BOTANICAL SOCIETY OF THE BRITISH ISLES

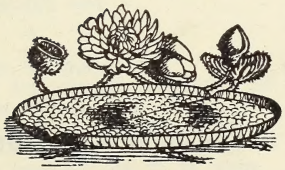
PROCEEDINGS

VOLUME 5

EDITED BY

D. H. KENT

Victoria regia



Floreat Flora

1963-64

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ERRATA

p. 23, line 17 up : *For* Braun read Braun.
p. 38, line 20 : *For* Nairn the read Nairn; the.
p. 50, line 19 up : *For coronopicfolia* read *coronopifolia*.
p. 51, line 19 : *For* Wedelber read Wendelberger.
p. 65, line 13 up : *For Datura* and *innoxia* read *Datura innoxia*.
p. 99, line 11 up : *For physaeodes* read *physalodes*.
p. 169, line 24 : *For equaticum* read *aquaticum*.
p. 214, line 1 up : *For* Elton read Etton.
line 2 up : *For* N. Lincs. read S. Lincs.
line 15 up : *For* Kinton read Kirton.
p. 215, line 1 : *For* S. Lincs. read N. Lincs.
p. 234, line 6 up : *For* O'Donovan read Donovan.
p. 271, line 19 : *For* RECHING read RECHING.
p. 364, line 9 : *For* latter read former.
p. 378, line 7 up : *For aegypticum* read *pumilum*.

DATES OF PUBLICATION

Part 1, pp. 1-104, February 1963.
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Two clumps of *Dryas octopetala* were selected near the south end of section F, and the following flowering plants and ferns were observed in close proximity to them. The southernmost clump is designated S, and the slightly more northern one N: —

Anthoxanthum odoratum		N	Lotus corniculatus		N
Betula pubescens		N	Molinia caerulea		N
Calluna vulgaris	S	N	Plantago lanceolata	S	N
Carex flacca	S	N	Polygala vulgaris		N
C. pulicaris	S		Polygonum viviparum		N
Cystopteris fragilis		N	Potentilla erecta		N
Festuca ovina	S	N	Primula vulgaris		N
F. rubra		N	Prunella vulgaris	S	
Fragaria vesca		N	Sieglingia decumbens	S	N
Geranium robertianum		N	Thymus drucei	S	N
Helictotrichon pubescens		N	Viola riviniana	S	N

The following flowering plants and ferns were frequently observed to grow in the deeper recesses of the "grikes": —

Asplenium trichomanes
A. viride
Cirsium heterophyllum
Hedera helix
Molinia caerulea
Polystichum lobatum
P. lonchitis
Primula vulgaris
Senecio jacobaea
Trollius europaeus
Viola riviniana

The following flowering plants and ferns were recorded by Druce from Kishorn. In a few cases he gives some idea of the location such as "on the limestone" (but several are obviously from the salt marsh) and the area below Courthill House where he turned aside to find out what bright yellow flower was in abundance there. It was *Hypochoeris radicata*.

Stellaria holostea
Spergularia rubra
Tilia europaea
Geranium molle
Oxalis acetosella
Sarothamnus scoparius
Anthyllis vulneraria
Lathyrus montanum
Prunus padus
Rubus corylifolius
Rosa villosa
Epilobium parviflorum
(on limestone)
E. obscurum
Anthriscus sylvestris
Oenanthe crocata
Aethusa cynapium
Viburnum opulus
Galium verum
Gnaphalium uliginosum
G. sylvaticum
Achillea millefolium
(var. rubra)
Chrysanthemum leucanthemum
Tussilago farfara
Cirsium arvense
(var. horridum)
Hieracium iricum
(on limestone)
Hypochoeris radicata
Veronica officinalis
Veronica anagallis-aquatica
Odontites verna
Mentha aquatica
Scutellaria galericulata
(var. littoralis)

SALIX REPENS
LISTERA OVATA
GYMNADENIA CONOPSEA
COELOGLOSSUM VIRIDE
IRIS PSEUDACORUS
JUNCUS GERARDII
SCIRPUS MARITIMUS
CAREX SYLVATICA
C. OVALIS
GLYCERIA MARITIMA
FESTUCA PRATENSIS (as *F. elatior*) (on limestone)
EQUISETUM FLUVIATILE (as *E. limosum*)
PHYLLITIS SCOLOPENDRIUM (near Kishorn)

The following is a list of the less common flowering plants and ferns seen by us in the limestone area. We are grateful to P. D. Sell and Dr. C. West for identifying the species of *Hieracia* included in the list.

AGROPYRON CANINUM. Not uncommon on shaded limestone rocks. Also on the sea-cliff near Seafield Farm.

ALCHEMILLA ALPINA

A. FILICAULIS

ALLIUM VINEALE. An unexpected find on low limestone sea-cliffs near Seafield Farm where it was locally common. A New County Record.

ANTENNARIA DIOICA

ANTHYLLIS VULNERARIA. Frequent on the limestone from the low sea-cliffs to the highest points.

ARABIS HIRSUTA

ARCTOSTAPHYLOS UVA-URSI. Rare.

ARENARIA SERPYLLIFOLIA

ASPLENIUM MARINUM. A few plants in sea-caves near Seafield Farm.

A. VIRIDE. Very common except on the lowest parts.

BOTRYCHIUM LUNARIA

BRACHYPODIUM SYLVATICUM

BROMUS RAMOSUS

CAREX HOSTIANA

C. LEPIDOCARPA. Frequent in basic flushes on the limestone.

C. RUPESTRIS. There is possibly no place in Britain where this sedge is so abundant as on the higher parts of the Kishorn limestone, where it occupies every crevice of the rocks over large areas but, as usual, flowering sparingly and easily overlooked.

C. SYLVATICA

CIRCAEA INTERMEDIA. Not uncommon in the wooded parts of the area as in Rassal Wood.

CIRSIUM HETEROPHYLLUM. Frequent in the Coille Dubh area but not noticed elsewhere.

COELOGLOSSUM VIRIDE. Frequent in the limestone pastures near sea-level.

CYSTOPTERIS FRAGILIS. Frequently accompanied *Asplenium viride* on the outcrops.

PROCEEDINGS

OF THE

BOTANICAL SOCIETY OF THE BRITISH ISLES

Editor: D. H. KENT

Vol. 5 FEBRUARY 1963 Pt. 1

CONTENTS

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Continued on inside of back cover.

THE CAMBRIAN LIMESTONE FLORA OF KISHORN, WEST ROSS

By A. A. Slack and A. McG. Stirling

The frontispiece to Druce's "Flora of West Ross" includes a photograph of the Jurassic limestone pavement at Applecross, and it appears that considerable attention was paid to the rather dull flora of this limestone, but the much more remarkable flora of the Cambrian limestone near Loch Kishorn remained undiscovered until recently. Lightfoot by-passed it by sailing from Gairloch to Glenelg, and from this circumstance we may assume that both Sibbald and Hope were unaware of its interest or, indeed, of its existence. George Don reached Skye but did not linger in West Ross. Hutton Balfour missed Kishorn in his numerous excursions. Prof. Robert Graham visited Applecross, Sheildaig and Loch Carron in 1842, and in 1886 a summer camp (reported by Allan (1887)) was established in the area, but we come down almost to the present century before Druce paid a visit to the Applecross peninsula in 1893.

Druce, in his introduction to "Flora of West Ross", stresses the predominance of infertile rock, claiming that the fucoid beds and limestone at Cnochan offer the best botanising in the vice-county. He does refer to the existence of "a little limestone near the surface" in the neighbourhood of Kishorn, but he clearly had no idea of its extent which makes it the largest limestone area in West Ross and probably the richest botanising ground in the vice-county.

Geologists have visited and mapped the area with some thoroughness, and Peach (1907) gives an account of the Kishorn limestone in relation to the surrounding rocks. The predominant dip of the rocks is very steep, and this has doubtless aided the formation of the "grikes" which are so characteristic of the area and which contribute so much to the establishment of its flora. Analyses of rock samples are given in a memoir of the Geological Survey, "The Limestones of Scotland", from which it is seen that the limestone is of considerable purity and not dolomitised as much as some of the other Cambrian limestones of Scotland's north-west.

Druce's visit of 1893 appears to have been his only contact with Kishorn and he clearly passed it by rapidly on his way to Applecross and back. It seems very likely that Druce passed Kishorn in the dull light of morning hurrying on his way to Applecross, and he only stopped briefly on his return trip to investigate the blaze of yellow produced by *Hypochoeris radicata* near Courthill. No doubt evening was approaching after the long rough route from Applecross.

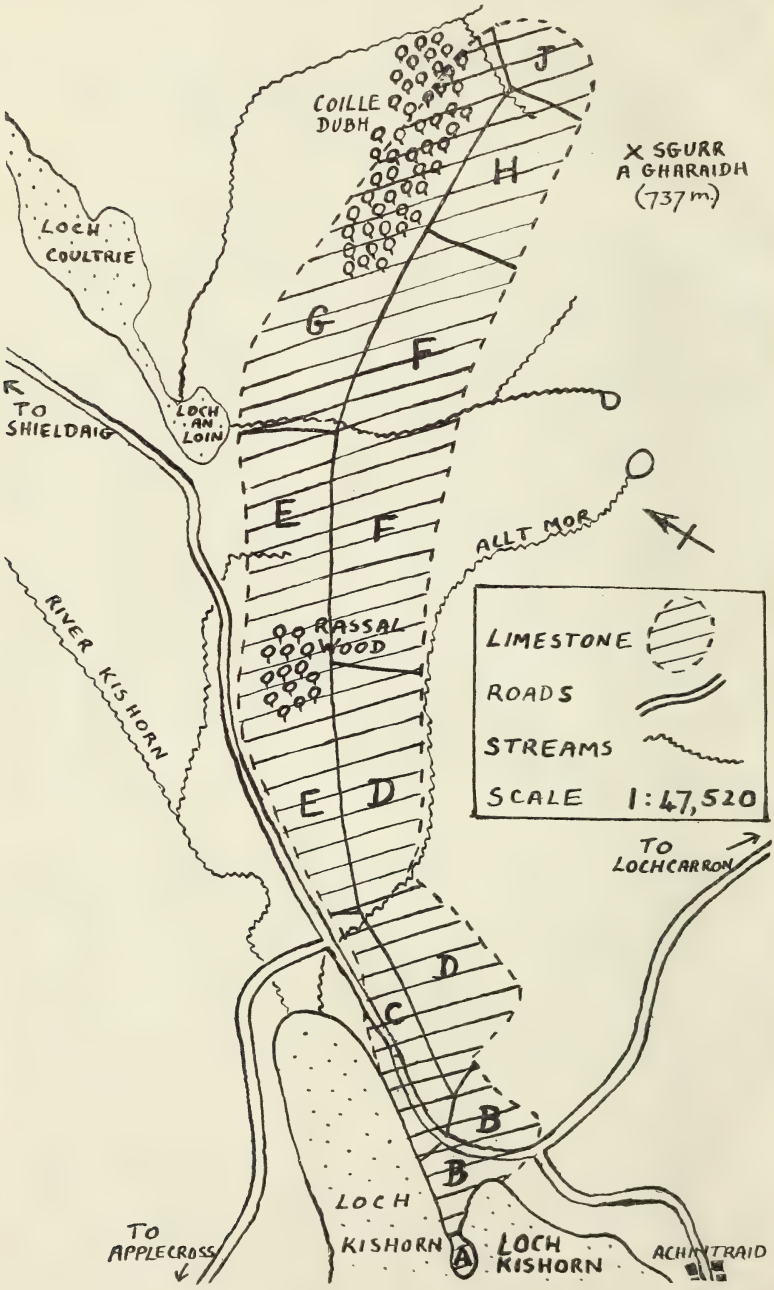

Fig. 1. The Kishorn Limestone Area.

It is interesting to compare the extent of some of these areas of Cambrian limestone. The largest occur just outside the boundaries of Ross, in Skye, near Broadford, where there is an area of about 12 square kilometres of Cambrian limestone, and around Elphin in Sutherland, where again about 12 square kilometres appear. The southern extremity of the latter just crosses the West Ross border. There are two other large areas in Sutherland and some small ones, the large ones being each of about 12 square kilometres, viz., at Durness, and around Inchnadamph. Kishorn is the fifth area in size and is about half the size of the first four, i.e., about 6 square kilometres. There are two other sizeable outcrops of Cambrian limestone in Ross, viz., about 2 square kilometres near Lochan Fada, and rather less near Loch Coulin. The last-mentioned has not been visited by either of the present writers, but it may be now stated that all the other areas exhibit very similar physical appearances and remarkably similar floras. It is hoped at a later date to make comparisons of these floras, but the purpose of the present paper is to describe the Kishorn limestone area.

The nomenclature used in this paper is as follows:—Phanerogams and vascular cryptogams—Dandy (1958); Hepatics—Jones (1958); Mosses—Richards & Wallace (1950).

The Kishorn limestone area in which Cambrian limestone is at or near the surface is a sickle-shape, a little over 5 kilometres in its greatest length from S.W. to N.E. and a little under 2 kilometres at its greatest breadth which is near the south end of Loch an Loin (See Fig. 1).

The flora of this area is remarkably uniform, as it is generously sprinkled with bare limestone outcrops, each one of which is extensively fissured, and on and around each outcrop calcicolous plants such as *Anthyllis vulneria, Asplenium trichomanes* and *Polygonum viviparum* occur widely. Nevertheless, there is a general change in flora from south to north, accompanying the average rise in level of the limestone from sea-level in the south to about 450 metres in the north. This change of level is also correlated with a change in land use, there being some cattle farming at the south extremity, many sheep in the middle section, and little human interference in the north. Around Courthill House, near the south end, there have been many introductions, e.g., *Heracleum mantegazzianum* and *Tamus communis* are growing in the woods, and *Erinus alpinus* flourishes on the walls.

For the sake of description the area may be rather arbitrarily divided into 9 sections, A to J, from south to north.

Section A. A small tidal area, the southern extremity of which projects above high tide mark as a tidal island. Between the exposures of jagged limestone is a sward composed of *Glaux maritima, Armeria maritima* and *Juncus gerardii.*

Section B. Largely cattle pasture with boggy patches and considerable areas of scrub wood. It is edged by sea-cliffs up to

six metres high in places, in which sea-caves occur. On the pastures grow some calcicolous plants, e.g., *Helictotrichon pubescens, Polygonum viviparum* and *Coeloglossum viride,* while in the wet patches, some of which are quite steep, grow *Pinguicula lusitanica, Rhynchospora alba, Schoenus nigricans, Triglochin palustre, Pedicularis palustris* and, in some sluggish water, *Rorippa nasturtium-aquaticum.* The scrub is mainly hazel, but a few plants of *Sorbus aria* occur. In the scrub occur *Listera ovata* and *Epipactis helleborine.* The sea-cliffs have the usual plants such as *Anthyllis vulneraria,* but in addition *Allium vineale* is found in several places. *Asplenium marinum* was only seen once, in a sea-cave. *Geranium lucidum* is another remarkable plant here, occurring on one shore rock.

Section C. Includes the policies of Courthill House (now in ruins), and the majority of this section is wooded. It is edged on the west by a sea-cliff which is, however, wooded for much of its length. On the east it opens out to the pastures of Section D. The trees, apart from the numerous introductions around Courthill House, are predominantly hazel and ash. The ground flora is largely composed of *Primula vulgaris* and *Mercurialis perennis,* but in addition there are *Carex remota* in flushes, *Asplenium trichomanes* and *Rubus saxatilis* on rocky outcrops, particularly on the wooded sea-cliff. *Listera ovata* is at Courthill, but the three most noteworthy plants occur on the wooded raised sea-cliff, viz., *Sorbus rupicola, Eupatorium cannabinum* in a flushed area, and *Epipactis atrorubens* in several rocky places.

Section D. Mainly pasture on which sheep graze. There are, as in all sections, rocky outcrops seamed with fissures or "grikes", but in this section the grassy parts greatly exceed the rocky parts. Grasses are mainly *Sieglingia decumbens, Molinia caerulea, Festuca ovina, Agrostis canina* and *A. tenuis.* On the rocks are *Asplenium trichomanes* and *A. ruta-muraria, Mercurialis perennis, Primula vulgaris, Circaea intermedia* and, here and there, *Dryas octopetala.*

Section E. This section merges in the south-east with the pastures of section D, but in the centre of this section is the unique Rassal Wood, which has been acquired by the Nature Conservancy as the only Scottish example of an ash-wood on limestone comparable with those seen in the west of England and in Wales. Rassal Wood contains fissured limestone rock with the same flora as in section D, but no *Dryas octopetala* was seen here. The wood is on a sort of shelf, below which there is a slope down to the road which skirts the west edge of the limestone. This slope is damp with numerous small flushes and streams, and *Carex hostiana, Saxifraga aizoides, Eriophorum latifolium* and *Schoenus nigricans* are common, while *Linum catharticum* and *Polygonum viviparum* occur abundantly in the drier parts.

Section F. This is a continuation northwards of section D, but *Calluna vulgaris* increases here, taking the place of the grassy patches between rocky outcrops. The frequency of rocky outcrops, which is at a minimum on passing from D to F, rapidly increases again on proceeding northwards, and each new outcrop has a tendency to introduce some characteristic plant. *Anthyllis vulneraria,* which has not been seen since leaving the sea coast, now re-appears, then *Polystichum lonchitis* along with *P. lobatum* occupies the "grikes" in the next outcrop, and then *Dryas octopetala* comes in abundance, having been seen only occasionally nearer the sea. In the centre of section F is a particularly rocky area where a sizeable stream flows over waterfalls and eventually descends by a gorge to near the south end of Loch an Loin. This area has a notable amount of *Salix myrsinites, Arctostaphylos uva-ursi, Juniperus communis,* and here also *Epipactis atrorubens* re-appears. North of this central rocky area extends a wide zone with little grass or heather but much fissured rock, sloping northwest at a fairly gentle angle. Most of the above mentioned plants continue throughout this zone, particularly the *Dryas octopetala* and *Epipactis atrorubens,* but *Salix myrsinites* was not seen again until section H was reached.

Section G. This might be entitled Coille Dubh (the Black Wood), which in contrast to Rassal Wood is of Birch instead of Ash. Limestone outcrops with "grikes" are more frequent, and the angle of slope is greater than in Rassal Wood. The birches are sometimes close enough to cast a shade, and *Melica nutans* and *Listera ovata* occur. The other characteristic plants of sections D and F continue. *Dryas octopetala* is abundant, *Polystichum lonchitis* frequent, and *Epipactis atrorubens* not uncommon. *Carex rupestris* appears and becomes frequent and so does *Cirsium heterophyllum,* but *Salix myrsinites* was not seen. An unexpected plant here was *Juncus triglumis* in flushes at the low level of 250 metres.

Section H. Continues north from section F, but has a very different appearance, for though mapped as limestone, the rocks of the adjacent Sgurr a' Gharaidh have sent numerous screes to cover the limestone, peat has developed, and rough grassland with *Calluna vulgaris* occurs. There are, however, a few outcrops of the limestone and on each of these *Dryas octopetala* occurs. Streams cross the section above ground, or in many places sink holes swallow them. The largest stream here is near the division between sections H and J. It flows at the surface only when in spate, and a natural limestone arch has been formed at one point in its bed. A little above the arch *Salix myrsinites* re-appears.

Section J. Consists largely of two huge outcrops of steep limestone, the uppermost reaching the maximum elevation of the limestone here which is about 450 metres. *Carex rupestris* is abundant along with *Dryas octopetala, Epipactis atrorubens, Gymnadenia conopsea, Anthyllis vulneraria,* etc. A damp area

on the upper outcrop had *Juncus triglumis*. At the extreme north-east edge of the limestone is a huge sink-hole, and here the only specimen of *Botrychium lunaria* encountered was seen.

A few remarks regarding special areas on or near the limestone may conclude this regional account. The gorge descending from the centre of section F to the south end of Loch an Loin, and forming a convenient division between sections E and G, is well worth further exploration. It contains *Viburnum opulus, Agropyron caninum, Bromus ramosus, Galium odoratum, Melica nutans,* etc., and its bryophytes would no doubt prove of interest. In a little gorge just off the limestone below section G was seen the only *Ajuga reptans* in this area (*Ajuga reptans* decreases in abundance in north Scotland). Here a collection of bryophytes was made, as summarised later. *Draba incana* and *Allium ursinum*, the latter, surprising at this altitude, was seen on the non-limestone side of the sink-hole at the extreme north-east of the limestone outcrop. It was very noticeable that the steep rocks of Sgurr a' Gharaidh were much wetter and their vegetation more luxuriant than adjacent equally steep limestone rocks. Plants such as *Saxifraga oppositifolia, Silene acaulis, Saussurea alpina, Chamaepericlymenum suecicum*, etc., appeared on the rocks of Sgurr a' Gharaidh just above 450 metres, but on the other hand *Dryas octopetala, Epipactis atrorubens* and *Carex rupestris* were absent.

Between limestone rocks in the outcrop areas, a fine red soil with some larger mineral fragments occurs. Two soil samples were taken, one at about 150 metres in Coille Dubh (section G), and the other at about 400 metres in section J. The analyses for these samples are as follows: —

		Kishorn 150 m.	Kishorn 400 m.
Exchangeable	Ca %	0·234	0·717
	Mg %	0·088	0·108
	Na %	0·001	0·006
	K %	0·015	0·044
Loss on ignition	%	4·1	24·5
pH		7·1	7·3
1% Citric soln.	P	5 (deficient)	7 (low)
mg/100g	K	5 (deficient)	22 (high)

The authors were primarily concerned with the flowering plants and ferns of the area, but an attempt was also made to collect at least a representative selection of the bryophytes. For this purpose, three areas were chosen, (a) a gorge where a stream debouched from just below the limestone in section G. Though not actually on the limestone, it was extremely close to it. The second area (b) was the region in Coille Dubh at about 150 metres from which the first soil sample was taken. The third area (c) was the region at the most elevated part of the limestone from which the second soil sample was taken. In addition, bryophytes were collected generally over the limestone. The lists of species which follow are labelled a, b and c where they occurred in

the areas as above, and d where they occurred in the general collection. It is noteworthy that one tuft from the most elevated part of the limestone contained 5 liverworts having a well-defined western distribution in Britain. We wish to acknowledge the help given by Mr. James Dickson in identifying these specimens.

