are found in Britain. This book will therefore be of value to those who are interested in the distribution and variation of British plants, even if they are unlikely to visit Greenland themselves.

The text is in Danish but there is an 'English Guide' and the equivalents of many important terms and abbreviations are given in English and Eskimo; there is also an illustrated glossary, so it is not difficult for the botanist with little or no knowledge of Danish to use the book. The 54 text figures include clear drawings of the whole or diagnostic parts of 320 species.—T. G. TUTIN.

BOOKS RECEIVED

ALLEN, D. E. *The Flora of the Rugby District*. Pp. 48 with a map. Rugby School Natural History Society. Rugby, 1957. Obtainable from George Over Ltd., Market Place, Rugby. Price 3/6. A full and up-to-date list, with localities, of the 986 species and subspecies of flowering plants and ferns recorded within a ten-mile radius of Rugby Market Place.

The work is based on a survey of the local flora made by members of the Rugby School Natural History Society in 1946-50, and includes all known records for the district back to the seventeenth century. The area covered extends as far as Coventry, Southam and Daventry, and takes in parts of Leicestershire and Northamptonshire as well as a large part of Warwickshire.

BOOTHAM SCHOOL NATURAL HISTORY CLUB. *Two Country Parishes: The History, Archaeology and Natural History of Overton and Skelton*. Pp. 106. York, 1956. This excellent survey by the members of the Bootham School Natural History Club includes a systematic list of the flowering plants and ferns found in the area. Ecological accounts of Overton Wood, North Field Wood and other selected areas are also given.

SANDBERGS BOKHANDEL. *A Catalogue of the Works of Linnaeus: issued in commemoration of the 250th Anniversary of the birthday of Carolus Linnaeus 1707-1778*. Pp. 1-179 with 21 figures in the text. Sandbergs Bokhandel Catalogue No. 12. Stockholm, 1957. Price 5 Cr. An extensive catalogue of the works of Linnaeus (and a number of publications immediately relating thereto), comprising all of his major works and most of his minor writings. The catalogue consists largely of the library of Axel Liljedahl (1875-1956) and contains many bibliographical notes and references for those who are interested in bibliographical and scientific data arising from the works of Linnaeus.

OBITUARY

PROFESSOR SIR WILLIAM WRIGHT SMITH, F.R.S. (1875-1956), who died on 15th December, 1956, was, from 1922 until the time of his death, Queen's Botanist in Scotland, Regius Keeper of the Royal Botanic Garden, Edinburgh, and Regius Professor of Botany in the University of Edinburgh.

He was born at Lochmaben, Dumfriesshire, on 2nd February 1875, and was a pupil in Dumfries Academy, from which he went, as First Bursar, to Edinburgh University. He graduated M.A. in 1896 and, having also completed a course at the Training College of Teachers, he worked as a school teacher in Edinburgh until 1902. In that year he became Assistant to Professor Isaac Bayley Balfour in the Botany Department of Edinburgh University, this auspicious appointment being the result of his marked interest and knowledge in botany which he had developed for some years and which had strongly impressed Professor Balfour. For five years he acquired much experience as a University teacher under the stimulating leadership of the Professor, who was at that time already internationally renowned as a botanist and horticulturist.

From 1907 to 1910 a very valuable period was spent in India as Curator of the Herbarium of the Royal Botanic Gardens, Calcutta, and, as Acting Director of the Botanical Survey of India, he carried out very energetic botanical explorations of the eastern Himalayas, particularly in Sikkim. These years of great activity in India, and on its frontiers, were followed by a return to the Royal Botanic Garden, Edinburgh, as Deputy Keeper under his former chief, Sir Isaac Bayley Balfour, with whom he continued to work from 1911 to 1922. Then Sir Isaac retired and William Wright Smith succeeded him as Regius Keeper and Professor of Botany in the University of Edinburgh.

Before and after succeeding Bayley Balfour he published steadily accounts of new genera and of species (over 550 in all) from collections made on the Himalayas and mountains of western China, particularly from the great wealth of material sent to Edinburgh by George Forrest and others. His numerous systematic papers appeared in *Records of the Botanical Survey of India*, *Notes from the Royal Botanic Garden, Edinburgh*, *Transactions of the Botanical Society of Edinburgh* and other periodicals. Although many different genera from recently explored regions were dealt with at the Royal Botanic Garden, Edinburgh, particular attention came to be given to *Rhododendron* and *Primula*, and Wright Smith's attention was devoted most closely to the latter as exhibited by his own descriptions of new *Primulas*, his work on the Sections of the genus with George Forrest, and, above all, his many, more recent, papers written in partnership with H. R. Fletcher.

His wide interests in systematic botany were shown in his Hooker Lecture to the Linnean Society, of which he was a Fellow, on "Some Aspects of the Bearing of Cytology in Taxonomy" (*Proc. Linn. Soc. Lond.*, 1932-33), and in his Masters Lectures to the Royal Horticultural Society on "Problems in Classification of Plants" (*J. Roy. Hort. Soc.*, 1936). Although the great bulk of his writings concerned non-British plants he maintained his interest in the British flora, especially our mountain species, always sharing in the general enthusiasm over important new discoveries such as the finding of *Diapensia lapponica*, in west Inverness-shire, in 1951. He was a Fellow, and frequently an office-bearer, of the Botanical Society of Edinburgh from 1902, a member of the Botanical Society and Exchange Club of the British Isles from 1919, and a member of the Society for the Promotion of Nature Reserves.