HEPATICS

Herberta hutchinsiae			c	
Bazzania tricrenata			c	
Anastrepta orcadensis			c	
Jamesoniella carringtonii			c	
Plagiochila asplenioides	a			
Scapania gracilis				d
Pleurozia purpurea			c	
Frullania tamarisci		b		d
Metzgeria conjugata	a			
Riccardia multifida		b		
Conocephalum conicum	a			

MOSSES

Fissidens cristatus		b		d
F. taxifolius	a			
Ditrichum flexicaule				d
Distichium capillaceum				d
Encalypta streptocarpa				d
Hygrohypnum luridum	a			
Tortella tortuosa	a	b		d
Grimmia apocarpa				d
Rhacomitrium lanuginosum		b		
R. aciculare	a			
Bryum pseudo-triquetrum		b		d
Mnium undulatum			c	
M. punctatum	a			
Bartramia pomiformis				d
Philonotis sp.		b		
Breutelia chryoacoma		b		d
Neckera crispa				d
Thamnium alopecurum	a			
Thuidium delicatulum				d
Cratoneuron commutatum		b		d
Campylium sp.				d
Isothecium myurum	a			
I. myosuroides	a			d
Orthothecium rufescens		b	c	d
Hypnum cupressiforme	a			
Ptilium cristacastrense				d
Ctenidium molluscum	a	b		d
Rhytidiadelphus loreus		b		d
R. triquetrus	a			d
Hylocomium splendens	a			d

Two clumps of *Dryas octopetala* were selected near the south end of section F, and the following flowering plants and ferns were observed in close proximity to them. The southernmost clump is designated S, and the slightly more northern one N: —

Anthoxanthum odoratum		N	Lotus corniculatus		N
Betula pubescens		N	Molinia caerulea		N
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C. pulicaris	S		Polygonum viviparum		N
Cystopteris fragilis		N	Potentilla erecta		N
Festuca ovina	S	N	Primula vulgaris		N
F. rubra		N	Prunella vulgaris	S	
Fragaria vesca		N	Sieglingia decumbens	S	N
Geranium robertianum		N	Thymus drucei	S	N
Helictotrichon pubescens		N	Viola riviniana	S	N

The following flowering plants and ferns were frequently observed to grow in the deeper recesses of the "grikes": —

Asplenium trichomanes
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Cirsium heterophyllum
Hedera helix
Molinia caerulea
Polystichum lobatum
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Primula vulgaris
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Trollius europaeus
Viola riviniana

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Spergularia rubra
Tilia europaea
Geranium molle
Oxalis acetosella
Sarothamnus scoparius
Anthyllis vulneraria
Lathyrus montanum
Prunus padus
Rubus corylifolius
Rosa villosa
Epilobium parviflorum
(on limestone)
E. obscurum
Anthriscus sylvestris
Oenanthe crocata
Aethusa cynapium
Viburnum opulus
Galium verum
Gnaphalium uliginosum
G. sylvaticum
Achillea millefolium
(var. rubra)
Chrysanthemum leucanthemum
Tussilago farfara
Cirsium arvense
(var. horridum)
Hieracium iricum
(on limestone)
Hypochoeris radicata
Veronica officinalis
Veronica anagallis-aquatica
Odontites verna
Mentha aquatica
Scutellaria galericulata
(var. littoralis)

Salix repens
Listera ovata
Gymnadenia conopsea
Coeloglossum viride
Iris pseudacorus
Juncus gerardii
Scirpus maritimus
Carex sylvatica
C. ovalis
Glyceria maritima
Festuca pratensis (as *F. elatior*) (on limestone)
Equisetum fluviatile (as *E. limosum*)
Phyllitis scolopendrium (near Kishorn)

The following is a list of the less common flowering plants and ferns seen by us in the limestone area. We are grateful to P. D. Sell and Dr. C. West for identifying the species of *Hieracia* included in the list.

Agropyron caninum. Not uncommon on shaded limestone rocks. Also on the sea-cliff near Seafield Farm.

Alchemilla alpina

A. filicaulis

Allium vineale. An unexpected find on low limestone sea-cliffs near Seafield Farm where it was locally common. A New County Record.

Antennaria dioica

Anthyllis vulneraria. Frequent on the limestone from the low sea-cliffs to the highest points.

Arabis hirsuta

Arctostaphylos uva-ursi. Rare.

Arenaria serpyllifolia

Asplenium marinum. A few plants in sea-caves near Seafield Farm.

A. viride. Very common except on the lowest parts.

Botrychium lunaria

Brachypodium sylvaticum

Bromus ramosus

Carex hostiana

C. lepidocarpa. Frequent in basic flushes on the limestone.

C. rupestris. There is possibly no place in Britain where this sedge is so abundant as on the higher parts of the Kishorn limestone, where it occupies every crevice of the rocks over large areas but, as usual, flowering sparingly and easily overlooked.

C. sylvatica

Circaea intermedia. Not uncommon in the wooded parts of the area as in Rassal Wood.

Cirsium heterophyllum. Frequent in the Coille Dubh area but not noticed elsewhere.

Coeloglossum viride. Frequent in the limestone pastures near sea-level.

Cystopteris fragilis. Frequently accompanied *Asplenium viride* on the outcrops.

Drosera anglica

Dryas octopetala. The upper parts of the limestone support an abundance of this species unsurpassed even by Durness or Inchnadamph. It is interesting to note that Druce knew *Dryas* as a W. Ross plant only at Cnochan Rocks where it just crosses the county boundary.

Epipactis helleborine. Observed in two places near Courthill and accompanied in one by *E. atrorubens.*

E. atrorubens. Another New County Record. This species was frequent at all levels on the limestone. One magnificent spike close to the road north of Courthill House was two feet in length and had 28 flowers. A few plants with cream-coloured flowers were seen in one place.

Eriophorum latifolium. A prominent feature of basic flushes on the limestone.

Eupatorium cannabinum. Observed only once on wet shaded limestone cliffs near Courthill House. A new County Record.

Euphrasia micrantha

E. confusa

E. scottica

Galium odoratum

G. boreale

Gentianella amarella agg. Too young for positive identification.

G. campestris

Geranium lucidum. This species was observed in small quantity only on limestone on the shore at the head of Loch Kishorn. Confirms a doubtful record for W. Ross.

Gymnadenia conopsea

Helictotrichon pubescens. A prominent feature of the limestone grassland in the lower and middle levels, but also observed occasionally in the upper zones.

Hieracium lingulatum

H. hebridense

H. ampliatum

H. shoolbredii

H. chloranthum

H. duriceps

H. caledonicum

H. vulgatum

Juncus triglumis. This normally alpine species was found sparingly on the limestone at around 250 metres.

Juniperus communis. Rare.

Listera ovata. Frequent in the limestone pastures near Courthill. A few plants also occurred on the highest part of the limestone at 450 metres.

MELICA NUTANS. Seen in a few places, but not common.

MYCELIS MURALIS. An unexpected New County Record, several plants growing on an old wall at Courthill House.

PHYLLITIS SCOLOPENDRIUM

PINGUICULA LUSITANICA

PLATANTHERA BIFOLIA

POA NEMORALIS

POLYGONUM VIVIPARUM

POLYSTICHUM LOBATUM

P. LONCHITIS. The Holly Fern was frequent in limestone "grikes" from the middle zone upwards.

POPULUS TREMULA

RUBUS SAXATILIS

SALIX MYRSINITES. This willow, which is a prominent feature at Inchnadamph, was found to be quite plentiful on some parts of the limestone over 300 metres. New to v.c. 105.

SAXIFRAGA AIZOIDES

S. HYPNOIDES

SCHOENUS NIGRICANS

SELAGINELLA SELAGINOIDES

SORBUS ARIA *sensu stricto*. A few small trees of this species were growing on the low cliffs near Seafield Farm. It is possible that they may have been bird-sown from the policies of Courthill House, but the habitat is natural.

S. RUPICOLA. This species is found on limestone rocks in Raasay, and on the Cambrian Limestone at Inchnadamph, thus its discovery on the Kishorn outcrop is not surprising. On the low wooded cliffs near the road north of Courthill House.

THYMUS DRUCEI

TROLLIUS EUROPAEUS

VIBURNUM OPULUS. Observed in the gorge leading to the south end of Loch an Loin.

CHARA VULGARIS. Only one *Chara* was found on the limestone. A specimen from a basic flush below Rassal Wood has been determined by Mr. G. O. Allen to be this species.

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NOTES ON DERBYSHIRE BRAMBLES

By E. S. Edees

The following account of the Derbyshire *Rubi* is based entirely on field observations made by the writer in 1961 and on herbarium specimens which he has seen and approved. No unverified record is included in the list. The author's own records are followed in brackets by the national grid reference to the one kilometre square in which the plant was found and by a mark of exclamation to indicate that it was seen *in situ*. Representative specimens of these records are preserved in the author's herbarium. There are many Derbyshire specimens in the national herbaria which have not been examined, but through the kindness of Prof. J. Heslop-Harrison and Prof. J. G. Hawkes full use has been made of the large collection of *Rubi* in the herbarium of Birmingham University (BIRM). There are also a few incidental references in this paper to specimens in the British Museum (BM).

Though it has not been thought wise to quote unverified records, the account given by W. R. Linton in the *Flora of Derbyshire* (1903) is very valuable. He was one of the leading batologists of his day and part author of the *Set of British Rubi,* which was issued during the period 1892-7 to illustrate the British species. The present paper should be regarded as a supplement to Linton's work rather than as superseding it. Linton's records of *Rubus fissus* (*R. scissus*), *R. lindleianus, R. durescens, R. rhamnifolius* (*R. cardiophyllus*), *R. lindebergii, R. selmeri* (*R. nemoralis*), *R. rusticanus* (*R. ulmifolius*), *R. sprengelii, R. leucostachys* (*R. vestitus*), *R. criniger, R. echinatoides, R. echinatus* (*R. discerptus*), *R. rubriflorus, R. concinnus* (*R. warrenii*), *R. sublustris* and *R. caesius* could be accepted as they stand with negligible risk. If we omit *R. idaeus, R. saxatilis, R. chamaemorus* and *R. viridis,* the last being in brackets and therefore very doubtful, Linton's list contains 70 names, classified as species, subspecies and varieties. The present paper comprises 42 unbracketed species. There is clearly much more work to be done.

Linton was fortunate to live in one of the richest bramble districts in Derbyshire. Nearly all the specimens he gathered for the *Set of British Rubi,* representing about 20 species, came from Shirley. The bushes grow there still. Other good places for those who wish to begin the study of Derbyshire brambles are as follows: (1) the lane from Dore to Blackamoor in square 43/2980, where *R. carpinifolius, R. dasyphyllus, R. echinatoides, R. fuscoater, R. hylocharis, R. polyanthemus, R. sprengelii* and *R. vestitus* grow together; (2) Dawson's Rocks (presumably

Repton Rocks of the *Flora*) in square 43/3322, where *R. calvatus, R. carpinifolius, R. criniger, R. dasyphyllus, R. hylocharis, R. lindleianus, R. nemoralis, R. polyanthemus, R. retrodentatus, R. rufescens* and *R. sprengelii* grow by the side of the track through the field and in and about the wood beyond; (3) an extraordinary place between two ponds in square 43/3567, about a mile west of Wingerworth, where the writer found most of the brambles he cannot name!

The nomenclature and sequence of species adopted in this account are those of Dandy (1958). Where the nomenclature differs from Linton's and cannot be understood by reference to his *Flora*, the former name is quoted as well. *R. caesius*, though not one of the critical species, is included because of its affinities with the *Triviales* and because other species of that group are frequently confused with it. All the records are for v.-c. 57, though Dore is now part of the City of Sheffield.

RUBUS CAESIUS L. Frequent in limestone woods and thickets. By the bridge at Milldale, 1884, and between Hipley and Longcliffe on the road from Ashbourne to Matlock, 1887, W. H. PURCHAS (BIRM). Between Alport and Rowsley (2365)! Hopton Wood (2656)! Mapleton (1748)! Matlock Bath (2957)!

R. SCISSUS W. C. R. Wats. (*R. fissus* Linton). Widely distributed in heathy places in woods and by roadsides, especially in hilly districts. A good distinguishing character is the ripe fruit, which instead of being black is dark red. Specimens for the *Set of British Rubi* were collected at Shirley by LINTON in 1892. Brierley Wood (3676)! Dore (2980)! Eyam (2277)! Holymoorside (3368)! The Carr, Hulland (2645), Miss K. M. HOLLICK. Nether Booth (1486)! Smeekley Wood (2976)! Wirksworth (3053)!

R. PLICATUS Weihe & Nees. In a wood near Hayfield (0388)! I think this is right, but my specimen is a poor one and not quite typical.

R. FISSUS Lindl. This is the plant which E. F. Linton called *R. rogersii*. The single record for Derbyshire is correct. Specimens for the *Set* were collected at Shirley between 1891 and 1894.

R. SUBLUSTRIS Lees. Widely distributed in hedgerows, especially on the limestone. LINTON collected specimens for the *Set* at Ednaston in 1894. Froggatt (2476)! Hathersage (2281)! Hope (1684)! Hopton Wood (2656)! Mapleton (1748)! Roadside north of Marston Montgomery (1439)! Millers Dale (1473)! Thorpe Cloud Station (1650)! Tideswell Dale (1574)! Tissington, by the church (1752)! Between Tissington and Bradbourne (1952)! Yeldersley Hollies (2243)!

R. WARRENII Sudre. The specimen on which the name was founded came from Bradley (Sudre, 1904). It was collected by LINTON in 1896 and issued in the *Set* as *R. dumetorum* var. *concinnus*. The statement in the *Flora* that it is one of the commonest brambles about Matlock is probably correct. I have seen it in many places in that part of Derbyshire. Near Bakewell, 1895, PURCHAS, old quarry near Mugginton, 1901, and Yeldersley Lane, Shirley, 1907, A. LEY (BIRM). Near Belper (3246)! Eyam (2276)! Hardwick Wood (3666)! Owler Bar (2977)! Unthank Lane (3075)!

R. TUBERCULATUS Bab. Roadside between Thurvaston and Culland Hall (2438)!

R. RUBRIFLORUS Purchas. This species was described from Derbyshire plants by PURCHAS (1894). The distribution was stated to be as follows: "Frequent in hedges in a district south of Ashbourne, comprising the adjoining parishes of Osmaston, Shirley, Yeaveley, Edlaston, Brailsford, Hulland, etc." This is still true to-day. There are good specimens from Shirley, Yeldersley, Edlaston and the road between Ashbourne and Osmaston in BIRM, collected by PURCHAS and LINTON, and I have recent specimens from the same district. Road to Ashbourne north of Osmaston (1944)! Hazelwood near Belper (3246)! Roadside south of Culland Hall (2438)! Yeldersley Hollies (2243)! Specimens for the *Set* were gathered at Shirley in 1896.

R. MYRIACANTHUS Focke (*R. diversifolius*). This species, like most of the *Triviales*, is often found on low ground near water. There are good examples by the roadside between Repton and Repton Shrubs (3024)! I have also seen it at Edlaston (1743)! It is probably much commoner than these few records suggest.

R. CALVATUS Lees ex Bloxam. Frequent, especially in the south of the county. LINTON gathered specimens for the *Set* at Shirley, 1891-4, and there are others from Mugginton and the road between Ashbourne and Mapleton in BIRM. Brailsford, excellent bushes against the churchyard wall and in the centre of the church field (2441)! Dawson's Rocks (3322)! Edlaston (1743)!

R. CARPINIFOLIUS Weihe & Nees. Near a footway from Youlgreave towards Robin Hood's Stride, 1876, Pilsbury near Hartington, 1880, and Osmaston near Ashbourne, 1887, specimens from various collectors (BIRM). Drabble Carr to Bradley, 1890, and Pincham's Wood, Belper, 1892, E. F. LINTON (BM). W. R. LINTON gathered specimens for the *Set* at Shirley in 1892. Sudre (1904) said of those he saw, "Ne parait pas différer de la forme Allemande". Dawson's Rocks (3322)! Dore (2980)! Glossop (0291)! Lane to Spinnyford Brook (2445)!

R. NEMORALIS P. J. Muell. (*R. selmeri*). Ashopton, 1893, LINTON in (BIRM). Barber Booth near Edale (1184)! Dawson's Rocks (3322)! Glossop (0291)! Hayfield (0388)! New Mills (0185)!

R. DURESCENS W. R. Linton. This species was described by Linton in 1892. "It occurs in plenty", he said, "over an area of some five miles by four to the north and east of Shirley". It still does. There are characteristic specimens in BIRM from Shirley, Mugginton, Bradley, Cross o' th' hands and Belper, gathered by LINTON between 1888 and 1901. I have seen it recently on the south side of Bradley Wood and in several places about Cross o' th' hands. There is an excellent bush where the roads and grid lines cross at 43/280460.

R. LINDLEIANUS Lees. Very common in south Derbyshire. Perhaps less common in the north, but generally distributed and probably to be found in every part of the county. I have 30 personal records. On quarry refuse in a field on the path to Woodseats near Cromford, 1884, C. BAILEY (BIRM). LINTON collected specimens for the *Set* near Shirley in 1892. It is abundant at Brailsford Green by the side of the path to the church and all round the field (2441)!

R. MUENTERI Marss. Near Shirley, 1892, LINTON (BIRM) as *R. pulcherrimus* forma. New Mills (0185)! Lane to Spinnyford Brook (2445)! This species is closely related to *R. polyanthemus* (*R. pulcherrimus*), but differs from it in several ways, notably in the softer, flat, rather square terminal leaflet, longer petiolules, eglandular rachis, and shorter, laxer and usually spreading inflorescence.

R. AMPLIFICATUS Lees. Spinnyford Brook near Hulland, 1893, LINTON (BIRM). This is the plant recorded in the *Flora* as *R. macrophyllus* var. *schlechtendalii*. By Bar Brook near Baslow (2673)! Between the ponds west of Wingerworth (3567)!

R. DANICUS (Focke) Focke. Ednaston (2342)!

[R. INCURVATUS Bab. The Derbyshire records under this name need investigating. I have not yet seen the true plant in the county nor any Derbyshire specimen of it. There is a colony of brambles in the centre of the church field at Brailsford (2441) which have leaves like those of *R. incurvatus*, but the strong falcate prickles of the flowering stem, notched petals and short stamens are reminiscent of *R. nemoralis*. There are specimens at BIRM of what is clearly the same species gathered by LINTON at Shirley in 1889 and 1892 and labelled *R. incurvatus*. But the name is incorrect.]

R. POLYANTHEMUS Lindeb. (*R. pulcherrimus*). A common bramble of wood borders and roadsides. Brailsford, 1889, E. F. LINTON (BM). Shirley, 1892-3, W. R. LINTON for the *Set*. Cross o' th' hands (2846)! Roadside south of Culland Hall (2438)! Dawson's Rocks (3322)! Dore (2980)! Ednaston (2342)! Holymoorside (2469)! Ladybower (1986)! Lane to Spinnyford Brook (2445)! Between the two ponds west of Wingerworth (3567)! Yeldersley Old Hall (2144)!

R. CARDIOPHYLLUS Muell. & Lefèv. (*R. rhamnifolius*). Apparently rather rare. LINTON gathered specimens for the *Set* at Thurvaston, 1891-4, and distributed them under the name *R. rhamnifolius*. Sudre (1904) said of those which came to him, "Specimens peu différents de ceux d'Allemagne". Cross o' th' hands (2846)! Between Thurvaston and Culland Hall (2438)!

R. ROTUNDATUS P. J. Muell. ex Genév. (*R. dumnoniensis*). Dawson's Rocks (3322)!

R. LINDEBERGII P. J. Muell. A local species of dry sunny hillsides which may be commoner in the limestone dales than our records show. Bradley, 1887 and 1890, W. R. LINTON, and near Froggatt, 1896, E. F. LINTON (BM). Glossop (0291)! Roadside descending Rushup Edge (1184)! Unthank Lane (3074)! W. R. LINTON collected specimens for the *Set* at Shirley, 1892-3, which Sudre (1904) considered quite typical.

R. ULMIFOLIUS Schott (*R. rusticanus*). This species has a peculiar distribution in Derbyshire, as in some other counties, which would be worth investigating in detail. It likes clay and calcareous soils, but shuns sandstone, so that it is often abundant in districts where other species are rare or from which they are totally absent. Monsal Dale, 1883, W. H. PAINTER, and Shirley to Hales Green, 1889, E. F. LINTON (BM). Alsop-en-le-dale (1554)! Ashbourne Green (1948)! Fenny Bentley (1650)! Near Hollington (2338)! Near Marston Montgomery (1439)! Near Radbourne (2735)! Sutton-on-the Hill (2333)! Swarkeston (3728)! Thorpe (1550)! Tissington (1852)!

R. WINTERI P. J. Muell. ex Focke (*R. robustus*). Stydd, 1896, LINTON for the *Set*. Sudre (1904) said of the specimen he saw, "Ce n'est pas le *R. robstus* Muell., mais bien le *R. winteri* Muell."

R. FALCATUS Kalt. (*R. thyrsoideus*). Swarkeston, where it has been known for nearly 70 years (3728)! There are fine examples in the lane to the church and younger bushes in the churchyard.

R. SPRENGELII Weihe. A beautiful woodland species, widely distributed throughout the county, but perhaps particularly common in the north. W. R. LINTON collected specimens for the *Set* near Shirley in 1892, of which Sudre (1904) wrote, "C'est bien cette espéce". Derby Hills near Ticknall and Southwood near Calke, 1862, A. BLOXAM (BIRM). Bar Brook, one mile above Baslow, 1899, E. F. LINTON (BM). Wood near Ambergate (3252)! Bradley (2245)! Bradley Wood (2046)! Brierley Wood (3676)! Copy Wood(2665)! Cross o' th' hands (2846)! Dawson's Rocks (3322)! Dore (2980)! Edlaston (1743)! Ednaston (2342)! Fox Lane (3076)! Glossop (0291)! Hayfield, abundant in wood on west of road (0388)! Wood near Holymoorside (3469)! New Mills (0185)! Owler Bar (2977)! Sherriff Wood (2378)! Lane to Spinnyford Brook (2445)! Upper Loads (3169)! Walton Wood (3668)!

[R. SCHMIDELYANUS Sudre. Bradley Wood (2046)! This exactly matches plants from Swynnerton, Staffordshire, which W. C. R. Watson called *R. schmidelyanus*. But, until we can examine an authentic specimen, it is impossible to say whether he was right.]

R. VESTITUS Weihe & Nees (*R. leucostachys*). One of the commonest species, occurring throughout the county. Abundant by the river at Matlock Bath. Slack Lane, Brailsford, 1889, E. F. LINTON (BM). I have about 30 personal records.

R. CRINIGER (E. F. Linton) Rogers. Plentiful where brambles grow in south Derbyshire, especially about Ashbourne and Shirley. Typical specimens for the *Set* were collected by LINTON near Shirley in 1894. Bradley Wood (1946)! Bretby (2923)! Cross o' th' hands (2846)! Dawson's Rocks (3322)! Ednaston (2342)! Roadside north of Marston Montgomery (1439)! Lane to Spinnyford Brook (2445)! Yeldersley Old Hall (2144)!

R. TAENIARUM Lindeb. (*R. infestus*). Froggatt (2476)!

R. RADULA Weihe ex Boenn. Dovedale, 1883, PURCHAS (BIRM).

R. DISCERPTUS P. J. Muell. (*R. echinatus*). Roadside north of Thurvaston (2438)! Hillside between Repton and Repton Shrubs (3024)!

R. ECHINATOIDES (Rogers) Sudre. A widely distributed and evidently common species in Derbyshire. Shirley, 1893, LINTON for the *Set*. Belperlane End (3349)! Dore (2980)! Edlaston (1743)! Ednaston (2342)! Fox Lane (3076)! Glossop (0291)! Ireton Wood (2847)! Ladybower (1986)! Smeekley Wood (2976)! Thurvaston (2438)! Unthank Lane (3075)! Upper Loads (3169)! Via Gellia (2757)! Roadside near Wingerworth (3666)! Yeldersley Old Hall (2144)!

R. GRANULATUS Muell. & Lefèv. (*R. bloxamianus*). Between Repton and Repton Shrubs, by the roadside (3124) and abundantly on a hillside above a house (3024)!

R. PALLIDUS Weihe & Nees. By the stream in Smeekley Wood (2976)!

R. SPADIX W. C. R. Wats. (*R. podophyllus*). Plentiful among gorse and by the roadside between Owler Bar and Cordwell (2977)! Fox Lane (3076)! Unthank Lane (3075)!

[R. SCABER Weihe & Nees. Linton's records for this species cannot be trusted. The Belper specimen was not accepted as typical by the authorities of the day (Rogers, 1892b), nor were specimens gathered at Cross o' th' hands. Rogers (1893) called these "good *R. scaber* but not typical *R. scaber*", whatever he meant by that. I have seen several herbarium specimens collected at Cross o' th' hands and have also examined the living plant both there and elsewhere in Derbyshire and cannot agree that it should be called *R. scaber*. What it is, I do not know.]

R. RUFESCENS Muell. & Lefèv. (*R. infecundus*). A woodland species locally common in South Derbyshire. LINTON collected specimens for the *Set* at Shirley in 1893 and issued them under the name *R. rosaceus* var. *infecundus*. Sudre (1904) said of those he saw, "Je ne crois pas que la plante diffère du *R. Rufescens* Lef. & Muell." Bretby (2923)! Dawson's Rocks (3322)! Repton Shrubs (3123)! Between Rodsley and Yeaveley (1940)! Shirley (2142)!

[R. APICULATUS Weihe & Nees (*R. anglosaxonicus*). Rogers (1892) tells us that he has seen both good *R. anglosaxonicus* and *R. rudis* from a field above the New Bath Hotel, Matlock, and also plants which seemed to him to be intermediate between the two and probably of hybrid origin. I have seen a bush by the river at Matlock Bath, between the Jubilee Bridge and the gateway to Willesley Castle, which matches exactly one of the first specimens gathered from the hillside above the hotel. It is neither *R. anglosaxonicus* nor *R. rudis*, but it may be the intermediate form.]

R. RETRODENTATUS Muell. & Lefèv. (*R. borreri*). Dawson's Rocks (3322)!

R. PHAEOCARPUS W. C. R. Wats. (*R. babingtonii*). Brierley Wood (3676)!

R. GRIFFITHIANUS Rogers. Dawson's Rocks (3322)! This species was found abundantly in Lount Wood, Leicestershire, four miles south east of Dawson's Rocks, in 1902. There is a good specimen from that locality in BIRM, which was determined by Rogers and which is practically identical with the Derbyshire plant. The Leicestershire station was sometimes erroneously attributed to Derbyshire, but it is probable that the record for Dawson's Rocks is the first for the county.

R. SPINULIFER Muell. & Lefèv. (*R. koehleri*). Near Alderwasley (3053)! Shirley (2141)!

R. HYLOCHARIS W. C. R. Wats. Widely distributed in woods and hedges. Bradley Wood (1945)! Cross o' th' hands (2746)! Dawson's Rocks (3322)! Dore (2980)! Edlaston (1743)! Fox Lane (3076)! Holymoorside (3469)! Sheriff Wood (2378)! Smeekley Wood (2976)! Lane to Spinnyford Brook (2445)! Unthank Lane (3075)! Upper Loads (3169)! Most of Linton's records for *R. histrix* probably belong here. Specimens gathered by him at Shirley, 1892-4, for the *Set* were labelled *R. rosaceus* var. *histrix*, but are *R. hylocharis*.

R. DASYPHYLLUS Rogers. This is certainly one of the commonest species in Derbyshire. Linton says, "Everywhere abundant". I have seen it in 50 localities up and down the county and there is no doubt that it can be found wherever brambles grow. It is particularly common in hilly districts and grows equally well on limestone, sandstone and clay. Specimens for the *Set* were collected by LINTON at Shirley in 1892.

[R. MARSHALLII Focke & Rogers. A large bush between the two ponds west of Wingerworth (3567)! This is evidently the plant mentioned in the *Flora* which Rogers determined as a form of *R. marshallii.* It is not typical *R. marshallii* and may well be an isolated bush of hybrid origin.]

R. FUSCOATER Weihe & Nees. Cross o' th' hands, 1899, LINTON (BIRM). Dore, plentiful about the gannister mine (2980)! Eyam, hillside at Eyam Firs (2276)! Froggatt (2476)! This is a distinct and beautiful species, but I am not sure that the name is correct. The shape and texture of the terminal leaflets are not quite those of the original description.

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JOHN BATEMAN'S HORTUS SICCUS, DATED 1718

By S. G. Harrison

I have had an opportunity to examine an interesting pre-Linnaean *hortus siccus* presented to the Pharmaceutical Society of Great Britain by the Royal College of Physicians. It is a large, single volume, bound in brown leather. Despite disintegration of the binding, the gold lettering on the spine is still quite distinct:

Hortus Siccus
John Bateman, M.D.
Coll. Med. Lond. Praes
1718

Inside, on the bibulous grey paper of the fly leaf, is written: "*Hunc hortum Siccum 2^d^ um Methodum D^nj^ Ray depositum DDD Collegio Medicor Lon.*"

The pages of the *hortus siccus* consist of the same thick, grey paper as the fly leaf, measuring approximately 21″ × 18″. They have become very brittle, especially along their edges, and could easily be damaged by careless handling. Luckily, the specimens are stuck on to smaller, tougher sheets of white paper, each about 8″ × 6″, usually mounted four to a page. The reinforcement provided by these additional backing sheets has, no doubt, helped to keep the plants in their excellent state of preservation. The majority are adequate specimens in such good condition that determination is possible without difficulty. On some pages there are gaps which probably had been left for future acquisitions. These spaces often contain a small piece of white paper bearing a phrase name which does not seem to apply to any of the specimens mounted on the same page, but which could apply to a related taxon for which the space might be reserved.

There are probably well over 1,000 specimens in this collection, most of them phanerogams, but ferns, bryophytes and algae are represented. The bryophytes and algae may be particularly interesting, for they were collected at a time when little interest had been taken in the study of these two groups and one suspects that comparatively few adequate specimens will have survived in such good condition. Some of the plants bear names and some bear numbers (in no obvious sequence). It is tragic that most of the specimens are nameless, numberless and unlocalised. Not all the species represented are native to Britain; some may have occurred as aliens and others as cultivated plants; a few may have been procured on the Continent. Bateman may not have collected all the material himself. A few sheets bear the name "Doody" which may indicate that some specimens were collected

by Samuel Doody, the botanist who was in charge of the Apothecaries' Garden in Chelsea from 1693 until his death in 1706.

It is reasonable to assume that the compiler of this *Hortus Siccus* was the Rev. John Bateman (1665-1724), mentioned in the literature by Hanbury and Marshall, Edward Jacob, Richard Pulteney, John Blackstone and others.

Hanbury and Marshall (1899) wrote:

"Of the Rev. John Bateman (fl. 1665-1700) we know little, beyond the fact that he drew up a list of Faversham plants, which was utilised by Blackstone in his *Specimen Botanicum.* Of first records due to Dr. Bateman, we find *Lythrum hyssopifolia, Cnicus pratensis* (= *Cirsium dissectum*), *Rumex pulcher* and *Epipactis violacea* (=*E. purpurata*)".

Earlier, Jacob (1777) had mentioned Bateman in the preface to his *Plantae Favershamienses*—"The ensuing Collection of Plants was begun many years since upon the Basis of the late Rev. Mr. Bateman's Catalogue, with whom, in the early part of Life, the Author made several Botanical Excursions hereabouts. . . . The principal Inducement for the Publication was to rectify the Account given in Mr. Blackstone's Specimen Botanicum, taken from Mr. Bateman's MS. Catalogue of near Two Hundred Plants growing about this Town, because many of the rare ones at this time, are not to be found in the Places therein referred to, which have of late been often diligently searched in hope of retrieving them, as they would have added much to this Work, but in vain.

In the Course of about Seventy Years since the Catalogue was made, many Causes and Accidents may be assigned for the loss of some of the rare Plants there mentioned, yet none greater than the industrious hand of improving Husbandry. Mr. Bateman might possibly have been mistaken in others, and possibly too some may be overlooked by the Author, who is not so conceited as to think he hath discovered all the Plants growing round him".

Jacob lists 635 plants in his *Plantae Favershamienses*, but unfortunately he does not distinguish species reputed to have been collected or recorded by Bateman.

Blackstone in his *Specimen Botanicum* (1746) includes in his index *"Catalogus Plantarum circa Feversham sponte nascentium, a Joanne Bateman A. M. Conscriptus. M.S."*

In the text, "Cat. Feversh." is cited for 46 species, most (if not all) of which will be found in Bateman's *Hortus Siccus.*

In the Sloane Herbarium at the British Museum (Natural History) there is a manuscript catalogue in Blackstone's hand, entitled *"Excerpta quaedam E MS. Revdi Viri Joannis Bateman A.M. Plantas rariores circa Feversham sponte nascentes Exhibens."* This catalogue lists 37 spp., including 9 which do not appear to be listed in Blackstone's *Specimen Botanicum* and 4 which Blackstone listed without citing "Cat. Feversh."

It is curious that Jacob referred to Bateman's catalogue of "near Two Hundred" plants being used as the basis for Blackstone's *Specimen Botanicum,* whereas Blackstone only acknowledged his indebtedness to the Catalogus for 46 plants. It is evident that another copy of Bateman's list existed, in addition to the abbreviated "Excerpta" now in the Sloane Herbarium. Perhaps other MS. copies existed, varying in the number of species listed.

The value of the unlocalized specimens in Bateman's *Hortus Siccus* would be greatly increased if the complete Catalogus could be found and related to the plant material. Detailed examination and determination of the specimens should supplement the information given in this preliminary note.

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A NOTE ON THE CHAROPHYTES OF HICKLING BROAD, E. NORFOLK

By S. P. Phillips

The Norfolk Broads are a very good habitat for plant and animal life and have long been recognised as a rich collecting ground for many species of Charophytes. Gurney (1949) and Lambert (1953) give accounts of the origin and formation of the Broads, and Gurney advances the theory that it is the calcareous, mineral-rich water which drains into them over glacial drift that makes them such a good habitat. Hickling Broad is somewhat brackish owing to the effect of an independent, underground salt-water table from the sea.

In June 1960 a B.S.B.I. party spent a week-end at Hickling Broad and made a collection of Charophytes which is in the herbarium of the British Museum (Natural History). These plants were identified and exhibited at the B.S.B.I. Exhibition in November 1960.

While working on this material from Hickling Broad, a list was made of all previous records of Charophytes from the locality and of all specimens from there in the herbarium of the British Museum. The species which are known from Hickling Broad are: *Nitellopsis obtusa* J. Groves, *Chara canescens* Lois., *C. vulgaris* var. *papillata* Wallr., *C. hispida* L., *C. contraria* Kütz., *C. contraria* × *hispida*, *C. baltica* var. *rigida* Groves & B.-Webster, *C. aculeolata* Kütz., *C. aspera* Willd., *C. connivens* Braun, and *C. delicatula* Ag. A sterile plant found in Hundred Stream, Potter Heigham, in 1881, was believed to have been *C. tomentosa* L., but there was insufficient material to determine the identity, and it has not been collected since (Groves and Bullock-Webster, 1924).

In 1960 the following species were collected:—*Nitellopsis obtusa* J. Groves, *C. hispida* L., *C. contraria* Kütz., *C. contraria* × *hispida*, *C. aculeolata* Kütz., and *C. aspera* Willd.

The identification of the *C. contraria* × *hispida* hybrid was made by G. O. Allen, to whom I am much indebted for his help and interest. In his letter, Mr. Allen refers to *Journ. Bot.*, **24**, 1 (1886) where there are an excellent description and plate by J. Groves under the name *C. papillosa*. Later Groves & Bullock-Webster referred to it as a hybrid. Druce (1908) called it *C. grovesii* but the true identity of the plant is still in doubt and this name is a *nomen nudum*. The material collected by the B.S.B.I. members was sterile, and the ripe oospore depicted by

Groves in 1886 was from Swedish material of *C. papillosa*. It is, perhaps, better to leave the identification as it now stands until fruiting material is found, although Mr. Allen inclines to the view that it should be considered a new species.

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PLANT NOTES

143/5×3. SPERGULARIA MARINA × RUPICOLA. 2, E. Cornwall; Par harbour, growing on breakwater; 1959, S. WALKER; 1961, J. A. RATTER & P. J. B. WOODS (*Hb. Edinburgh*).

A vigorous prostrate perennial intermediate in morphology between its parents. Shoots to 20 cm., glandular-hairy as in *S. rupicola*. Inflorescences very long (to 15 cm.), many-flowered. Flowers intermediate between those of the parents, 8 mm. in diameter, with sepals 4·5 mm. in length. Petals about equalling the sepals in length, pink above and white below. Stamens 10, as in *S. rupicola* but not *S. marina*; anthers small as in *S. marina* with usually very short filaments so that they lie in a ring about the base of the ovary. Pollen totally abortive. Plant completely sterile. Fruit unknown.

A single plant of this hybrid was growing (September, 1961) in a large mixed population of both parents on the west breakwater of Par harbour. It was conspicuous by the abundant flowering which presumably resulted from the failure of fruit production. Two other plants of this hybrid were collected from the same locality in 1959 by Dr. S. Walker. The mixed population of *S. rupicola* and *S. marina* is crowded and in many places individuals of both species were observed actually to overlap each other so that conditions would favour the production of hybrids.

The wild plants are very similar to synthetic hybrids of the same parentage, which are readily produced by controlled breeding (Ratter, J. A., *Proc. B.S.B.I.*, **3**, 98, 1958), and show the same total pollen-sterility.

The hybrid between these species has been recorded only once previously. A single plant was found by Pugsley on the harbour pier at Lyme Regis growing with its parents and forming 'a considerable and very floriferous tuft" which produced no capsules (Pugsley, H. W., *J. Bot.*, **49**, 365, 1911). Pugsley's specimen, in *Herb. Mus. Brit.*, corresponds closely with both the Par hybrids and the synthetic hybrids.

It seems possible that *S. marina* × *rupicola* may be more widespread than the present records indicate in habitats (probably mainly man-made) where the parents are growing together.—J. A. RATTER.

187/1×2. ULEX EUROPAEUS × GALLII. In the 1961 Exhibition account of this hybrid (1962, *Proc. B.S.B.I.*, **4**, 469) it is said that "The hybrid may have been overlooked in view of its intermediate characters, but can be recognised by its sterility". This should read—"The hybrid may be overlooked because it is completely fertile, but it can be recognised by its intermediate character".—P. M. BENOIT.

229/S. **Crataegus succulenta** Schrad., 1831, in Link, *Handb.* **3**, 78: *C. glandulosa* var. *macracantha* Lindl., 1836, *Bot. Reg.*, 22, pl. 1912; *C. macracantha* var. *minor* Lodd., 1838, Loud. *Arb. Brit.*, **2**, 819: *C. occidentalis* Britton, 1900, *Bull. New York Bot. Gard.*, I, **5**, 448: *C. coloradensis* A. Nels., 1904, *Proc. Biol. Soc. Wash.*, **17**, 175. 4, N. Devon; Shirwell, two trees in a

hedge on Batchford Hill, and one in woods half a mile away; Landkey, a tree on edge of wood above Birch Valley. Presumably bird-sown from a garden. C. M. A. Cadell, det. J. E. Lousley (1961, *Rep. & Trans. Devon. Assoc.*, **93**, 84). Specimens from Batchford Hill are in *Herb. Lousley*.

Tree, 3-5 metres tall, with stout ascending branches; shoots glabrous; spines stout, 3-5 cm. long; leaves broad-elliptic to obovate, acute or short-acuminate, cuneate, 5-8 cm. long, coarsely and doubly serrate, lustrous above, pubescent beneath on the veins, finally glabrous. Flowers 2 cm. across, in many-flowered clusters 7·5 cm. across; stalks downy; sepals glandular-serrate; stamens 15-20; anthers usually pink; fruit globose, 1·5 cm. across, bright red, pulpy. Flowers in May. Fruits in August-September. A native of southern Canada and the eastern United States. Introduced into cultivation in 1830.—D. H. Kent.

254/1. Epilobium hirsutum L. A very large-flowered form of this species was found in a lane near Kilmore Quay, Co. Wexford (v.c. H.12), in September 1961. Though no more luxuriant in growth than normal, at least two clumps of plants growing about a hundred yards apart had corollas 28-30 mm. in diameter compared with the normal (15-) 20-22 (-23) mm., the individual petals measuring 18 × 15 mm. The sepals were 11-12 mm. long compared with the normal 7-9 mm., and the styles and anthers were also proportionately larger than normal.

It would be interesting to know if such a variant has been met with before in the British Isles. Time did not permit of a lengthy search in the locality mentioned and it is possible that the plant occurs more widely in that district. Alternatively, it may be a newly-arisen mutant which has only just started to spread. As the plant is attractive enough to tempt horticulturalists, the precise location is purposely withheld but will gladly be released to anyone wishing to make a cytogenetic investigation. Two specimens were dried and will be donated to Hb. Mus. Brit.—D. E. Allen.

367/2. Primula scotica Hook. In the 'Biological Flora' account of *Primula scotica* by J. C. Ritchie (1954, *J. Ecol.*, **42**, 623-628) the author states of the perennation of the Caithness plants that they over-winter as rosettes of leaves. During December 1961 and again in February 1962, I examined the colony at Yesnaby, Orkney. In all the plants which I was able, with difficulty, to find the whole rosette had died away completely, leaving a small circular patch devoid of other vegetation, in the centre of which was an extremely small farinose bud.—E. R. Bullard.

560/H. **Helenium autumnale** L., 1753, *Sp. Pl.*, 886. V.c. 17, Surrey; overgrown floor of an old chalkpit, near cottages, Reigate, 1960; edge of plantation near houses, Monk's Orchard, Croydon, 1960; in both cases an established garden outcast, D. P. Young.

A perennial herb, roughly pubescent all over, with erect stems 60-100 cm tall, corymbosely branched above, narrowly winged by the decurrent leaf-bases. Leaves spirally arranged, lanceolate, ± dentate, 5-10 × 1-4 cm., only the lowest with a short broad petiole. Capitula terminal, ca. 50 cm. across. Phyllaries narrow-lanceolate, spreading or reflexed. Receptacle hemispherical, waxed. Ray-florets reflexed, cuneate, 3(-6)-fid. at the extremity, bright yellow, pistillate. Disc globose, yellow or brown.

Achenes short, bluntly tetragonal, scaly, pappus of chaffy scales. Flowers in August and September. Native of the eastern states of N. America; a well-known garden plant. The hortal forms usually grown, and now escaped, are apparently dwarf ones, since the plant is said to attain 180 cm. in the wild. Bronze colour-forms are often grown.—D. P. Young.

625/4. Epipactis leptochila (Godf.) Godf. The second edition of the *Flora of the British Isles* (Cambridge, 1962, p. 1019) ascribes to me the combination *E. leptochila* var. *cleistogama* (C. Thomas). I would like to make it clear that I have never made this combination, nor as far as I am aware has it been made previous to that publication. As full reference is not given there to the basinym it is not validly published as a new combination (*International Code of Botanical Nomenclature*, **1956**, art. 32) and remains *nomen nudum*.

My own view on *Epipactis cleistogama* C. Thomas has been set forth in a recent paper in *Watsonia* (**5**, 127; 1962): namely that it might eventually prove to be no more than a state or form of *E. leptochila*, but that its taxonomic status requires further experimental study.—D. P. Young.

659/1×2. **Holcus lanatus × mollis.** The presence of this hybrid in Britain near Cwm Rhyddnant, Cardigan, v.c. 46, and near Brandon, W. Suffolk, v.c. 26 (J. D. Hughes) is reported by Carroll and Jones (1962, *New Phyt.*, **61**, 73).

The hybrid tends to resemble *H. mollis* in morphology and growth form and is easily confused with that parent. The following characters are provided by the authors to assist in identifying the hybrid but they point out that only a chromosome count can provide certain identification.

1. Spikelets resembling *H. mollis* except that the glume tips are somewhat obtuse with a ± abruptly exserted nerve, and some pilosity.

2. Awns appearing somewhat shorter than is usual in *H. mollis*: say c. 3·0-3·5 mm. as against 4·0-4·5 mm. or more (especially by comparison with authentic *H. mollis* in the same season and locality).

3. Anthers shrunken and indehiscent.

4. Spikelets *H. mollis*-like but hairs at the sheath of the flag-leaf extending above the node.

5. The presence of abnormal spikelets may indicate a triploid: e.g., spikelets containing three florets, no awn, or more than one awn.