During his long life of service to botany and horticulture as teacher, explorer, writer and administrator, William Wright Smith received many honours and distinctions. In addition to his knighthood, conferred in 1932, and his election to the Royal Society in 1945, he was D. ès Sc. of the University of Toulouse, LL.D. of the University of Aberdeen, and an Honorary Member of the American Academy of Arts and Sciences. From 1944-49 he was President of the Royal Society of Edinburgh, and in 1942 received from that Society its MacDougall-Brisbane Prize. The Royal Horticultural Society presented to him its Victoria Medal of Honour in 1925 and then, in 1930, its Veitch Memorial Medal.

Sir William was a great personality, combining forthrightness, kindness and humour with an abiding interest in the welfare of all those with whom he became closely associated. His excellent, often astonishing, memory was a sure aid to his natural courtesy in recalling incidents in the careers of his students, colleagues, and friends generally. Delighting in the open country and hills, since his early years in Dumfriesshire, he was remarkably active in outdoor exercises and games, especially lawn-tennis, which he enjoyed until very late in life.

He is survived by Lady Smith and their three daughters.

J. GRANT ROGER.

PERSONALIA AND NOTICES TO MEMBERS

ROMULEA COLUMNAE Seb. & Mauri

Miss M. A. Turner, Belford House, Kennford, near Exeter, Devon, is studying *Romulea columnae* and is anxious to see herbarium material, particularly from Cornwall.

PERMITS FOR VISITING NATURE RESERVES

For details of the Nature Reserves declared by the Nature Conservancy and procedure for obtaining permits to visit them see *Proceedings B.S.B.I.*, 2, 332 (1957).

NEWBOROUGH WARREN, ANGLESEY

The Air Ministry have established a range at Newborough Warren but, following representations made at a Public Local Inquiry by this Society and others, have agreed to make advance notices of firing practices available to research workers and students. These notices will be sent to our Local Secretary, Prof. P. W. Richards, Coed Menai, Upper Bangor, Caernarvonshire, and members wishing to visit the Warren are advised to make arrangements with him well in advance of the time of their visits.

*THE NINTH INTERNATIONAL BOTANICAL CONGRESS,
MONTREAL, 1959*

The Ninth International Botanical Congress will be held in Montreal, Canada, from August 19 to 29, 1959, at McGill University and the University of Montreal. The programme will include papers and symposia related to all branches of pure and applied botany. A first circular giving information on programme, accommodation, excursions, and other detail will be available early in 1958. This circular and subsequent circulars including application forms will be sent only to those who write to the Secretary-General asking to be placed on the Congress mailing list: Dr. C. Frankton, Secretary-General, IX International Botanical Congress, Science Service Building, Ottawa, Ontario, Canada.

THREATS TO BRITISH FLORA

Members are urged to report to Mr. J. E. Lousley, 7 Penistone Road, London, S.W.16, any threats to the British flora. The Council has appointed a Conservation Committee to deal with such matters and every effort will be made "to promote in every way possible the conservation of the British flora".

TOXIC SPRAYS

The Society is collecting information about the effect on native vegetation of toxic chemicals used for spraying crops. The increasing use of weed-killing chemicals on arable land implies a threat to neighbouring uncultivated land or woods since the spray can be carried a considerable distance under suitable conditions. Members who observe damage from this cause are asked to send full details to Mr. J. E. Lousley, 7 Penistone Road, London, S.W.16.

SYSTEMATICS ASSOCIATION

A card index of autecological and/or cytogenetic-taxonomic researches that are being carried out on British flowering plants is maintained by the Association. Copies of the index may be consulted at the Royal Botanic Gardens, Kew, or at the Royal Botanic Garden, Edinburgh. Its purpose is to obviate overlapping between different workers. Members taking up research of this nature are asked to send particulars either to Mr. R. D. Meikle, Royal Botanic Gardens, Kew, Richmond, Surrey, or to Mr. B. L. Burtt, Royal Botanic Garden, Edinburgh, 4.

LIBRARY FACILITIES

Members are reminded that, through the kindness of the Council of the Linnean Society of London, they have the privilege of consulting the Library of the Linnean Society at Burlington House, Piccadilly, London, W.1.

ADVERTISEMENTS

A limited number of relevant advertisements will be accepted for the Society's publications as space permits. Enquiries should be addressed to Mr. D. H. Kent, 75 Adelaide Road, London, W.13

Instructions to Exhibitors

PAPERS, ARTICLES AND NOTES

are invited both from Members of the Society and others. They should be of general interest concerning the British Flora. Papers should be typed. They should be double-spaced and typed on one side of the paper only. The form adopted in this part should be used for citations and references. Full references should be put at the end, except where special reasons exist (e.g., the citation of place of publication of a plant name) or in very short papers. Illustrations, which may take the form of line drawings or photographs, will be considered for publication. Twenty-five separates of each paper are given free to the author, and further copies may be obtained on payment; requests for extra copies should be made when proofs are returned. Papers should be sent to the Editor, Mr. D. H. Kent, 75 Adelaide Road, London, W.13.

PLANT RECORDS

Instructions are given in the Year Book, 1953, 71-73. Records may be sent either to the Editor or Mr. E. C. Wallace, 2 Strathearn Road, Sutton, Surrey.

PLANT NOTES

Instructions are given in the Year Book, 1953, 73. Notes should be sent to the Editor.

OBITUARIES

These should include date of birth and death, summary of life so far as events have a bearing on botanical work, whereabouts of herbarium and any manuscripts, and chief botanical publications. Offers to write obituary notices may be sent to the Editor.

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