6. Plant resembling *H. mollis*, but with leaf margins appearing rather hairy.

7. Plant resembling *H. lanatus* but possessing rhizomes which could be lacking in vigour.—D. H. Kent.

PLANT RECORDS

Compiled by E. C. WALLACE

"Plant Records" are now arranged in the order given in the *List of British Vascular Plants* (*L.B.V.P.*) by J. E. Dandy (1958).

Records where no date is given are for the year 1961.

The following signs are used:—

§ before the *L.B.V.P.* number: to indicate that the paragraph contains information necessitating a correction to an annotated copy of the *Comital Flora.*

÷ before the *L.B.V.P.* 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 the *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 National Grid Co-ordinates, made as accurate as is thought advisable, are added to all records. These will not be published, but the original cards containing them will be filed, and may be made available for reference.

1/1. LYCOPODIUM SELAGO L. 45, Pemb.; dry grassy heath near Carnbreseb, Prescelly, 1960, T. A. W. Davis, conf. A. E. Wade (1961, *Nature in Wales*, **7**, 21).

1/3. LYCOPODIUM ANNOTINUM L. 103, Mid Ebudes; wet ground, Lag a Mhuilinn-luaidh, Loch Buie, Mull, B.S.B.I. FIELD MEETING. 105, W. Ross; slopes by Lochan Vaine, Coulm Forest, A. G. KENNETH, det. E. C. WALLACE.

1/4. LYCOPODIUM CLAVATUM L. 45, Pemb.; dry grassy heath near Carnalw, Prescelly, 1960, T. A. W. Davis, conf. A. E. Wade (1961, *Nature in Wales*, **7**, 21).

4/9×10. EQUISETUM × LITORALE Kühlew. ex Rupr. 9, Dorset; base-rich bog, Corfe Common, H. J. M. BOWEN, det. P. TAYLOR.

15/8. ASPLENIUM SEPTENTRIONALE (L.) Hoffm. 69, Westmorland; crags near head of Mardale, 1959, D. A. RATCLIFFE; crags near Dungeon Gill, Langdale, 1961, R. J. BIRKETT.

16/1. CETERACH OFFICINARUM DC. 24, Bucks.; old wall of Hedsor Priory Gardens, a good colony, A. F. WOOD.

18/2. Athyrium alpestre Clairv. 98, Argyll; Beinn Ime: 105, W. Ross; ravine above Lochan Vaine, Coulin Forest, A. G. Kenneth, both det. E. C. Wallace.

21/4. Dryopteris villarii (Bellardi) Woynar. 69, Westmorland; limestone scars at 1,200 ft., Hillbeck, near Brough, 1955, D. A. Ratcliffe.

21/6. Dryopteris carthusiana (Villar) H. P. Fuchs. 96b Nairn; moorland, Ardclach; open bog, west end of Loch of the Clans, rare, 1960, M. McC. Webster, conf. F. Ballard.

25/1. Polypodium vulgare L. *sensu stricto*. 98, Argyll; woodland near Taynvilk, Dailnamac: 101, Kintyre; epiphytic on oak, Knapdale, near Stronachullin, A. G. Kenneth, both det. J. A. Crabbe.

25/A. Polypodium australe Fée. 45, Pemb.; wall at Llawhaden, T. A. W. Davis, det. A. C. Jermy.

25/I. Polypodium interjectum Shivas. 98, Argyll; woodland rocks near the sea, near Oban: 101, Kintyre; shady rocks near West Loch Tarbet, A. K. Kenneth, both det. J. A. Crabbe.

46/11. Ranunculus lingua L. [†15, E. Kent; a root has been planted in the Luddenham Marshes near the road that leads to the church, H. M. Wilks (1962, *Bull. Kent F.C.*, **7**, 18)].

50/2. Thalictrum alpinum L. 69, Westmorland; calcareous flushes and cliff ledges, from 1,800 ft. upwards, Catchedicam and Brown Cove, Helvellyn range, 1952, E. Blezard and D. A. Ratcliffe: calcareous flushes at 2,000 ft., Blea Water Crags, High Street, 1954, D. A. Ratcliffe: calcareous flushes at 1,800 ft., Dovedale, near Hartsop, 1960, R. J. Birkett.

50/3. Thalictrum minus L. 34, W. Glos.; still in very small quantity on the Gloucester side of the Avon Gorge, 1960, P. J. M. Nethercott (1961, *Proc. Bristol Nat. Soc.*, **30**, 108): 69, Westmorland; ledges of calcareous cliffs at 1,500-2,000 ft., Caudale Moor and Ill Bell, High Street range, 1954. D. A. Ratcliffe.

58/5. Papaver argemone L. 95, Moray; arable fields, Kintessack, 1950: 96b, Nairn; verge of road, ½ mile east of Nairn, M. McC. Webster.

66/2. Fumaria capreolata var. babingtonii Pugsl. 22, Berks.; garden weed, Tilehurst, E. and J. Hodgson (1961, *Reading Nat.*, **13**, 25).

72/2. Diplotaxis tenuifolia (L.) DC. †112, Zetland; garden weed, Lerwick, R. C. Palmer.

†79/V. Lepidium virginicum L. 111, Orkney, farmland, Garson, Stromness, Mrs. Stevenson, det. P. D. Sell, comm. E. R. Bullard.

§87/1. Hornungia petraea (L.) Reichb. *69, Westmorland; limestone pavement, Castle Fold, 1,300 ft., Great Asby Scar, H. Milne-Redhead.

94/3. Draba incana L. 69, Westmorland; calcareous rocks, 1,800 ft., Froswick, High Street range, 1958, D. A. Ratcliffe; calcareous rocks, 1,500 ft., Scandale near Ambleside, Dovedale, near Hartsop, 1960, R. J. Birkett; calcareous rocks, 2,000 ft., Harter Fell, Mardale, 1960, R. J. Birkett and D. A. Ratcliffe; calcareous rocks, 2,000 ft., Knott, High Street range, R. J. Birkett: 69b, N. Lancs.; calcareous rocks, 1,700 ft., Coniston Old Man, 1959, R. J. Birkett and D. A. Ratcliffe. 99, Dunbarton; rock ledge, south slope of Ben Vane, A. G. Kenneth, det. E. C. Wallace.

†97/7. Cardamine latifolia Vahl. 90, Forfar; bank of Dighty Water, Baldovan Woods, near Dundee, U. K. Duncan.

99/1. Cardaminopsis petraea (L.) Hiit. 112, Zetland; top of sea cliff, East Neap, Fetlar, 1958; first Shetland record outside Unst, W. Scott and R. C. Palmer.

102/2×1. Rorippa × sterilis Airy Shaw. 95, Moray; bog, Lochinver, Elgin, 1958, M. McC. Webster, conf. H. K. Airy Shaw.

105/1. Erysimum cheiranthoides L. 96, Easterness; Tomatin distillery yard, introduced with grain: 96b, Nairn; Findhorn river shingle, Coulmony, washed down from distillery, M. McC. Webster.

§†108/4. Sisymbrium orientale L. *112, Zetland; waste ground, Lerwick, 1956, W. Scott.

112/2. Reseda lutea L. 95, Moray; railway embankment, Forres, M. McC. Webster.

§113/5. Viola reichenbachiana Jord. ex Bor. *100, Clyde Isles; calcareous wood, south of Corrie, Arran, B.S.B.I. Field Meeting, conf. E. C. Wallace, comm. U. K. Duncan.

†113/10. Viola cornuta L. 112, Zetland; among rocks by west side of Loch of Asta, garden outcast, 1955, W. Scott.

§115/1. Hypericum androsaemum L. *†95, Moray; Brodie Castle woods, bird-sown, M. Mc. Webster, conf. N. Robson.

115/5. Hypericum perforatum L. 95, Moray; railway embankment, Forres, M. Mc. Webster, conf. N. Robson.

115/6b. Hypericum maculatum subsp. obtusiusculum (Tourlet) Hayek. 107, E. Sutherland; top of a wall by the Kirk, Lairg, M. McC. Webster, conf. N. Robson.

§115/8. Hypericum tetrapterum Fr. 96b, Nairn; Geddes: 97, Westerness; Arisaig: 106, E. Ross; north of Dingwall: *107, E. Sutherland; south of Helmsdale, 1955, M. Mc. Webster, all. conf. N. Robson.

115/12. Hypericum hirsutum L. 95, Moray; Brodie Castle woods, appeared after felling: 106, E. Ross; limestone outcrop by main road north of Dingwall, M. McC. Webster, conf. N. Robson.

123/7. Silene acaulis (L.) Jacq. 69, Westmorland; calcareous rocks at 2,500 ft., High Street, 1954, D. A. Ratcliffe.

†123/S. Silene schafta C. C. Gmel. 62, N.-E. Yorks.; rocky sandstone bank between High and Low Dalby, Pickering, B. G. Howland, det. and comm. C. C. Townsend.

126/1. Cucubalus baccifer L. †3, S. Devon; in woody thicket not far behind the beach, Elbury Cove, near Brixham, 1932 or 1933, A. J. Davey, comm. J. E. Lousley.

†131/3. Cerastium tomentosum L. 112, Zetland; naturalised by a stream near the sea, Levenwick, 1960, W. Scott.

131/4. Cerastium alpinum L. 69, Westmorland; calcareous rocks at 2,200 ft., Dove Crag, near Hartsop, 1960, R. J. Birkett.

160/5. Salicornia pusilla Woods. 45, Pemb.; abundant in the upper marsh, Dale, 1960, M. George (1961, *Field Studies*, **1**, 8); in mixed salt-marsh on clayey mud, St. Ishmaels, T. A. W. Davis, det. P. W. Ball.

§163/2. Malva sylvestris L. *98, Argyll; Oban Hill, Oban, 1957, P. Macpherson.

†164/T. Lavatera trimestris L. 5, S. Som.; rubbish-tip, Yeovil, Mrs. V. I. Ricketts, det. and comm. C. C. Townsend.

†168/P. Geranium platypetalum Fisch. & Mey. 112, Zetland; rubbish-tip, Scalloway, W. Scott, det. J. E. Lousley.

†170/8. Oxalis latifolia Kunth. 24, Bucks.; garden weed near Cookham railway station, A. F. Wood, conf. D. P. Young.

†170/11. Oxalis incarnata L. 59, S. Lancs.; weed in greenhouse, Chadderton Cemetery. A very common weed in greenhouses in this area, J. Whitehead, det. and comm. C. C. Townsend.

185/3. Genista pilosa L. 45, Pemb.; cliff promontory near Granston, T. A. W. Davis, conf. P. E. Gibbs.

190/4. Medicago minima var. pulchella Lowe. 14, E. Sussex; one small patch with the typical form, Camber Sands, Miss B. Stoner, det. and comm. C. C. Townsend.

§195/3. Lotus pedunculatus Cav. (*L. uliginosus* Schkuhr). *110, Outer Hebrides; near Stornoway, 1959, B.S.B.I. Field Meeting, comm. U. K. Duncan. Not 112, Zetland, as printed in *Proceedings*, **4**, 284 (1961).

200/1. Astragalus danicus Retz. 106, E. Ross; fixed dune about a mile north of Rosemarkie, Blackisle, M. McC. Webster.

§†207/8. Lathyrus latifolius L. ‡62, N.-E. York; near Staithes, I. C. Lawrence: ‡65, N.W. York; railway bank near Tanfield, C. M. Rob (1962, *The Nat.*, **1962**, 26).

207/10. Lathyrus japonicus Willd. 90, Forfar; sandy sea-shore, Elliot Links, near Arbroath, Lady Anne Brewis, D. W. Fawdry and U. K. Duncan, det. J. E. Lousley (as "*L. maritimus* var. *acutifolius* Bab.").

§211/1. Rubus chamaemorus L. *73, Kirkcudbr.; summit peak, Windy Standard, at 2,250 ft. Though given for v.c. 73 in *C.F.* I believe this to be a misprint for v.c. 72. H. Milne-Redhead. For v.c. 72 record see *Top. Bot. Suppl.*, **1**, E. C. Wallace.

211/2. Rubus saxatilis L. 101, Kintyre; near Largybaan, Mull of Kintyre, A. G. Kenneth.

†211/8. Rubus spectabilis Pursh. *112, Zetland; stream between Cott and Sound, Weisdale, R. C. Palmer.

§212/4. Potentilla rupestris L. ‡107, E. Sutherland; see *Proc.* B.S.B.I., **4**, 501 (1962).

†212/7. Potentilla recta L. 81, Berwick; bank of the Cleekhimin Burn, near Carfraemill, two plants, 1960: 86, Stirling; railway embankment near Bridge of Allan station, two colonies, E. P. Beattie.

212/12. Potentilla crantzii (Crantz) G. Beck ex Fritsch. 69, Westmorland; calcareous crags at 2,600 ft.; east face of Helvellyn, 1959; calcareous crags at 1,500 ft., Dovedale, near Hartsop, 1960. D. A. Ratcliffe.

§212/14. Potentilla anglica Laichard. *100, Clyde Isles; Brodick Castle woods, Arran, B.S.B.I. Field Meeting, comm. U. K. Duncan.

§218/1. Agrimonia eupatoria L. *107, E. Sutherland; cliff south of the causeway, The Mound, M. McC. Webster.

220/3(9). Alchemilla glomerulans Buser. 96, Easterness; rocky ravine, Gleann na Ciche, 1,600 ft., H. Milne-Redhead, det. S. M. Walters.

225/9×12. Rosa dumalis × sherardii. 97, Westerness; one bush near the end of the motor road, Glen Nevis, C. C. Townshead (det. R. Melville as *R. afzeliana* × *sherardii*).

225/12. Rosa sherardii Davies. 97, Westerness; scattered along lower Glen Nevis, with both rose-coloured and white flowers, C. C. Townsend: 107, E. Sutherland; roadside west of Tressidy, 1959, M. McC. Webster. (Both det. R. Melville as f. *resinoides* (Crép.) W.-Dod).

†231/1. Amelanchier confusa Hyland. 22, Berks.; plantations and heaths near Ufton Nervet, H. J. M. Bowen.

§235/1. Sedum rosea (L.) Scop. *52, Anglesey; north to north-west facing slopes of rock outcrop upon which Corsedd Cwlwm is situated, just south of Tre-Wilmot, c. 200 ft., D. B. Woods, comm. F. H. Perring.

§235/5. Sedum anglicum Huds. 112, Zetland; plentiful in the Outer Skerries, 1946, L. S. V. and U. M. Venables; limestone outcrops, Ling Ness, 1960, South Nesting; recorded (from elsewhere) by Edmondston (1845) but doubted by Druce and bracketed in *C.F.*, W. Scott. Remove from brackets in *C.F.*—Ed.

239/3. Saxifraga hirculus L. 69, Westmorland; calcareous flushes at 2,200 ft., Meldon Fell, 1959, D. A. Ratcliffe.

239/17. Saxifraga oppositifolia L. 69. Westmorland; calcareous rocks and flushes from 2,000 ft. upwards, Catchedicam, Helvellyn range, 1952. E. Blezard and D. A. Ratcliffe; dry calcareous rocks at 1,800 ft., Pavey Ark, Langdale, 1958, D. A. Ratcliffe.

§246/3. Ribes nigrum L. *†112, Zetland; streamside, Wester Quarff, 1955, W. Scott.

254/4. Epilobium lanceolatum Seb. & Mauri; 23, Oxon.; in fair quantity in an old railway siding half a mile north of Cropredy station, R. C. Palmer.

254/6×4. Epilobium adenocaulon × lanceolatum. 24, Bucks.; garden weed, Bourne End, A. F. Wood, conf. at Kew.

254/6×9. Epilobium adenocaulon × obscurum. 3, S. Devon; damp streamside meadows near Bickington, J. Rogerson, det. at Kew.

254/12. Epilobium alsinifolium Vill. 69, Westmorland; basic flushes, Fairfield and Dovedale, near Hartsop; wet gullies, Harter Fell and Blea Water Crags, Mardale, 1960, R. J. Birkett and D. A. Ratcliffe.

†257/1. Fuchsia magellanica Lam. *112, Zetland; waste ground by Loch of Clickimin, Lerwick, 1958, R. C. Palmer.

258/1. Circaea lutetiana L. 95, Moray; Brodie Castle woods: 106, F Ross; in shade of bracken by the sea, Blackisle wood at Brahan Castle, M. McC. Webster.

§262/3. Callitriche obtusangula Le Gall. *45, Pemb.; in pond, Marloes; in flowing stream, St. Ishmaels, T. A. W. Davis, det. J. P. Savidge.

275/1. Scandix pecten-veneris L. 95, Moray; railway track near Forres station, M. McC. Webster.

§285/4. Apium inundatum (L.) Reichb. f. *112, Zetland; Ollamoor Loch, Papa Stour, and in about half-a-dozen other small lochs or pools scattered over the island, 1959, R. C. Palmer and W. Scott.

319/16. Euphorbia cyparissias L. †61, S.-E. York; roadside, Kirkella, Hull, F. de Beer: †63, S.-W. York; established near old quarry, Greetland, F. Murgatroyd (1962, *The Nat.*, **1962**, 26).

320/5. Polygonum viviparum L. 69, Westmorland; wet calcareous rocks at 2,300 ft., Keppelcove, Helvellyn, 1953, E. Blezard and D. A. Ratcliffe.

320/14. Polygonum minus Huds. 12, N. Hants.; dried-up shallow pond, Stoney Heath, Boughhurst, 1957, W. E. Warren.

325/1(3). Rumex tenuifolius (Wallr.) Löve. 105, W. Ross; river shingle, Kinlochewe river, near Kinlochewe, A. G. Kenneth, det. E. C. Wallace.

§325/8. Rumex longifolius DC. *100, Clyde Isles; sea shore, Whiting Bay, Lamlash, Arran, B.S.B.I. Field Meeting, comm. U. K. Duncan.

330/5×6. Ulmus carpinifolia × plotii. 25, E. Suffolk; Otley, F. W. Simpson, conf. at Kew (1962, *Trans. Suffolk Nat. Soc.*, **12**, 62).

§343/5. Salix triandra var. hoffmanniana (Sm.) Bab. *†110, Outer Hebrides; hedge by roadside, Lochboisdale, South Uist, 1960, U. K. Duncan, det. R. D. Meikle.

343/13×12. Salix × multinervis Doell. 112, Zetland; Holm in Tonga Water, Northmavine, 1959, R. C. Palmer, det. R. D. Meikle.

§343/15. Salix phylicifolia L. ‡112, Zetland; Holm in loch Clubbi Shunns, Northmavine, growing with and hybridising with *S. cinerea*, 1959, R. C. Palmer, det. R. D. Meikle. But see *Top. Bot. Suppl. 2*.—Ed.

343/13×16. Salix aurita × repens subsp. argentea. 105, E. Ross; shore gully near Reiff, A. G. Kenneth, det. at Royal Bot. Gard., Edinburgh.

§343/17. Salix lapponum L. *73, Kirkcudbr.; moist basic ledges at 2,200 ft., on north-facing cliffs of Merrick, D. A. Ratcliffe: 96, Easterness; low cliffs, Gleann na Ciche, H. Milne-Redhead.

343/19×21. Salix × simulatrix F. B. White. 88, Mid Perth; one plant on a rock ledge at c. 2,500 ft., Craig Chailleach, Killin, 1959, C. C. Townsend, conf. R. D. Meikle.

343/21. Salix herbacea L. 69, Westmorland; stony plateau at 2,600 ft., Dove Crag, near Hartsop, R. J. Birkett. 69b, N. Lancs.; stony ridge at 2,500 ft., Dow Crag, Coniston Fells, 1959, R. J. Birkett. 73, Kirkcudbr.; summit, Windy Standard, 2,280 ft., H. Milne-Redhead.

†351/1. Gaultheria shallon Pursh. 11, S. Hants.; heathy roadside near Ringwood, H. J. M. Bowen.

358/3. Vaccinium uliginosum L. 99, Dunbarton; south slope of Ben Vane, A. G. Kenneth, det. E. C. Wallace.

§364/2. Empetrum hermaphroditum Hagerup. 69, Westmorland; block screes at 1,800 ft., below Dove Crag, Hartsop, 1954; block screes at 1,200 ft., Riggindale, Mardale, 1954, D. A. Ratcliffe. 99, Dunbarton; high on south slope of Ben Vane, A. G. Kenneth, det. E. C. Wallace. *112, Zetland; stony plateau at the summit of Ward of Otterswick, Yell, R. C. Palmer, det. E. F. Warburg.

367/1. Primula farinosa L. 69b, N. Lancs.; calcareous flushes near Tilberthwaite Gill, Furness, 1960, R. J. Birkett.

371/1. Trientalis europaea L. 111, Orkney; Longiger, Rendall, Miss E. R. Bullard.

†388/P. Phacelia tanacetifolia Benth. 14, E. Sussex; reseeded pasture near Crowborough, Mrs. D. W. Kirkland, det. and comm. C. C. Townsend. 16, W. Kent; among crops, Speldhurst, Mrs. J. Denton, det. and comm. C. C. Townsend. 112, Zetland; garden weed, Scalloway, 1960, W. Scott, det. J. E. Lousley.

389/1. Cynoglossum officinale L. 106, E. Ross; grassland at foot of old red sandstone cliff, Blackisle, rare, M. McC. Webster.

§392/1. Symphytum officinale L. *†112, Zetland; naturalised near a house, Gerdie, Mid Yell, with cream-coloured flowers; field below house, Uralee, Yell, with purple flowers, R. C. Palmer.

§392/6. Symphytum tuberosum L. *100, Clyde Isles; rills by sea shore, Cordon, near Lamlash, Arran, B.S.B.I. Field Meeting, comm. U. K. Duncan.

§394/1. Trachystemon orientalis (L.) G. Don. 98, Argyll; outskirts of Blairmore, A. G. Kenneth.

§400/3. Myosotis brevifolia C. E. Salmon. ‡78, Peebles; east slope of Dollar Law, c. 1,700 ft., D. A. Ratcliffe, det. A. E. Wade (1961, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 233).

402/1. Mertensia maritima (L.) Gray. 106, E. Ross; near Rosemarkie, Blackisle, a single plant on shingle—an old record unconfirmed for sixty years, M. McC. Webster.

403/1. Echium vulgare L. 95, Moray; railway embankment north of Grantown-on-Spey, M. McC. Webster.

†406/1×3. Calystegia × lucana (Ten.) G. Don. 21, Middx.; hedgerow, West Ealing, in quantity; Brentford, several places, D. H. Kent. 48, Mer.; waste ground near Aberdovey station, E. Milne-Redhead, det. C. A. Stace (1962, *Nature in Wales*, **7**, 169).

†406/P. Calystegia pulchra Brummitt & Heywood. 61, S.-E. York; hedge, old vicarage, Burnby, Miss Shore: 62, N.-E. York; Seamer, near Stokesley, I. C. Lawrence: 63, S.-W. York; Calder Bank Mills, D. H. Sutcliffe: 64, Mid-W. York; Esholt Village, near Boston Spa, F. Houseman (1962, *The Nat.*, **1962**, 26).

§†409/1. Lycium halimifolium Mill. *82, Haddington; hedge at Pefferside, near Scougall: *83, Edinburgh; railway embankment, Seafield, Edinburgh, a large patch, 1948→: *84, Linlithgow; roadside near Limefield, Bathgate, one plant: *85, Fife; wood by shore at Pathhead, Kirkcaldy, a large patch, E. P. Beattie.

413/3. Solanum nigrum L. 112, Zetland; very rare as a garden weed near Scalloway, 1958, W. Scott.

†415/F. Datura ferox L. 11, S. Hants; spontaneous garden weed, Drayton, Portsmouth, Mrs. H. M. Wyatt, det. and comm. C. C. Townsend.

†416/3. Verbascum phlomoides L. ‡31, Hunts.; waste ground, Staughton Moor, 1958, N. Y. Sandwith and J. L. Gilbert (1962, *Rep. Hunts. Fauna & Flora Soc.*, **1961**, 12).

420/4. Linaria vulgaris Mill. †107, E. Sutherland; railway track, The Mound—increasing on railway tracks in north Scotland, M. McC. Webster.

§†423/1. Cymbalaria muralis Gaertn., Mey. & Scherb. *112, Zetland; garden walls, Seafield, Lerwick, W. Scott.

§424/3. Scrophularia umbrosa Dumort. ‡68, Cheviotland; south side of Tweed, near Horncliffe, and near Cornhill, 1958, G. A. & M. Swan (1959, *The Vasc. (Subst.)*, **44**, 16): north bank of Tweed near Castle Hills, G. A. & M. Swan.

§†424/5. Scrophularia vernalis L. ‡23, Oxon.; several large and healthy plants near Henley Grammar School, J. A. Cole (1962, *Reading Nat.*, **14**, 30). 95, Moray; Brodie Castle Woods, M. McC. Webster.

434/4. Melampyrum sylvaticum L. 96, Easterness; rocky ravine, Gleann na Ciche, 1,600 ft., H. Milne-Redhead.

§435/1(2). Euphrasia scottica Wettst. *43, Radnor; marsh by roadside west of Penygarreg Reservoir, 1959, W. E. Warren, det. P. F. Yeo.

435/1(10). Euphrasia curta (Fr.) Wettst. 98, Argyll; Ben Hiant, Loch Sunart, 1957, E. P. Beattie and U. K. Duncan, det. E. F. Warburg as var. *piccola* Towns.

435/1 (12). Euphrasia occidentalis Wettst. 98, Argyll; seashore, Cul Diorlinn, near Acharacle, E. P. Beattie and U. K. Duncan, conf. E. F. Warburg. 106, E. Ross; seashore, Rosemarkie, B.S.B.I., Field Meeting, det. E. F. Warburg, comm. U. K. Duncan.

435/1(15). Euphrasia confusa Pugsl. 42, Brecon; Nardetum on mountain slope near Heol Senni: 45, Pemb.; grassy slope, Porthmynawyd, Brawdy; in a mixed gathering from heavy grazed pasture near the Afon Wern, Prescelly, T. A. W. Davis, all det. P. F. Yeo.

435/1(15)×1(12). Euphrasia confusa × occidentalis. 45, Pemb.; grassy slope on sandy soil, Porthmynawyd, Brawdy, T. A. W. Davis, det. P. F. Yeo.

435/1(22). Euphrasia anglica Pugsl. 45, Pemb.; introgressed form in grassy moor in a small valley near St. David's Head; in a mixed gathering, probably ± introgressed, in heavily grazed pasture near the Afon Wern, Prescelly, T. A. W. Davis, det. P. F. Yeo.

440/4. Orobanche alba Steph. ex Willd. 98, Argyll; on *Thymus*, steep place below rocks, Crag nam fitheach, near Loch Craignish, A. G. Kenneth, det. E. C. Wallace.

442/3. Utricularia intermedia Hayne. 62, N.-E. York; peaty pool, Strensall Common, A. Wegener (1962, *The Nat.*, **1962**, 25).

§445/6×7. Mentha × niliaca var. alopecuroides (Hull) Briq. *112, Zetland; stream between Cott and Sound, Weisdale, R. C. Palmer.

445/7×5. Mentha × cordifolia Opiz. 3, S. Devon; Castle Yard, Exeter, a large clump, Miss B. Smythe-Richards, det. and comm. C. C. Townsend.

†472/6. Plantago indica L. 5, S. Som.; rubbish-tip, Yeovil, Mrs. V. I. Ricketts, det. and comm. C. C. Townsend (as *P. psyllium* L.).

474/1. Wahlenbergia hederacea (L.) Reichb. 63, S.-W. York; Royd Edge Clough, Meltham, Crawshaw (1962, *The Nat.*, **1962**, 25).

485/3b×4. Galium mollugo subsp. erectum × verum. 96, Easterness; bank in hotel garden, Aviemore, 1960: 96b, Nairn; verge of road near Geddes House, M. McC. Webster.

494/1. Valerianella locusta (L.) Betcke. 111, Orkney; plentifully by roadside, field and shore, Pierowall, Westray, Miss E. R. Bullard, det. S. M. Walters.

§†512/1. Inula helenium L. 95, Moray; ditch behind the home farm, Brodie Castle, M. McC. Webster. *112, Zetland; roadside south of Walls, 1960, R. C. Palmer: a patch by an oatfield at West Sandwick, Yell, W. Scott.

513/2. Pulicaria vulgaris Gaertn. 12, N. Hants; plentifully around a pond. Springwater Farm, Branshill, Mrs. Simmonds (1961, *Reading Nat.*, **13**, 21).

§526/2. Anthemis cotula L. *90, Forfar; waste ground near Powrie Castle, by Dundee, U. K. Duncan.

§526/3. Anthemis arvensis L. *†112, Zetland; a few plants in the enclosure of the new Scalloway Reservoir, W. Scott.

§†533/4. Chrysanthemum parthenium (L.) Bernh. *112, Zetland; rubbish-tip, Scalloway, frequent; roadside by Asta, W. Scott.

†534/S. Cotula squalida Hook. f. 112, Zetland; established by roadside a short distance west of Graven, 1957, W. Scott, det. J. E. Lousley.

§535/6. Artemisia absinthium L. *†100, Clyde Isles; waste ground on seashore, Kildonan, Arran, B.S.B.I. Field Meeting, comm. U. K. Duncan.

538/2. Arctium nemorosum Lejeune. 45, Pemb.; in a large clearing in a wooded valley, St. Ishmaels, T. A. W. Davis, det. F. H. Perring.

543/1. Saussurea alpina (L.) DC. 69, Westmorland; moist basic cliff ledges at 2,200 ft., Fairfield, near Patterdale, 1953, E. Blezard and D. A. Ratcliffe; basic ledges at 2,500 ft., Crinkle Crags, Langdale, 1954, D. A. Ratcliffe.

550/2. Leontodon hispidus L. 97, Westerness; bank below Arisaig railway station, rare, M. McC. Webster.

§552/1. Tragopogon pratensis subsp. minor (Mill.) Wahlenb. *94, Banff; verge of road to Strathlene golf course: 108, W. Sutherland; Machair Polin, M. McC. Webster.

§555/1. Mycelis muralis (L.) Dumort. *68, Cheviotland; Brunton Burn near Falloden, 1958; Boathouse Plantation, near Cornhill on Tweed, G. A. and M. Swan. 97, Westerness; farm wall, Arisaig, M. McC. Webster.

†557/3. Cicerbita macrophylla (Willd.) Wallr. 112, Zetland; waste ground by Loch of Clickimin, Lerwick, 1959, R. C. Palmer.

§559/5. Crepis biennis L. *45, Pemb.; roadside hedgebank, Herbrandston, T. A. W. Davis, det. J. B. Marshall.

§577/6. Potamogeton gramineus L. *68, Cheviotland; pond in old limestone quarry, east of Coves Haven, Holy Island, G. A. and M. Swan, conf. J. E. Dandy.

577/7. Potamogeton alpinus Balb. 96b, Nairn the reservoir, Geddes House, M. McC. Webster.

§598/3. Ornithogalum pyrenaicum L. ‡†4, N. Devon; Satterleigh and Warkleigh; roadside near Chittenamholt, near cottages, C. E. Hicks (1961, *Rep. & Trans. Devon. Assoc.*, **93**, 619).

§†605/2. Juncus tenuis Willd. *111, Orkney; track near Quoyness, and north of the Burn of Quoy, Hoy, 1957, Mrs. McMillan, comm. Miss E. R. Bullard.

605/26. Juncus triglumis L. 69, Westmorland; basic flushes at 2,000 ft., Catchedicam, Helvellyn range, 1952, E. Blezard and D. A. Ratcliffe; basic flushes at 1,900 ft., Caudale Moor, High Street range, 1954, D. A. Ratcliffe.

§†607/7. Allium carinatum L. *68, Cheviotland; Boathouse Plantation, near Cornhill on Tweed, G. A. and M. Swan.

†607/11. Allium paradoxum (Bieb.) G. Don. 23, Oxon.; established at Peppard Common, Mrs. Paul (1961, *Reading Nat.*, **13**, 25).

§631/1. Hammarbya paludosa (L.) Kuntze. *112, Zetland; widespread over a small area of wet mossy ground by loch between Bay of Brough and Kirk Loch, Yell, W. Scott.

§633/1. Corallorhiza trifida Chatel. ‡64, Mid.-W. York; Ribblehead, Mrs. F. Houseman: Austwick, J. N. Frankland (1962, *The Nat.*, **1962**, 25).

†647/1. Calla palustris L. 57, Derby; Allestree Park lake; first noticed in 1952 and believed to have been introduced by water-fowl, E. Caulton (1961, *Trans. Derby N.H.S.*, **2**, 16).

§650/3. Lemna minor L. *107, E. Sutherland; lochan two miles north of Rogart; very rare in north Scotland, M. McC. Webster.

§656/4. Eleocharis multicaulis (Sm.) Sm. *43, Radnor; boggy ground north-east of Pont-ar-Elan, 1959, W. E. Warren.

§658/1. Cyperus longus L. *42, Brecon; pool, Llangoed Castle, Lleyswen, probably introduced by water-fowl, A. C. Powell, comm. Nat. Mus. Wales.

§663/2. Carex distans L. 94, Banff; turf by sea, Findlater Bay: *96, Easterness; salt marsh, Kessock Ferry: 96b, Nairn; salt marsh east of Nairn, 1960: 106, E. Ross; turf by sea one mile north of Rosemarkie, Blackisle, M. McC. Webster.

663/9. Carex scandinavica E. W. Davies. 90, Forfar; damp slack, Sands of Barry, U. K. Duncan, conf. E. C. Wallace.

§663/12. Carex sylvatica Huds. ‡103, Mid Ebudes; bushy sea-cliffs near Balmeanach, Loch na Keal, Mull, B.S.B.I. Field Meeting, but see *Top. Bot. Suppl.*, 1—Ed.

663/16×17. Carex × involuta (Bab.) Syme. H.9, Clare; west end of Lough Inchiquin, with both parents, E. Booth and M. McC. Webster.

§663/22. Carex pendula Huds. *43, Radnor; near Llanstephan, 1956, H. J. M. Bowen. 103, Mid Ebudes; wet bank in dense woodland, Carsaig Bay, Mull, B.S.B.I. Field Meeting.

663/28. Carex limosa L. 80, Roxburgh; poor fen, Branxholme Wester Loch, 900 ft., H. Milne-Redhead.

§663/29. Carex paupercula Michx. *103, Mid Ebudes; *Sphagnum* swamp on watershed, Beinn a' Bhainne, Loch Buie, Mull, B.S.B.I. Field Meeting.

663/54×71. Carex × boenninghausiana Weihe. 95, Moray; single plant with both parents, edge of salt marsh, Culbin State Forest, M. McC. Webster.

663/69. Carex elongata L. 14, E. Sussex; boggy pit on edge of wood near Danehill, R. C. Palmer.

§669/3. Glyceria declinata Bréb. ‡61, S.-E. York; Allerthorpe Common, Yorks. Nat. Union Excursion (1962, *The Nat.*, **1962**, 25).

670/1×671/1. × Festulolium loliaceum (Huds.) P. Fourn. *112, Zetland; grassy pastures between Norwick and the sea, Unst, 1956, R. C. Palmer.

670/2×3. Festuca × gigas Holmberg. 96, Easterness; fallow grassland by the Reelig Burn, Kirkhill, with both parents, M. McC. Webster.

670/4. Festuca altissima All. 65, N.-W. York; shaded ravine above Burntmill Bridge, 420 ft., H. Milne-Redhead.

672/2. Vulpia bromoides (L.) Gray. 112, Zetland; hayfield at Buster, Yell, R. C. Palmer.

672/3. Vulpia myuros (L.) C. C. Gmel. 96, Easterness; distillery yard: 106, E. Ross; Garve station yard, 1957, M. McC. Webster.

673/5. Puccinellia rupestris (With.) Fernald & Weatherby. 45, Pemb.; frequent on hard sandy shingle, Solva, T. A. W. Davis, conf. B. Seddon.

676/7. Poa glauca Vahl. 69, Westmorland; calcareous rocks at 2,800 ft., east face of Helvellyn, 1955, D. A. Ratcliffe; calcareous rocks at 2,000 ft., Dove Crag, near Hartsop, 1960, R. J. Birkett. 69b, N. Lancs.; calcareous rocks at 1,700 ft., Coniston Old Man, 1959, R. J. Birkett and D. A. Ratcliffe.

§676/14. Poa palustris L. ‡†48, Mer. & ‡†49, Caern.; abundant amongst *Phragmites* and *Phalaris* in marshy ground by the river Glaslyn between Portmadoc and Minffordd, in both Caernarvon and Merioneth (Caern., Miss A. P. Conolly: Mer., D. I. Hughes and G. Wesson) (1962, *Nature in Wales*, **7**, 173).

677/1. Catabrosa aquatica (L.) Beauv. 95, Moray; Sanquhar Loch, Forres; newly dug ditch, Culbin State Forest, near the sea: first records for fifty years, M. McC. Webster.

†679/2. Cynosurus echinatus L. 10, Wight; abundant in dry sandy places by cliff path immediately south-west of Sandown, 1960, C. A. Stace.

680/1. Briza media L. 107, E. Sutherland; edge of a pine wood, The Mound, M. McC. Webster.

681/1. Melica uniflora Retz. 107, E. Sutherland; cliffs south of the causeway, The Mound, M. McC. Webster.

†683/4. Bromus inermis Leyss. 23, Oxon.; railway bank on Rugby line near Godington, just within the county, R. C. Palmer, det. at Kew.

§683/5. Bromus sterilis L. 88, Mid Perth; Aberfeldy: *96, Easterness; verge of road near Allanfearn, 1955, M. McC. Webster.

†683/7. Bromus diandrus Roth. 14, E. Sussex; top of wall near sea, Black Rock, Brighton, Lady Anne Brewis, det. A. Melderis.

683/11. Bromus ferronii Mabille. 45, Pemb.; abundant on an exposed cliff-top, Pwll Whiting, Trevine, T. A. W. Davis, conf. B. Seddon.

§683/12. Bromus thominii Hardouin. *112, Zetland; rye-grass field, Seli Voe, near Gruting, 1959; by fields, Lunning, 1960, W. Scott, both det. C. E. Hubbard.

†683/20. Bromus willdenowii Kunth. 14, E. Sussex; several clumps at Plumpton station, 1957, R. C. Palmer, det. A. Melderis, as *B. unioloides*.

687/2. Hordeum murinum L. 96, Easterness; sea coast, Ardersier, 1954, M. McC. Webster.

691/1. Trisetum flavescens (L.) Beauv. 94, Banff; sea cliffs, Garnvie, 1955: 107, E. Sutherland; golf course, Brora, 1955: 109, Caithness; verge of road, Dunbeath, 1955; Lybster, M. McC. Webster.

§693/1. Helictotrichon pratense (L.) Pilg. *109, Caithness; sea cliffs, Dunbeath, 1955, M. McC. Webster.

§701/4. Agrostis gigantea Roth. ‡48, Mer.; railway yard, Penrhyndeudraeth station, Mrs. M. D. G. Jones, conf. C. E. Hubbard (1962, *Nature in Wales*, **7**, 167).

§703/1. Polypogon monspeliensis (L.) Desf. ‡‡31, Hunts.; railway sidings, St. Neots, J. G. Dony (1962, *Rep. Hunts. Fauna & Flora Soc.*, **1961**, 12).

§708/4. Alopecurus aequalis Sobol. ‡48, Mer.; Mochras, near Llandbedr, P. M. Benoit (1962, *Nature in Wales*, **7**, 172).

§711/1. Hierochloe odorata (L.) Beauv. *80, Roxburgh; fen, Blackpool Moss, 800 ft., H. Milne-Redhead.

Charophyta all det. Mrs. S. P. Phillips.

Nitella opaca Ag. 1a, Isles of Scilly; Abbey Pool, Tresco, 1957, J. E. Lousley.

§Tolypella glomerata (Desv.) Leonh. *O, Sarnia; Guernsey; quarry on coast between Port Soif and Portinfer, 1958, J. E. Lousley and D. McClintock.

Chara vulgaris L. O, Sarnia; Guernsey; quarry on coast between Port Soif and Portinfer, 1958, J. E. Lousley and D. McClintock.

Chara contraria Kuetz. O, Sarnia; Guernsey; quarry on coast between Port Soif and Portinfer, 1958, J. E. Lousley and D. McClintock: Herm; pool on dunes, north end of island, 1958, J. E. Lousley, F. Le Sueur and D. McClintock.

Chara aculeolata Kuetz. H.23, Westmeath; Scraw Bog, 1953, D. McClintock.

Chara globularis Thuill. O, Sarnia; Guernsey; pond in disused quarry, Chouet, 1958, J. E. Lousley and D. McClintock.

Chara delicatula Ag. O, Sarnia; Guernsey; flooded quarry, Portinfer, J. E. Lousley and N. Jee.

ABSTRACTS FROM LITERATURE

Compiled by D. H. Kent

Thanks are due to E. B. Bangerter and Mrs. S. P. Phillips for their assistance.

SYSTEMATIC, ETC.

1→ Pteridophyta. Sorsa, V., 1958, Chromosome studies on Finnish pteridophyta, 1, *Hereditas,* **44,** 541-546: 1961, 2, *loc. cit.,* **47,** 481-488.

4→ Sphenopsida. Webb, J. A., 1958, The ferns and fern allies of Gower, *Gower,* **10,** 75-78.

4→ Sphenopsida. Webb, J. A., 1959, Ferns and fern allies of Gower Wallica, *Gower,* **11,** 47-48.

7. Hymenophyllum. Stace, C. A., 1962, Transplanting experiments: Hymenophyllum, *Bull. Kent F.C.,* **7,** 16-17. *Hymenophyllum tunbrigense* is found in about twelve localities in north-east Sussex, and is not elsewhere found nearer than the Severn valley area from whence it extends over western Britain. *H. wilsonii* has a similar distribution in western Britain, but is absent from Sussex.

In connexion with a research project four small tufts of *H. wilsonii* from Tryfen Mountain, Caernarvonshire, have been transplanted to Eridge, Sussex, where *H. tunbrigense* is indigenous. Single small tufts of each species have also been transplanted to Hungershall Rocks, Tunbridge Wells, Kent.—[D.H.K.]

15. Asplenium. Meyer, D., 1961, Zur Zytologie der Asplenien Mitteleuropas (xxix Abschluss), *Ber. Deutsch. Bot. Ges.,* **74,** 449-461.

15. Asplenium. Meyer, D. E., 1962, Über neue und seltene Asplenien Europas, *Ber. Deutsch. Bot. Ges.,* **75,** 24-33.

21. Dryopteris. Lawalrée-Collaris, A. & A. M., 1961, Dryopteris x tavelii in the valley of Chamonix, France, *Amer. Fern J.,* **51,** 180-185.

21. Dryopteris. Wagner, W. H., Jr., & Hagenah, D. J., 1962, Dryopteris in the Huron Mountain Club Area of Michigan, *Brittonia,* **14,** 90-99.

22. Polystichum. Manton, I. & Reichstein, T. 1961, Zur Zytologie von Polystichum braunii (Spenner) Fée und seiner Hybriden, *Ber. Schweiz. Bot. Ges.,* **71,** 370-383.

27. Azolla. Fulvio, T. E. di, 1961, Sobre el episporio de las especies Americanas de Azolla con especial referencia a A. mexicana Presl, *Kurtziana,* **1,** 299-302. The internal structure of three American species of *Azolla* is compared; although clearly different between each other, the peculiarities of *A. mexicana* appear intermediate in relation with those of *A. filiculoides* and *A. caroliniana.*—[Author's summary.]

43. Anemone. Lamprecht, H. von, 1962, cyto-systematische Untersuchungen an Anemone nemorosa L. und Anemone ranunculoides L., *Beitr. Biol. Pflanz.,* **37,** 107-146.

46/24. RANUNCULUS FICARIA L. Augsten, H., 1962, Über die Beziehungen zwischen den Entwicklungsrhythmus von Ficaria verna Huds. und den Veränderungen einiger Stoffwechselgrössen in Bulbillen und Wurzelknollen, *Beitr. Biol. Pflanz.*, **37**, 85-105.

46/24. RANUNCULUS FICARIA L. Green, P. S. & Thomas, J. L., 1961, The bulbiferous Ranunculus ficaria, *Rhodora*, **63**, 289-294. *Ranunculus ficaria* occurs as an established adventive in the United States. Material examined by the authors in the Gray Herbarium and in the herbarium of the New England Botanical Club—all from New England—proved to belong to var. *bulbifer*.—[D.H.K.]

66. FUMARIA. Leal, A. R., 1961, Las especies de Fumaria adventicias en cultivos mendocinos, *Darwiniana*, **12**, 203-240. *Fumaria officinalis, F. parviflora, F. capreolata* and *F. micrantha* occur as adventives in vineyards, orchards, gardens and by roadsides in the Argentine. *F. officinalis* has long been established in the country but the remaining three species have become established only during the last thirty years.—[D.H.K.]

77/1. CAKILE MARITIMA Scop. Binet, P., 1961, Inhibitions pericarpiques et tégumentaires chez les semences de Cakile maritima Scop. Les conditions de leur levée, *Bull. Soc. Linn. Normandie*, 10 ser., **1**, 178-191. Describes experiments on the dormancy of the seeds of *Cakile maritima*, as affected by cold and other factors.—[E.B.B.]

94/1. DRABA AIZOIDES L. Webb, J. A., 1950, Gower's own plant, Draba aizoides montana, *Gower*, **3**, 44-45. A short history of *Draba aizoides* in Gower.—[D.H.K.]

105/1. ERYSIMUM CHEIRANTHOIDES L. Ahti, T., 1961, On the taxonomy of Erysimum cheiranthoides L. (Cruciferae), *Arch. Soc. Zool. Bot. Fenn. 'Vanamo'*, **16**, 22-35. The populations of *Erysimum cheiranthoides* are grouped into two major races, subspecies *cheiranthoides* and subspecies *altum* (ssp. nova).

Subsp. *cheiranthoides* is an old, widespread, boreal-temperate weed, which mainly occurs in gardens and cereal fields. It is not known with certainty to be indigenous in any area.

Subsp. *altum* is biennial and considerably taller than the former. It is indigenous, especially in alluvial and steppe-like vegetation of the boreal continental regions of Eurasia and N. America. It also occurs as a weed, particularly in hay fields, in the northern sections of the boreal forest. In more southern areas it is largely occasional. In Fennoscandia it is a weed which is constant only in Lapland and the adjacent territories.

The chromosome number of the two subspecies was found to be the same ($2n=16$).—[Author's summary.]

123→ CARYOPHYLLACEAE. Bocquet, G. & Baehni, C., 1961, Les Caryophylacées-Silenoidées de la flora Suisse, *Candollea*, **17**, 191-202.

139. HONKENYA. Probedimova, E., 1960, Revisio generis Honkenya Ehrh., *Not. Syst. Herb. Inst. Bot. Nom. V. L. Komarovii Acad. Sci. U.R.S.S.*, **20**, 142-146.

148/1. SCLERANTHUS ANNUUS L. Nicora, E. G., 1961, El género Scleranthus en la Argentina, *Rev. Argent. Agron.*, **28**, 18-21. *Scleranthus annuus* was found growing plentifully in cultivated ground in Buenos Aires in 1959. It is new to the adventive flora of the Argentine.—[D.H.K.]

160/1. Salicornia perennis Mill. Ferguson, I. K., 1962, Salicornia perennis Mill. in Ireland, *Irish Nat. J.*, **14**, 18-19. *Salicornia perennis* was found in 1961 in sandy mud-pans in the upper region of a salt-marsh, south-west of Duncormick, Co. Wexford. This is the first authentic record of the occurrence of the species in Ireland.—[D.H.K.]

171/4. Impatiens glandulifera Royle. Schimmelbauer, H., 1961, Impatiens glandulifera Royle in Südbayern, *Ber. Bayer. Bot. Ges.*, **34**, 92.

173/1. Acer pseudoplantus L. Zuk, J., 1961, Badania biometryczne nad liśćmi klonu jaworu (Acer pseudoplantanus), *Rocznik*, **15**, 211-222. Biometrical studies on the leaves of *Acer pseudoplatanus* in Poland.—[D.H.K.]

187/1. Ulex europaeus L. Milliner, L. H., 1961, Day-length as related to vegetative development in Ulex europaeus L., 1. The experimental approach, *New Phyt.*, **60**, 340-354.

190. Medicago. Négre, R., 1959, Révision des Medicago d'Afrique du Nord, *Bull. Soc. Hist. Nat. Afr. Nord.*, **50**, 267-314. A revision of North African *Medicago* intended as a complement to the monograph of *Medicago* in Morocco published in 1956. New taxa described in the monograph are defined in the revision, keys to the species are provided, distribution maps given and a list of the taxonomic combinations in R. Maire's manuscript of the Flora of North Africa is appended.

Most of the species occurring as natives or adventives in the British Isles are included.—[E.B.B.]

192/18. Trifolium repens L. Snaydon, R. W., 1962, Micro-distribution of Trifolium repens L. and its relation to soil factors, *J. Ecol.*, **50**, 133-143.

195. Lotus. Grant, W. F., Bullen, M. R. & Nettancourt, D. de, 1962, The cytogenetics of Lotus, 1. Embryo-cultured interspecific diploid hybrids closely related to L. corniculatus L., *Canad. J. Genet. & Cytol.*, **4**, 105-128.

201. Oxytropis. Gutermann, W. & Merxmüller, H., 1961 Die europäischen Sippen von Oxytropis sectio Oxytropis, *Mitt. Bot. Staats. München*, **4**, 199-275. A revision of the European species of *Oxytropis* section *Oxytropis*. A key is provided to the species and full descriptions, synonymy and geographical distribution are given.—[D.H.K.]

212. Potentilla. Smith, E. C. Bate-, 1961, Chromatography and taxonomy in the Rosaceae, with special reference to Potentilla and Prunus, *J. Linn. Soc., Bot.*, **58**, 39-54.

226. Prunus. See 212. Potentilla.

232. Sorbus. Düll, R., 1961, Die Sorbus-Arten und ihre Bastarde in Bayern und Thuringen, *Ber. Bayer. Bot. Ges.*, **34**, 11-65. A revision of the species and hybrids of *Sorbus* found in Bavaria and Thuringia. The correct name for the hybrid *S. aria* × *aucuparia* is said to be **S. × pinnatifida** (Sm.) Düll, comb. nov.—[D.H.K.]

232. Sorbus. Gabrielian, E., 1961, The genus Sorbus L. in Turkey, *Notes Roy. Bot. Gard. Edinb.*, **23**, 483-496. Describes and keys the species of *Sorbus* found in Turkey. A number of species also found in Britain are included.—[D.H.K.]

232. Sorbus. Karpati, Z., 1960, Die Sorbus-Arten Ungarns, *Fedde. Rep.*, **62**, 71-320. A monograph of *Sorbus* in Hungary.—[D.H.K.]

232. SORBUS. Kovanda, M., 1961, Taxonomical studies in Sorbus subg. Aria, *Acta Dendrol Čechoslov.*, **3**, 23-70.

232. SORBUS. Kovanda, M., Fenologické formy některých druhu jěrábu (Sorbus L.), *Acta Dendrol. Čechoslov.*, **3**, 135-138.

232. SORBUS. Kovanda, M., 1961, Spontaneous hybrids of Sorbus in Czechoslovakia, *Acta Univ. Carolinae*, **1961**, 41-83.

236. SEMPERVIVUM. Zésiger, F., 1961 Recherches cytotaxonomiques sur les Joubarbes (genres Sempervivum L. et Jovibarba Opiz), *Ber. Schweiz. Bot. Ges.*, **71**, 113-117.

239. SAXIFRAGA. Knaben, G., 1961, Videre studier over livssyklus hos norske sildre-arter, *Blyttia*, **1961**, 148-157. Studies in the life cycles of *Saxifraga tridactylites* and two other closely related species in Scandinavia.—[D.H.K.]

243/1. PARNASSIA PALUSTRIS L. Radwánska-Paryska, Z., 1961, Zmienność kwiatów Parnassia palustris L. w zaleznosci od wysokości nad poziom morza, *Acta Soc. Bot. Pol.*, **30**, 649-666. Studies on *Parnassia palustris* in the Tatra Mountains of Poland. Considerable variation was noted in flowers depending on the height above sea level of the various populations.—[D.H.K.]

254. EPILOBIUM. Melville, R., 1962, Some New Zealand Epilobia in Britain, *Kew Bull.*, **15**, 477. *Epilobium nerterioides* A. Cunn. is widely established in Britain as a garden escape. *E. pedunculare* A. Cunn. also occurs but is rare. The author has seen no authentic British material of *E. nummularifolium* though the name has been widely used for *E. nerterioides*.—[D.H.K.]

254/13. EPILOBIUM NERTERIOIDES Cunn. Davey, A. J., 1961, Epilobium nerterioides A. Cunn. (Biological Flora), *J. Ecol.*, **49**, 753-759. *Epilobium nerterioides*, a native of New Zealand, is now widely naturalised as a garden escape in the British Isles especially on high ground in western districts. It is found on a variety of soils, from sea level to 3,000 feet. The first British record was as a weed in a garden at Edinburgh in 1904, but the first "wild" record was from Ardrishaig, Kintyre in 1911.

The British vice-comital distribution is given as v.c. 1-4, 6, 8, 9, 14, 21, 22, 33, 35, 40-42, 45, 46, 48, 49, 51, 57-60, 62-70, 72, 73, 75-80, 86-88, 90, 92, 94-102, 104, 105, 111, H.1-4, 7, 9, 12, 13, 16, 20, 27, 28, 33-36, 38-40.—[D.H.K.]. The following vice-counties, based on records published in recent numbers of the *Proceedings*, should be added to the distribution given above:—v.c. 16. 81, 83, 103, H.21.—ED.

262. CALLITRICHE. Schotsman, H. D., 1961, Races chromosomiques chez Callitriche stagnalis Scop. et Callitriche obtusangula Le Gall, *Ber. Schweiz. Bot. Ges.*, **71**, 5-16. In a study of populations from south-west, west and central Europe, including the British Isles, six caryotypes of *Callitriche stagnalis* and four of *C. obtusangula* are recognised. Little difference morphologically was observed between the different caryotypes and further experiment is necessary to show whether a possible relationship exists between ecology and caryotypic variation.—[E.B.B.]

263/1. VISCUM ALBUM L. Sokolowski, A. W. & Faliński, J. B., 1961, Materialy do wystepowania i ekologii jemioly (Viscum album L. s.l.) w Puszczy Bialowieskij, *Rocznik*, **15**, 187-209. Ecological studies on *Viscum album* in the National Park, Bialowieskij, Poland.—[D.H.K.]

263/1. Viscum album L. Walldén, B., 1961, Misteln vid nes Nordgräns, *Svensk Bot. Tidskr.*, **55**, 427-549.

268. Hedera. Wijk, H., 1961, Hederastudier i norra Halland, 2, *Svensk Bot. Tidskr.*, **55**, 599-603.

292/1. Bunium bulbocastanum L. Asai, Y., 1961, A new introduced herb, Bunium bulbocastanum L. in Japan, *J. Jap. Bot.*, **36**, 399-400. *Bunium bulbocastanum* was first noted as an adventive at Fujisawa City, Hondo, central Japan, in 1953. It has now become naturalised.—[D.H.K.]

294. Pimpinella L. Weide, H., 1962, Systematische Revision der Arten Pimpinella saxifraga L. und Pimpinella nigra Willd. in Mitteleuropa, *Fedde. Rep.*, **64**, 240-268.

320. Polygonum. Doida, Y., 1961, Cytological studies in the genus Polygonum, 2, *Ann. Rep. Nat. Inst. Gen., Japan*, **11**, 65.

320. Polygonum. Doida, Y., 1961, Developmental studies in the genus Polygonum, 4. Further studies on the effect of gibberellin on microsporogenesis in three Polygonum species, *Ann. Rep. Nat. Inst. Gen., Japan*, **11**, 66-67.

320/1. Polygonum aviculare L. Scholz, H., 1960, Bestimmungsschlüssel für die Sammelart Polygonum aviculare, *Ver. Bot. Ver. Prov. Brandenburg*, **98-100**, 180-182. Studies on *Polygonum aviculare L.* agg., including a key to its segregates.—[D.H.K.]

325/12. Rumex obtusifolius L. Lawalrée, A. & Lambinon, J., 1961, Deux sous-espèces de Rumex obtusifolius adventices en Belgique, *Rev. Verv. d'Hist. Nat.*, **18**, 2-3. *Rumex obtusifolius* subsp. *sylvestris* and subsp. *transiens* are described and their distribution in Belgium given. Extra-European distribution of each subspecies is outlined.—[D.H.K.]

330. Ulmus. Richens, R. H., 1961, Studies on Ulmus, 5. The village elms of Bedfordshire, *Forestry*, **34**, 181-200. The biometrical study of the leaves of the village elms of Bedfordshire continues the series of county surveys published in this journal. The number of samples collected was 173. The majority of samples are assigned to two groups of *Ulmus carpinifolia*, three of *U. procera*, one of *U. glabra*, and one representing the Dutch Elm. A heterogeneous assortment of forms of *U. carpinifolia* and hybrids between this species and *U. glabra* from the central region of the county is believed to be of comparatively recent introduction. *U. glabra* is indigenous, *U. procera* may be of Roman origin, and one of the groups of *U. carpinifolia* an early introduction from Huntingdon. The composition of the Bedfordshire elm fauna is also discussed.—[Author's summary.]

335/1. Betula pendula Roth. Svolba, F., 1959, Beobachtungen über den Zeitpunkt des Laubfalles bei zwei Birkenformen, *Ver. Zool.-Bot. Ges. Wien*, **98** and **99**, 168-170. Notes on *Betula pendula* and its f. *laciniata*.—[D.H.K.]

342. Populus. Lang, W. D., 1960, On some leaf-shape sequences in poplars, *Proc. Dorset N. H. & Arch. Soc.*, **81**, 86-88.

342. Populus. Mattila, R. E., 1961, On the production of the tetraploid hybrid aspen by colchicine treatment, *Hereditas*, **47**, 631-640.

343. Salix. Chmelăr, J., 1961, Salix daphnoides Vill. × triandra L. nový kríženec vrb na území Československa, *Acta Dendrol. Čechoslov.*, **3**, 109-111.

343. Salix. Skvortsov, A. K., 1961, Willows of the section Phylicifoliae Dumort. in the flora of the U.S.S.R., *Bull. Moscow Soc. Nat.*, **66**, 26-33. (In Russian.) A revision of *Salix* section *Phylicifoliae* in the flora of the U.S.S.R. Three new species are described, but several other species are reduced in synonymy.—[D.H.K.]

343/11. Salix caprea L. Samusev, F. F., 1961, Monoecious Salix caprea L., *Bot. Zhurn.*, **46**, 896-897. (In Russian.)

347/1. Kalmia polifolia Wangenh. Scott, G. D., 1962, Kalmia polifolia in Scotland, *Glasgow Nat.*, **18**, 196-197. Reports the discovery of a well-established plant of *Kalmia polifolia* on Flanders Moss, Perthshire.

The naturalisation of the species in Surrey is discussed.—[D.H.K.]

351/2. Gaultheria procumbens L. MacKeever, F. C., 1961, An albino-fruited form of Gaultheria procumbens, *Rhodora*, **63**, 346-347. An albino-fruited form of *Gaultheria procumbens* was found on Nantucket Island, Mass., U.S.A., in 1959. It is described as f. *leucocarpa* MacKeever, forma nov.—[D.H.K.]

356/1. Calluna vulgaris (L.) Hull. Grant, S. A. & Hunter, R. F., 1962, Ecotypic differentiation of Calluna vulgaris (L.) in relation to altitude, *New Phyt.*, **61**, 44-55. Population studies of *Calluna vulgaris* were undertaken in order to investigate plant variations genotypic in origin. Seed was collected from ten widely separated areas in Great Britain and seedlings from each population were grown in a spaced plant trial. In a later study plants were raised from seed collected at high and low altitude from within sixteen centres in Scotland.

Data were collected on growth habit, flowering and frost resistance.

The results indicate that ecotypic differentiation occurs and that the pattern of differentiation is ecoclinal.

(i) Variation in growth habit is continuous and the proportions of the various growth forms change with change in altitude.

(ii) Maturity type is related to the length of the growing season at the site of origin of the population. Populations originating from areas having shorter growing seasons are composed of individuals of an earlier maturity type than those from areas where the season is longer.

(iii) Observations on frost damage were made in the first study. The numbers of susceptible plants were too low to permit population comparison but susceptibility could be related to soil and climatic variations.

The significance of the variational trends is discussed.—[Authors' summary.]

356/1. Calluna vulgaris (L.) Hull. Klásterský, I., 1960, Calluna vulgaris (L.) Hull (1808) var. hirsuta Gray (1821) v Cedách, *Acta Dendrol. Čechoslov.*, **2**, 303-304. An account of *Calluna vulgaris* var. *hirsuta* S. F. Gray in Czechoslovakia.—[D.H.K.]

358. Vaccinium. Smith, D. W., 1962, Ecological studies of Vaccinium species in Alberta, *Canad. J. Plant Sci.*, **42**, 82-90.

359. Pyrola. Burtt, B. L., 1961, Pyrola chlorantha—a Scottish species, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 238. During a visit to Edinburgh Dr. G. Knaben of the University of Oslo examined the material of *Pyrola* in the Royal Botanic Garden Herbarium, and pointed out that one sheet contained *Pyrola chlorantha* mixed with *P. rotundifolia*. The collector

was given as J. Mackay (1772-1802), and the locality as Bengloe, Perthshire. The specimens had come to Edinburgh as part of the herbarium of the Brodie of Brodie, but had apparently not been mounted until about 1910. There was, therefore, ample time for some mixture to have occurred. On the other hand, Ben-y-gloe has not been over-explored botanically and the two species of *Pyrola* are easily confused. *P. chlorantha* Sw. is found both in Scandinavia and in western Europe, and it is possible, therefore, that it is a Scottish species.

P. chlorantha has the curved style of *P. rotundifolia* but differs from that species in having yellowish-green flowers in short racemes, shorter oval-triangular (rather than lanceolate-acute) calyx lobes, and much smaller, almost entire, leaves.—[D.H.K.]

364/2. EMPETRUM HERMAPHRODITUM Hagerup. Klásterský, I., 1960, Taxonomichá hodnota Empetrum hermaphroditum (Lge.) Hager., *Acta Dendrol. Čechoslov.*, **2**, 300-302.

367. PRIMULA. Mowat, A. B., 1961, An investigation of mixed populations of Primula veris and P. vulgaris, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 206-211. Studies on mixed populations of *Primula veris* and *P. vulgaris* at the East Neuk of Fife.—[D.H.K.]

367. PRIMULA. Woodell, S. R. J. & Valentine, D. H., 1961, Studies in British Primulas, 9. Seed incompatibility in diploid-autotetraploid crosses, *New Phyt.*, **60**, 282-294.

376/1. FRAXINUS EXCELSIOR L. Wardle, P., 1961, Fraxinus excelsior L. (Biological Flora), *J. Ecol.*, **49**, 739-751.

380→ GENTIANACEAE Zeltner, L., 1961, Contribution à l'étude cytologique des genres Blackstonia Huds. et Centaurium Hill (Gentianacées), *Ber. Schweiz. Bot. Ges.*, **7**, 18-23. Cytological studies on *Blackstonia* and *Centaurium*. Chromosome numbers for *Centaurium pulchellum* ($n=10$ and $n=20$) and *Blackstonia perfoliata* ($n=20$) are different from those published hitherto.—[E.B.B.]

392. SYMPHYTUM. Smail, H. C. P., 1961, A note on the Comfrey, *Countryside*, **19**, 100-103. Discusses the species of *Symphytum* found in Britain, and in particular those found in Sussex.—[D.H.K.]

413. SOLANUM. Seithe, A., 1962, Die Haararten der Gattung Solanum L. und ihre taxonomische Verwertung, *Bot. Jahrb.*, **81**, 261-335

420. LINARIA. Champagnat, M., 1961, Recherches de morphologie descriptive et experimentale sur le genre Linaria, *Ann. Sci. Nat.*, **2**, 1-170.

425. MIMULUS. Mukherjee, B. B. & Vickery, R. K., junr., 1962, Chromosome counts in the section Simiolus of the genus Mimulus (Scrophulariaceae), 5. The chromosomal homologies of M. guttatus and its allied species and varieties, *Madroño*, **16**, 141-155.

430. VERONICA. Afanasiyeva, N. G. & Meshkova L. Z., 1961, Caryogeographic investigations applied to the phylogeny of the genus Veronica L., *Bot. Zhurn.*, **46**, 247-259. [In Russian.]

434/3. MELAMPYRUM PRATENSE L. Jalas, J. & Rikkinen, K., 1962, Populationsstudien an Melampyrum pratense L. in Finnland, 1. Über die variation in Wasserscheidegebiet zwischen Pohjanmaa und Nord-Häme, *Ann. Bot. Soc. Zool.-Bot. Fenn. 'Vanamo'*, **32** (**4**), 1-24. Population studies on *Melampyrum pratense* in Finland.—[D.H.K.]

440/10. OROBANCHE HEDERAE Duby. Privat, G., 1960, Recherches sur les phanérogames parasites (étude d'Orobanche hederae Duby), *Ann. Sci. Nat.*, **1**, 721-871. A detailed study of experimental work on the morphology and biochemistry of *Orobanche hederae*.—[E.B.B.]

441/4. PINGUICULA GRANDIFLORA Lam. Harrison, Y. Heslop-, 1962, Winter dormancy and vegetative propagation in Irish Pinguicula grandiflora Lamk., *Proc. Roy. Irish Acad.*, **62**, Sect. B, 23-30. Studies on the climatic tolerances of *Pinguicula grandiflora* in Ireland by a series of experiments involving the use of controlled environment plant growth chambers.—[D.H.K.]

442. UTRICULARIA. Bouby, H., 1961, Observations sur les "Utricularia" de la Forêt de Fontainbleau, *Bull. Ass. Nat. Loing.*, **37**, 72-74. Three species of *Utricularia*, viz. *U. vulgaris*, *U. neglecta* and *U. minor* are recorded for the Forest but it is stated that, owing to possible misidentifications, most if not all of these may refer to *U. neglecta*. The difficulties of identification are demonstrated.—[E.B.B.]

442. UTRICULARIA. Taylor, P., 1961, Notes on Utricularia, *Mitt. Bot. Staats. München*, **4**, 95-106.

448. THYMUS. Staes, J., 1961, Revisie van het geslacht Thymus L. in België, *Bull. Jard. Bot. Brux.*, **31**, 443-479. Three species of *Thymus*, *T. pulegioides* L., *T. humifusus* Bernh. and *T. serpyllum* L. are recognised in Belgium. All are very polymorphic and include many varieties. The following key distinguishes the species:—

Floriferous stems quadrangular, hairy only on the angles, with reflexed hairs; plants upright, with sterile stems and upright or ascending floriferous stems; inflorescence rounded to elongate-spiciform; leaves elliptic or oval, 6-16 mm. long, glabrous, with camptodromous nerves [lateral nerves becoming thinner towards margin, which is not thickened]; upper calyx teeth longer than broad ..... *T. pulegioides*

Floriferous stems obscurely quadrangular or almost cylindric, hairy all round; stems decumbent, bearing rows of floriferous upright stems; inflorescence globular:

Plant creeping with decumbent stems ending in an ascending inflorescence; floriferous stems with reflexed or spreading hairs, irregularly scattered all round; leaves broad, elliptic, oval to oval-rhomboid, 5-10 mm. long, glabrous or hairy; with conspicuous and pseudomarginal nerves; upper calyx teeth longer than broad ..... *T. humifusus*

Plant creeping lengthily, with decumbent stems ending in a sterile foliar rosette; floriferous stems with short, reflexed hairs spreading all round; leaves narrow, linear-oblong to narrowly oboval, 3-11 mm. long, glabrous, with camptodromous nerves; upper calyx teeth as long as broad ..... *T. serpyllum*

T. pulegioides is the most common, found in dry places; *T. humifusus* is calcicolous and *T. serpyllum* calcifuge. Hybrids are: *T.* × *oblongifolius* Opiz (*T. pulegioides* × *serpyllum*); *T.* × *schulzei* Rönn. (*T. humifusus* × *serpyllum*). *T. vulgaris* and *T.* × *citriodorus* (Pers.) Schreb. are cultivated and *T. marschallianus* Willd. is found as an adventive.—[E.B.B.]

455/R. SALVIA REFLEXA Hornem. Hunziker, A. T., 1961, Sobre la importancia de Salvia reflexa Hornem. Como maleza en la Provincia de Córdoba, *Kurtziana*, **1**, 304-305. *Salvia reflexa*, Mint Weed, is a serious pest in parts of the Argentine. Methods of control are discussed.—[D.H.K.]

457. PRUNELLA. Wojciechowska, B., 1961, Morfologiczne i anatomiczne cechy owoców środkowoeuropejskich gatunków rodzaju Prunella L.

rodziny Labiatae, *Monogr. Bot.*, **12**, 49-88. Morphological and anatomical studies on the fruits of the mid-European species of *Prunella*.—[D.H.K.]

460. Ballota. Patzak, A., 1961, Zwei neue Ballota-Arten aus der Türkei nebst einem Nachtrag zur Gattung Ballota, *Ann. Naturhist. Mus. Wein*, **64**, 42-56. Includes a key to all known species of *Ballota*.—[D.H.K.]

475/7. Campanula rotundifolia L. Böcher, T. W., 1961, Experimental and cytological studies on plant species, 5. The Campanula rotundifolia complex, *Biol. Skr. Kungl. Danske Vid. Selsk.*, **11** (**4**), 1-69. A survey is given of all chromosome counts made on *Campanula rotundifolia*, and the distribution of diploids and tetraploids is discussed. The taxonomy of the complex is intricate and the conclusions reached are based upon experimental cultivations, population studies and morphological comparisons between diploids and tetraploids.—[D.H.K.]

490/1. Linnaea borealis L. Kozak, K., 1959, Stanowiska zimoziolu polnocnego (Linnaea borealis) na Roztoczu środkowym, *Ann. Univ. Mariae Curie*, **14**, 373-382. Ecological studies on *Linnaea borealis* in Poland.—[D.H.K.]

495. Valeriana. Voroshilov, V. N., 1959, *Medicinal Valeriana*. Pp. 159. Academy of Sciences, U.S.S.R. Moscow (in Russian). A revision of *Valeriana officinalis* L. agg. in Europe, including descriptions of a number of new species. A key is provided to the identification of species, which are illustrated by line drawings.—[D.H.K.]

501→ Compositae. Burtt, B. L., 1961, Compositae and the study of functional evolution, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 216-232.

501→ Compositae. Pedersen, A., 1961, Kurvblomsternes udbredelse i Danmark (ekskl. Hieracium og Taraxacum), *Bot. Tidsskr.*, **57**, 81-289. The distribution of the *Compositae* in Denmark is treated in detail. Many of the species native to the country are also widespread in Britain. Established adventives of comparatively recent introduction include *Chrysanthemum leucathemum* subsp. *irkutianum* and *Lactuca tatarica*. *Cotula coronopicfolia*, first noted in 1806, is now being spread from north-west Germany by birds. *Conyza canadensis*, first recorded in 1821, and *Matricaria matricarioides*, first recorded in 1852, have since about 1920-30 spread rapidly, as in Britain. Numerous other alien species are cited. The account is illustrated by 84 distribution maps.

Matricaria maritima var. *salina* (Wallr.) DC. is raised to subspecific rank as **Tripleurospermum maritimum** subsp. **salinum** (Wallr.) Pedersen, comb. nov.—[D.H.K.]

503. Galinsoga. Hylander, N., 1961, En rödblommig Galinsoga-art funnen i Sverige, *Bot. Not.*, **114**, 464-467. A red-flowered *Galinsoga* species, identified as *G. brachystephana* Reg., but also identical with *G. caracasana* (DC.) Sch.-Bip. *sensu auct. bor. amer.*, is reported as an adventive from two localities in Sweden—a garden in Varberg (province of Halland) in 1932 and from a rubbish-tip near Gothenburg in 1931.

G. parviflora and *G. ciliata* are now fully established as weeds in Sweden, but occur also in waste places. In the latter habitats a glandular form of *G. parviflora* has occasionally been found, this implies a direct introduction from abroad, since the established form is always non-glandular.—[D.H.K.]

504. AMBROSIA. Bassett, I. J. & Terasmae, J., 1962, Ragweeds, Ambrosia species, in Canada and their history in postglacial time, *Canad. J. Bot.*, **40**, 141-150.

506/17. SENECIO INTEGRIFOLIUS (L.) Clairv. Morgan, G. H., 1962, Transplanting experiments: Senecio integrifolius, *Bull. Kent F. C.*, **7**, 18. Information is provided on transplanting experiments at Burham, Kent.—[D.H.K.]

521/A. ERIGERON ANNUUS (L.) Pers. Simmonds, A. M., 1961, A rare alien in Berkshire, *Reading Nat.*, **13**, 26. A note on the occurrence of *Erigeron annuus* in a clover field near Reading in 1960.—[D.H.K.]

534. COTULA. Caro, J., 1961, Las especies de Cotula (Compositae) del Centro de la República Argentina, *Kurtziana*, **1**, 289-298. Taxonomic studies on the three species of *Cotula* found in the central region of the Argentine Republic, viz. *C. coronopifolia* L., *C. australis* (Sieb. ex Spreng.) Hook. f. and *C. cabrerae* Caro, nom. nov. (*C. pedicillata* (Ruiz & Pav.) Cabrera).

The three species are described and illustrated by drawings and their distributions are given.—[D.H.K.]

535. ARTEMISIA. Wedelberger, G., 1959, Die mitteleuropäischen Reliktvorkommen der Artemisia-Arten aus der Sektion Heterophyllae, *Ver. Zool.-Bot. Ges. Wien*, **98** & **99**, 57-95.

537/1. CARLINA VULGARIS *L.* Wilcke, J., 1961, Die Distel, *De Levende Natuur*, **64**, 209-213.

544. CENTAUREA. Dormer, K. J., 1962, The taxonomic significance of crystal forms in Centaurea, *New Phyt.*, **61**, 32-35.

553. SCORZONERA. Sosnovetz, A., 1960, On the cytology of the genus Scorzonera, *Bot. Zhurn.*, **45**, 1813-1815. (In Russian).

556. SONCHUS. Saad, S. I., 1961, Pollen morphology in the genus Sonchus, *Pollen et Spores*, **3**, 247-260.

560. TARAXACUM. Furnkranz, D., 1961, Cytogenenische Untersuchungen an Taraxacum im Raume von Wien. **2**. Hybriden zwischen T. officinale und T. palustre, *Österr. Bot. Zeitschr.*, **108**, 408-415.

560. TARAXACUM. Van Soest, J. L., 1961, Quelques nouvelles espèces de Taraxacum, natives d'Europe, *Acta Bot. Neerl.*, **10**, 280-306. Sixteen new species of *Taraxacum* are described and plates of the type specimens are provided. *T. lucidepedatum* occurs in the British Isles, A. H. G. Alston 11897 from Coulsdon, Surrey, being cited.—[E.B.B.]

560/I. IVA. Jackson, R. C., 1960, A revision of the genus Iva L., *Kansas Univ. Sci. Bull.*, **41**, 793-876.

563. ALISMA. Pogan, E., 1961, Oddrebnósc gatunkowa i próba wyjaśnienia genezy Alisma lanceolatum With., *Acta Soc. Bot. Pol.* **30**, 667-718. Morphological and karyological studies on *Alisma lanceolatum*, and upon its origin and relationship with *A. plantago-aquatica*.—[D.H.K.]

568/1. STRATIOTES ALOIDES L. Jefferies, F., 1961, Water Soldier (Stratiotes aloides), *Proc. Liverpool Nat. F. C.*, **1960**, 21.

569. EGERIA. St. John, H., 1961, Monograph of the genus Egeria Planchon, *Darwiniana*, **12**, 293-307. The genus *Egeria* contains two species —*E. densa* and *E. naias*, the former is native in Brazil, Argentina and Uruguay, and occurs as an established adventive in Mexico, the United States of America (widespread), Germany, France and Britain. The latter

is native in Brazil, Paraguay, Uruguay and Argentina, and is not known to occur outside its native range.

A key is given to the identification of the two species.—[D.H.K.]

574. TRIGLOCHIN. Löve, D. & Leith, H., 1961, Triglochin gaspense, a new species of arrow grass, *Canad. J. Bot.*, **39**, 1261-1272. A new species, *Triglochin gaspense* Leith & D. Löve, is described from a salt-marsh on the Gaspé Peninsula, Quebec, Canada. It is distributed in Quebec, the Canadian Maritime Provinces, and Newfoundland, as well as in at least the northern part of the state of Maine, U.S.A. It is well differentiated from the other N. American species of the *T. maritima* complex, to which it belongs, morphologically (5-20 cm. tall, leaves overtopping the short, few-flowered spike), cytologically ($2n=96$ chromosomes), and ecologically (confined to the tidal zone of the Atlantic coast below the high-water mark).—[Author's summary p.p.]

574/2. TRIGLOCHIN MARITIMA L. Binet, P., 1961, Rapports entre l'eau de mer et la germination des semences de Triglochin maritimum L., *Bull. Soc. Linn. Normandie*, 10 ser., **1**, 117-132. Experimental work on the relationship between germination and the salinity and temperature of sea water in *Triglochin maritima* is described and discussed.—[E.B.B.]

581/3. NAJAS MARINA L. Forsberg, B. & C., 1961, The freshwater environment for Najas marina L. in Scandinavia, *Svensk Bot. Tidskr.*, **55**, 604-612.

607/5. ALLIUM VINEALE L. Lazenby, A., 1961-62: Studies on Allium vineale L., 1. The effects of soils, fertilizers and competition on establishment and growth of plants from aerial bulbils, *J. Ecol.*, **49**, 519-541. 2. Establishment and growth in different intensities of competition, *loc. cit.*, **49**, 543-558. 3. Effect of depth of planting, *loc. cit.*, **50**, 97-109.

624→ ORCHIDACEAE. Dressler, R. L. & Dobson, C. H., 1961, Classification and phylogeny in the Orchidaceae *Ann. Miss. Bot. Gard.*, **48**, 25-68.

624→ ORCHIDACEAE. Metron, J., 1961, Sur quelques orchidées intérssantes ou critiques du massif de Fontainbleau, *Bull. Ass. Nat. Loing*, **37**, 75. Several interesting orchids are recorded including species of *Orchis*, *Ophrys* and *Cephalanthera;* descriptive notes are given of a form of *C. ensifolia* (=*C. longifolia*).—[EB.B.]

625. EPIPACTIS, Sipkes, C., 1961, Breedbladige wesenorchis in de duinen, *Natura*, **58**, 82-83. An account of *Epipactis* on the Netherland dunes.—[D.H.K.]

631/1. HAMMARBYA PALUDOSA (L.) Kuntze. Baldwin, W. K. W., 1961, Malaxis paludosa (L.) Sw. in the Hudson Bay lowland, *Canad. Field Nat.*, **75**, 74-77. *Hammarbya paludosa*, a very rare species in N. America, has been discovered in a remote area of the Hudson Bay lowlands.

Various authors have suggested that the species is adventive in N. America, but the present author after reviewing its world and known N. American distribution considers that it is native and probably often overlooked.—[D.H.K.]

648. LYSICHITON. Löve, A. & Kawano, S., 1961, A note on amphipacific Lysichitum, *J. Jap. Bot.*, **36**, 359-361.

650/3. LEMNA MINOR L. Lawalrée, A., 1961, La pollinisation de Lemna minor, *Nat Belges*, **42**, 164-165. Most authorities state that the stigma in *Lemna minor* is receptive before dehiscence of the anthers. The

author states that he has seen only proterogynous flowers and concludes that pollinisation results most often from accidental contact between the flowers of neighbouring plants.—[E.B.B.]

652/1. SPARGANIUM ERECTUM L. Cook, C. D. K., 1962, Sparganium erectum L. (Biological Flora), *J. Ecol.*, **50**, 247-255.

652. SPARGANIUM. Cook, C. D. K., 1961, Die bayerischen Sparganium-Arten, *Ber. Bayer. Bot. Ges.*, **34**, 7-10. Describes and provides a key to the identification of the *Sparganium* species and subspecies found in Bavaria.—[D.H.K.]

654→ CYPERACEAE. Hadac, E., 1961, The family Cyperaceae in Iraq, *Bull. Coll. Sci. Iraq*, **6**, 1-28. Keys are provided to the genera and species of *Cyperaceae* found in Iraq. The following species are new to the country—*Blysmus compressus, Carex polyphylla, C. otrubae, C. flacca, C. pendula, C. panicea* and *C. acutiformis*.—[D.H.K.]

654/1. ERIOPHORUM ANGUSTÍFOLIUM Honck. Kershaw, K. A., 1962, Quantitative ecological studies from Landmannahellir, Iceland, 1. Eriophorum angustifolium, *J. Ecol.*, **50**, 163-169.

654/2. ERIOPHORUM GRACILE Roth. Lajos, J., 1961, Eriophorum gracile Koch. A huzai flora uj növénye, *Bot. Kozl.*, **49**, 114. *Eriophorum gracile* was found in Hungary for the first time in 1958.—[D.H.K.]

656. ELEOCHARIS. Strandhede, S.-O., 1961, Eleocharis palustre in Scandinavia and Finland, *Bot. Not.*, **114**, 416-434. Studies on the *Eleocharis palustris* complex in Fennoscandia.

The taxa found are *E. palustris* subsp. *palustris* (subsp. *microcarpa* Walters), *E. palustris* subsp. *vulgaris* Walters, *E. mamillata* Lindb. f., *E. austriaca* Hayek, *E. uniglumis* subsp. *uniglumis*, and *E. uniglumis* subsp. *sterneri*, subsp. nov.

E. palustris subsp. *palustris*, when it occurs within the range of *E. palustris* subsp. *vulgaris*, prefers fine-grained substrata such as humus, clay and loam, while *E. palustris* subsp. *vulgaris* grows well on bottoms with coarser sand.

E. mamillata is a well defined and generally accepted species, but *E. austriaca* is not well understood and is apparently very rare—there being only three records—all from Norway, and two of these from the same river.

E. uniglumis subsp. *sterneri*, described from Öland, Gotland, has $2n = 74\text{-}82$, while *E. uniglumis* subsp. *uniglumis* has $2n = 46$.—[D.H.K.]

663/33 × 20. CAREX × EVOLUTA Hartm. Voo, E., Van der, 1962, Carex × evoluta Hartm., *Gorteria*, **1**, 19-20. The hybrid of Carex lasiocarpa and *C. riparia* (*C.* × *evoluta* Hartm.), in the Netherlands, till now found only near Wychen (prov. Gelderland) in 1955, was found in 1961 near Maartensdijk (prov. Utrecht). Data are given concerning the ecology of the hybrid and the plant communities in which it occurs.—[Author's summary.]

663/52. CAREX BIGELOWII Torr. ex Schwein. Kershaw, K. A., 1962, Quantitative ecological studies from Landmannahellir, Iceland, 2. Carex bigelowii and Calamagrostis neglecta, *J. Ecol.*, **50**, 171-179.

664→ GRAMINEAE. Lundqvist, A., 1961, A rapid method for the analysis of incompatibilities in grasses, *Hereditas*, **47**, 705-707.

670/1. Festuca pratensis Huds. Lundqvist, A., 1961, Self-incompatibility in Festuca pratensis Huds., *Hereditas*, **47**, 542-562.

670/6. Festuca rubra L. Kjellqvist, E., 1961, Studies in Festuca rubra L., 1. Influence of environment, *Bot. Not.*, **114**, 403-408.

670/8. Festuca ovina L. Harberd, D. J., 1962, Some observations on natural clones in Festuca ovina, *New Phyt.*, **61**, 85-100.

670/8. Festuca ovina L. Snaydon, R. W. & Bradshaw, A. D., 1961, Differential responses to calcium within the species Festuca ovina, *New Phyt.*, **60**, 219-234.

670/12. Festuca longifolia Thuill. Skvortsov, A. K., 1960, Festuca longifolia—a new species for the flora of central Russia, *Bull. Moscow Soc. Nat.*, **65**, 75-80 (in Russian).

675/1. Nardurus maritimus (L.) Murb. Stace, C. A., 1962, A note on Nardurus maritimus in Kent, *Bull. Kent F.C.*, **7**, 11-14. Provides a key for the separation of *Nardurus maritimus* from *Vulpia membranacea*, *V. ambigua*, *V. bromoides* and *V. myuros* and gives details of the records of *Nardurus maritimus* in Kent.—[D.H.K.]

676. Poa. Boivin, B. & Löve, D., 1960, Poa agassizensis a new prairie bluegrass, *Nat. Canad.*, **87**, 173-180. *Poa pratensis* in North America is a collective species including a multitude of varieties and forms, both introduced and native. A distinct type of the *P. pratensis* complex noted to be widespread over large parts of Canada and the United States is described as *P. agassizensis*, sp. nov., on a basis comparable with that of other apomictic species in this collective group, e.g. *P. angustifolia* L., *P. subcaerulea* Sm. and *P. alpigena* Fr. Chromosome numbers so far counted in material of this new species are $2n=41$, 42, 43 and 56.

A table shows the detailed differences between *P. pratensis* L. sensu stricto and *P. agassizensis*.—[D.H.K.]

676. Poa. Hartley, W., 1961, Studies on the origin, evolution and distribution of the Gramineae. 4. The genus Poa, *Austr. J. Bot.*, **9**, 152-161. Studies of the regional and global distributions of the genus *Poa* L. show that it reaches its highest relative specific differentiation in regions of high latitude and high altitude. The genus is rare or absent in the tropics except in mountainous regions, but constitutes more than 15% of the grass flora of Alaska, Iceland, Kamchatka, and the high Pamir Mountains.

There is a close association between the occurrence of high percentage frequencies of species of *Poa* and cool summer temperatures. In the U.S.A. the 75° F. mid-summer (July) isotherm effectively demarcates those regions in which *Poa* species form more than 5% of the grass flora from those in which they constitute a smaller percentage. A similar relationship between percentage frequency and mid-summer temperature is found in most other parts of the world. Climatic factors other than temperature seem to have little influence on the distribution of *Poa*.

It is concluded that the genus has attained a high stage of development in nearly all parts of the world to which it is climatically adapted. The evidence does not permit firm conclusions about the centre of origin of the genus, but it has a major centre of species differentiation in the mountain and plateau region of central Asia. It is probably monophyletic, and has a long evolutionary history in the course of which it has spread

through regions now separated by topographical or climatic barriers.—[Author's summary.]

678. DACTYLIS. Doroszewska, A., 1961, A comparative study on Dactylis slovenica Domin and D. glomerata L., *Acta Soc. Bot. Pol.*, **30**, 775-802.

678/1. DACTYLIS GLOMERATA L. Curran, P. L., 1961, Microsporogenesis in native and introduced forms of Dactylis glomerata L., *Sci. Proc. Roy. Dublin Soc.*, Ser. A, **1**, 215-231.

679/1. CYNOSURUS CRISTATUS L. Lodge, R. W., 1962, Autecology of Cynosurus cristatus L. 1. Habitat studies, *J. Ecol.*, **50**, 63-73. 2. Ecotypic variation, *loc. cit.*, **50**, 75-86.

683/4. BROMUS INERMIS Leyss. Nielsen, E. L., 1960, Cytology and fertility of small plants of Bromus inermis, *Bot. Gaz.*, **121**, 133-139.

683/13. BROMUS LEPIDUS Holmberg. Scannell, M. J. P., 1962, Bromus lepidus Holmb. var. micromollis (Krösche) in Co. Wexford. *Irish Nat. J.*, **14**, 18. Reports the occurrence of *Bromus lepidus* var. *micromollis* at Wexford.—[D.H.K.]

683/13. BROMUS LEPIDUS Holmberg. Scholz, H., 1961, Bromus lepidus in Schleswig-Holstein, *Die Heimat*, **68**, 124-125. *Bromus lepidus* has been found in Schleswig-Holstein. The differences between *B. lepidus* and its allied species are given.—[D.H.K.]

685. AGROPYRON. Hansen, A., 1961, Revision der niederländischen arten der Gattung Agropyron, *Acta Bot. Neerl.*, **10**, 394-396.

692. AVENA. Drennan, D. S. H. & Berrie, A. M., 1962, Physiological studies of germination in the genus Avena. 1. The development of amylase activity, *New Phyt.*, **61**, 1-9.

692/1. AVENA FATUA L. Banting, J. D., 1962, The dormancy behaviour of Avena fatua L. in cultivated soil, *Canad. J. Plant. Sci.*, **42**, 22-39.

693. HELICTOTRICHON. Hedberg, I., 1961, Chromosome studies in Helictotrichon Bess., *Bot. Not.*, **114**, 389-396. A new chromosome number, $2n=126$, is reported for material of *Helictotrichon pratense* from 13 different localities in Scotland, England and Sweden.

The number $2n=14$ has been found in material of *H. pubescens* from 12 localities in Scotland, England, Norway and Sweden; this in accordance with other recent counts.

The need for a thorough cyto-taxonomic investigation of the genus *Helictotrichon* is emphasised.—[D.H.K.]

694/1. ARRHENATHERUM ELATIUS (L.) Beauv. ex J. & C. Presl. Pfitzenmeyer, C.D.C., 1962, Arrhenatherum elatius (L.) J. & C. Presl (Biological Flora), *J. Ecol.*, **50**, 235-245.

695. HOLCUS. Carroll, C. P. & Jones, K., 1962, Cytotaxonomic studies in Holcus, 3. A morphological study of the triploid F_1 hybrid between Holcus lanatus L. and H. mollis L., *New Phyt.*, **61**, 73-84*. A statistical study has been made of the morphology of *Holcus lanatus* ($2n=14$), *H. mollis* ($2n=28$) and three F_2 progenies ($2n=21$).

The hybrids, while intermediate in some respects, tend to resemble the *H. mollis* parent strongly in morphology and growth form. This could be accounted for by their genomic composition.

*See also Plant Notes.—ED.

The occurrence of natural F_1 hybrids is reported, and considered in the light of the experimental results. Their importance in the evolution of the *H. mollis* complex is discussed. It is shown that interspecific hybrids could easily be confused with authentic *H. mollis* in the wild. A list of tentative diagnostic characters is given, but only chromosome counting can provide decisive identification.—[Authors' summary.]

695/1. HOLCUS LANATUS L. Beddows, A. R., 1961, Flowering behaviour, compatibility and major gene differences in Holcus lanatus, *New Phyt.*, **60**, 312-324.

695/2. HOLCUS MOLLIS L. Jones, K. & Carroll, C. P., 1962, Cytotaxonomic studies in Holcus, 2. Morphological relationships in Holcus mollis L., *New Phyt.*, **61**, 63-71. A randomized block experiment was laid down to compare the morphology of the tetraploid, pentaploid and hexaploid races of *Holcus mollis*. No qualitative differences have been found to distinguish the races.

Quantitative differences exist but are not sufficiently large to allow a taxonomic separation.

The morphology of the pentaploid *H. mollis* is discussed in relation to its possible hybrid origin involving *H. lanatus*.—[Authors' summary.]

699/1. AMMOPHILA ARENARIA (L.) Link. Smith, P., Greig-, 1961, Data on pattern within plant communities. 2, Ammophila arenaria (L.) Link, *J. Ecol.*, **49**, 703-708.

700/3. CALAMAGROSTIS STRICTA (Timm.) Koel.—See 663/52. CAREX BIGELOWII.

708/S. STIPA. Parodi, L. R., 1961, Las especies de Stipa del subgénero Pappostipa de la Argentina y Chile, *Rev. Argentina de Agron.*, **27**, 65-106. Keys and describes the species of *Stipa* found in the Argentine and Chile. Some of the species have occurred in Britain as wool adventives.—[D.H.K.]

711/1. HIEROCHLOE ODORATA (L.) Beauv. Norstog, K.J., 1960, Some observations on the spikelet of Hierochloe odorata, *Bull. Torr. Bot. Club*, **87**, 95-98. Species of *Hierochloe odorata* having four florets per spikelet rather than the usual three were collected in Iceland. In these plants the first and second florets are staminate; the third and fourth are perfect. Other distinctions are the presence of three stamens in the third floret rather than the usual two and the reduced size of the fourth floret.

In the classification of grasses the presence in the *Phalarideae* of a perfect floret subtended by wholly or partially sterile florets has been a puzzle. The *Phalarideae* clearly are Festucoid in most characteristics; however, the spikelets resemble the panicoid type. It is suggested that the structures of the spikelets herein described reveal their true Festucoid nature.—[Author's summary].

712. ANTHOXANTHUM. Rozmus, M., 1961, Odrebność gatunkowa Anthoxanthum alpinum L. et L. w swietle badań anatomicznych, *Acta Biol. Cracov.*, Ser. Bot., **3**, 81-90. Morphological and anatomical studies on 27 biotypes of *Anthoxanthum odoratum* L. and 42 biotypes of *A. alpinum* Löve & Löve from various habitats in Poland.—[D.H.K.]

CHARACEAE. Wood, R. D., 1962, New combinations and taxa in the revision of Characeae, *Taxon*, **11**, 7-25. A summary of taxonomic revisions of the group as proposed for a forthcoming monograph. A radical departure from current taxonomic treatment is foreshadowed.—[S.P.P.]

TOPOGRAPHICAL

O, Channel Islands. Le Sueur, F. & McClintock, D. (Compilers), 1961, A check-list of the flowering plants and ferns wild on Herm and its off-islets, *Rep. & Trans. Soc. Guernesiase*, **17**, 36-48.

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3-4, Devon. Greig, O., 1961, 53rd Report on the botany of Devon, 1. Phanerogams, *Rep. & Trans. Devon. Assoc.*, **93**, 81-90.

5-6, Som. Hallam, A. D. (Recorder), 1961, Somerset botany: recorder's notes, 1960, *Proc. Som. Arch. & N.H.S.*, **105**, 147-148.

15, E. Kent. Morgan, G. H., 1962, Transplanting experiments: Senecio integrifolius, *Bull. Kent F.C.*, **7**, 18.

15, E. Kent. Rose, F., 1962, Reports of Recorders: Botanical, *Bull. Kent F.C.*, **7**, 9.

15-16, Kent. Stace, C. A., 1962, A note on Nardurus maritimus in Kent, *Bull. Kent F.C.*, **7**, 11-14.

16, W. Kent. Angel, T. H., 1960, List of plants recorded in Kevington Wood, St. Mary Cray, Kent, 28th June 1959, *Ann. Rep. Sidcup N.H.S.*, **10**, 11-13.

16, W. Kent. Gahan, P. B., 1960, List of angiosperms observed in the Cray valley (North Cray area) on 1/7/59 and 15/7/59, *Ann. Rep. Sidcup N.H.S.*, **10**, 13-15.

16, W. Kent, 17, Surrey, 18 and 19, Essex, 20, Herts, 21, Middlesex, and 24, Bucks. Lousley, J. E., 1962, Botanical records for 1961, *Lond. Nat.*, **41**, 9-14.

17, Surrey. Jones, A. W., 1962, The vegetation of Devilsden Wood and nearby Downs, Coulsdon, Surrey, *Lond. Nat.*, **41**, 77-86.

17, Surrey. Welch, B., 1962, Some plants of Ham Common, 1941-1961, *Lond. Nat.*, **41**, 23-27.

17, Surrey. Young, D. P., 1961, A botanist explores Bethlem, *Bethlem Maudsley Hospital Gaz.*, **4**, 182-185. An account of the flora of the grounds of the Bethlem Maudsley Hospital grounds on the Surrey-Kent border near Croydon.—[D.H.K.]

17, Surrey, & 21, Middlesex. Kent, D. H., 1962, Additions and corrections to the flora of Central London, *Lond. Nat.*, **41**, 16-22.

22, Berks. Simmonds, A. M., 1962, Coleman's Moor—A botanist's lament, *Reading Nat.*, **14**, 35-37. An account of the vegetation of Coleman's Moor near Reading, now about to be drained and built over.—[D.H.K.]

22, Berks., & 23, Oxford. Butler, K. I., 1961, The Recorder's Report for botany, 1959-60, *Reading Nat.*, **13**, 20-25. Gives a number of interesting records made during 1959 and 1960, including details of plants found on local rubbish-tips.—[D.H.K.]

25-26, Suffolk. Simpson, F. W., 1962, Notes on some Suffolk grasses, *Trans. Suffolk Nat. Soc.*, **12**, 57.

30, Bedford. Richens, R. H., 1961, Studies on Ulmus, 5. The village elms of Bedfordshire, *Forestry*, **34**, 181-200.

31, Hunts. Gilbert, J. L., 1962, Flora, *Rep. Hunts. Fauna & Flora Soc.*, **1961**, 11-13. Gives details of interesting records made in 1961.—[D.H.K.]

39. STAFFS. Edees, E. S., 1961, Three common alien plants in Staffordshire. *N. Staff. J. Field Studies*, **1**, 115-118. Details are given of the history, spread and distribution of *Chamaenerion angustifolium*, *Senecio squalidus* and *Impatiens glandulifera* in Staffordshire. Distribution maps accompany the account.—[D.H.K.]

41. GLAMORGAN. Hyde, H. A., 1961, Plant life in and around the Glamorgan Forests, in Edlin, H. L. (Editor), *Glamorgan Forests*, 49-61. Forestry Commission Guide. H.M.S.O., London. Price 5/-.

46. CARDIGAN. Cadman, W. A. & Chater, E. H., 1961, Some effects of the dumping of milk on moorland vegetation, *Nature in Wales*, **7**, 135-139.

49. CAERNARVON. Anderson, D. J., 1961, The structure of some upland plant communities in Caernarvonshire, 2. The pattern shown by Vaccinium myrtillus and Calluna vulgaris, *J. Ecol.*, **49**, 731-738.

55, LEICS. Gamble, P., 1961, Flowering plants and ferns, *Bull. Loughborough Nat. Club*, **3**, 4-5. Gives a few interesting records for the Loughborough area.—[D.H.K.]

58. CHESTER, & 59. S. LANCS. McMillan, N., 1961, Botanical records, 1953-60, *Proc. Liverpool Nat. F.C.*, **1960**, 19-20.

61-65, YORK. Rob, C. M., 1962, Botany: Plant records, *The Nat.*, **1962**, 23-27. Gives details of the more interesting records made in 1961.—[D.H.K.]

65, N.-W. YORK. Dalby, E., 1961, The ecology of crowberry (Empetrum nigrum) on Ilkley Moor, 1959-60, *The Nat.*, **1961**, 37-40.

69. WESTMORLAND. Park, K. J. F., Rawes, M. & Allen, S. E., 1962 Grassland studies on the Moor House National Nature Reserve, *J. Ecol.*, **50**, 53-62.

SCOTLAND. Gladstone, J., 1961, The natural woodlands of Galloway and Nithsdale, *Forestry*, **34**, 174-180.

SCOTLAND. Harper, P. C., 1962, The soils and vegetation of Lammermuir, *J. Ecol.*, **50**, 35-51. The vegetation of a region of upland heath in southern Scotland has been surveyed and the relationships between topography, soils and vegetation are brought out. Two soil catenas are shown to exist, their distribution determined by topography and parent materials. The distribution of the vegetation types is shown to follow that of the soils. The variation in both soils and vegetation is found to be continuous. —[Author's summary.]

78, PEEBLES, & 79, SELKIRK. Ratcliffe, D. A., 1961, Mountain plants in Peebleshire (v.c. 78) and Selkirkshire (v.c. 79), *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 232-234.

83, EDINBURGH. Roger, J. G., 1961, Plants of Duddingston Loch Bird Sanctuary, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 212-215.

105, W. ROSS. Gimingham, C. H., Miller, G. R., Sleigh, L. M. & Milne, L. M., 1961, The ecology of a small bog in Kinlochewe Forest, Wester Ross, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 125-147.

112, ZETLAND. Holbourn, S. C., 1961, Further additions to the Flora of Foula, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 235-236.

H. 1-2, KERRY. Boatman, D. J., 1961, Vegetation and peat characteristics of blanket bogs in County Kerry, *J. Ecol.*, **49**, 507-517.

H. 16 & H. 17, GALWAY. Webb, D. A. & Glanville, E. V., 1962, The vegetation and flora of some islands in the Connemara Lakes, *Proc. Roy.*

Irish Acad., **62**, Sect. B, 31-54. A description is given of the flora and vegetation of selected islands on 8 different lakes in Connemara. The islands, unvisited by man or domestic animals, support a community which must be close to the natural climax, and which contrasts vividly with the plagioclimax on the mainland which is stabilized by grazing and burning. Apart from a narrow littoral zone and a zone of marginal rocks, the islands usually contain a heath zone on the windward side, dominated either by *Ulex gallii* or by *Calluna* and *Molinia*: this passes eastwards into woodland, which on the larger islands covers the greater part of the area. The woodland is very dense, with trees up to 11 metres but mostly lower, and a rather restricted ground flora. Among the trees *Quercus petraea, Ilex aquifolium, Sorbus aucuparia, Taxus baccata, Betula pubescens* and *Salix cinerea* subsp. *atrocinerea* are all common without any one showing extensive dominance. There is no shrub layer. Bryophytes are plentiful and varied, but not dominant in the ground cover.

From islands of total area of about 10 acres (4 hectares) a total of 173 species of vascular plants is recorded: 39 of these are woody. Besides the species already mentioned, *Daboecia cantabrica, Erica cinerea, Hedera helix, Lonicera periclymenum, Rubus fruticosus, Vaccinium myrtillus, Luzula sylvatica, Viola riviniana, Dryopteris dilatata, Osmunda regalis* and *Pteridium aquilinum* are constant and plentiful.

On one lake the island vegetation has been radically transformed by the presence of a large colony of breeding cormorants. The trees have been killed, most of the woodland and heath species eliminated or reduced and replaced largely by ruderal and nitrophile species not seen on the other islands. One of the islands, now partly deserted by the birds, shows the first steps towards recovery. Other islands with scanty tree-cover and *Pteridium* largely dominant may represent stages in incomplete recovery from a bird invasion.—[Authors' summary.]

ECOLOGICAL (See also TOPOGRAPHICAL)

Ahlgren, I. F. & C. E., 1960, Ecological effects of forest fires, *Bot. Rev.*, **26**, 483-533.

Bergh, J. P. van der & Elberse, W. T., 1962, Competition between Lolium perenne L. and Anthoxanthum odoratum L. at two levels of phosphate and potash, *J. Ecol.*, **50**, 87-95.

Bournerias, M., 1961, Flore de l'Aisne. Etude phytogéographique du Laonnois, *Bull. Trim. Fed. France. Soc. Sci. Nat.*, **26**, 277-356. The vegetation groups studied are 1. heliophile and 2. forest. Under the former are recognised associations of: calcareous and neutral marsh and water; acid marsh and water; mesophilic meadows; xerophilic grassland; vegetation of man-made habitats. Under forests: alder, poplar, oak-hornbeam, oak-ash, beech are discussed.—[E.B.B.]

Bray, R., 1961, A test for estimating the relative informativeness of vegetation gradient, *J. Ecol.*, **49**, 631-642.

Duvigneaud, J., 1961, La végétation de l'Entre-Sambre-et-Meuse: la hêtraie des sols calcaires, *Bull. Soc. Roy. Bot. Belg.*, **93**, 161-174. A study of calcicolous beechwoods, regarded as relict groups of natural chalk woodlands, including a tabular analysis of floristic composition based on recordings from ten woods.

These woods belong to the alliance *Querceto-Fagion*, to which English chalk beechwoods are assigned.—[E.B.B.]

Fekete, G., 1961, Les groupements à arbes feuillis des forêts steppes fraiches continentales en Hongrie (études cénologiques sur les forêts du pays de collines de Gödöllo). *Acta Bot. Acad. Sci. Hung.*, **7**, 229-233. A preliminary paper on forest areas to the east and north-east of Budapest. Two associations are particularly discussed: *Aceri-Quercetum petraeae-roburis* and *Dictamno-Tilietum cordatae*.—[E.B.B.]

Gehu, J.-M., 1960, Quelques observations sur la végétation et l'écologie d'une station réputée de l'Archipel de Chausey: Isle aux Oiseaux, *Bull. Lab. Marit. Dinard*, **46**, 78-94. An ecological study of maritime vegetation of an island with reference especially to *Zosteretum nanae*, *Salicornietum herbaceae* and *S. radicantis*.—[E.B.B.]

Gehu, J.-M., 1960, Un site célèbre de la côte Nord bretonne: Le Sillon de Talbert (C.-du-N.). Observations phytosociologiques et écologiques, *Bull. Lab. Marit. Dinard*, **46**, 93-115. In this study of maritime vegetation two new associations are described: *Crithmeto-Crambetum* and *Atriplicetum glabriusculo-arenariae*. Attention is given in particular to the distribution of *Crambe maritima*.—[E.B.B.]

Gehu, J.-M., 1961, Les groupements végétaux du Bassin de la Sambre Française. 2 & 3, *Vegetatio*, **10**, 161-208 & 257-372. Grassland associations are tabulated and discussed in the former of these two papers, forest and woodland in the latter; associations of waste and cultivated land are also analysed in the latter paper. In all about 60 groups are described, two being new to phytosociology, viz.: *Ranunculetum aquatilis* of watering-places and *Filipenduleto-Scorzoneretum humilis* of the alluvial plain.—[E.B.B.]

Gehu, J.-M. & Gehu-Franck, J., 1960, L' évolution du sol et de la végétation, après incendie, dans une lande bretonne, *Bull. Lab. Marit. Dinard*, **46**, 42-77. The first part of a study of the evolution of soil and vegetation on burnt heathlands. Five types are recognised: rich (*Ulex europaeus*); dry (*Ulex gallii*, *Erica cinerea*); mesophilic (*Ulex gallii* and *Erica ciliaris*); humid (*Ulex gallii* and *Erica tetralix*) and cliff heathland (*Ulex gallii*, *Erica cinerea*, etc.). The effects of fire on each are analysed.—[E.B.B.]

Gimingham, C. H., 1961, North European heath communities: a 'network of variation', *J. Ecol.*, **49**, 655-694.

Goodall, D. W., 1961, Objective methods for the classification of vegetation, 4. Pattern and minimal area, *Austral. J. Bot.*, **9**, 162-193.

Harberd, D. J., 1961, The case for extensive rather than intensive sampling in genecology, *New Phyt.*, **60**, 325-338.

Harberd, D. J., 1962, Application of a multivariate technique to ecological survey, *J. Ecol.*, **50**, 1-17.

Hübl, E., 1959, Die Wälder des Leithagebirges. Eine vegetationskundliche Studie, *Ver. Zool.-Bot. Ges. Wien*, **98** & **99**, 96-167.

Kershaw, K. A., 1961, Association and co-variance analysis of plant communities, *J. Ecol.*, **49**, 643-654.

Knoerr, A., 1961, Le milieu la flora, la végétation la biologie des halophytes dans l'archipel de Riou et sur la côte sud de Marseille, *Bull. Mus. Hist. Nat. Marseille*, **21**, 5-100.

LELOUCHIER, P., 1962, Etude écologique de la vallée de l'Hermeton, *Lejeunia*, **6**, 3-97.

MCNEILL, W. M., 1961, A key to beech (Fagus sylvatica L.) associations on chalk uplands in England devised by Ray Bourne, *Forestry*, **34**, 116-118. A chart prepared by the late Ray Bourne is reproduced showing the relationships between soils, ground vegetation, natural regeneration and ecologic associations of the beech (*Fagus sylvatica*) on chalk upland sites in southern England. This hitherto unpublished chart represents the result of extensive field observations by the originator and has been found to be of much practical value. It is reproduced to ensure that a valuable piece of work is not lost to future foresters.—[Author's summary.]

NEGRE, R., 1960, Les associations végétales du lac Zima, *Bull. Soc. Sci. Nat. Maroc*, **40**, 1-16. Seven associations on the shores of Lake Zima are analysed. These include *Salicornietum* (*Salicornia fruticosa* and *Lepturus incurvatus*), *Atripliceto-Frankenietum*, *Suaedeto-Limonietum*, *Plantagineto-Frankenietum* (*Plantago coronopus*).—[E.B.B.]

NOIRFALISE, A. & SOUGNEZ, N., 1961, Les forêts riveraines de Belgique, *Bull. Jard. Bot. Brux.*, **31**, 199-287. The associations studied and tabulated of riverside forests subject to periodic flooding are: *Stellario-Alnetum*, *Peucedano-Alnetum*, *Glycerio-Alnetum*, *Cariceto laevigatae-Alnetum*.—[E.B.B.]

PFEIFFER, H. H., 1961, Sociologische Stellung Gesellschaftshaushalt und Entwicklung des gefährdeten Cladietum marisci, *Fedde. Rep.*, **139**, 250-262.

PIGNATTI, S., 1959, Ricerche sull' ecologia e sul popolamento delle dune del litorale di Venezia, *Boll. Mus. Civ. Stor. Nat. Venezia*, **12**, 61-142. Studies on the flora and ecology of the sandbanks of the Venetian coast line.—[D.H.K.]

SMITH, P. GREIG-, 1961, Data on pattern within plant communities, 1. The analysis of pattern, *J. Ecol.*, **49**, 695-702. 2. Ammophila arenaria (L.) Link, *loc. cit.*, **49**, 703-708.

WATT, A. S., 1962, The effect of excluding rabbits from grassland A (xerobrometum) in Breckland, 1936-60, *J. Ecol.*, **50**, 181-198.

WILLIAMS, W. T. & LAMBERT, J. L., 1961, Multivariate methods in plant ecology, 3. Inverse association-analysis, *J. Ecol.*, **49**, 717-729.

ZARZYCKI, K., 1961, Etude sur la végétation des dunes anciennes en Petite Camargue, *Acta Soc. Bot. Pol.*, **30**, 577-610. A study of the vegetation of the Little Camargue and the Silve Godesque, the latter having the younger dunes. The phytosociological orders involved are: *Ammophiletalia*, *Thero-Brachypodietaia*, *Quercetalia ilicis* and *Populetalia albae*. The climax vegetation is shown to be the forest association *Quercetum ilex galloprovinciale*.—[E.B.B.]

HISTORICAL

GLADSTONE, J., 1961, The natural woodlands of Galloway and Nithsdale, *Forestry*, **34**, 174-180. An account is given from contemporary printed sources and maps of the woodlands of the south-west of Scotland as they existed at the end of the seventeenth century, together with notes on their subsequent history.—[D.H.K.]

Glass, B., 1960, Eighteenth-century concepts of the origin of species, *Proc. Amer. Phil. Soc.*, **104**, 227-234.

Greene, S. W., 1961, The publication date of William Withering's 'A Systematic Arrangement of British Plants (Ed. 4)', London, 1801, *J. Soc. Bibl. Nat. Hist.*, **4**, 66-67.

Lloyd, B., 1962, John Scouler, M.D., LL.D., F.L.S. (1804-1871), *Glasgow Nat.*, **18**, 210-212.

Nelson, G. A., 1959, William Turner's contribution to the first records of British plants, *Proc. Leeds Phil. Soc., Sci. Sect.*, **8**, 109-138.

Robertson, N. F., 1962, The botanic garden and its function in modern society, *Nature*, **194**, 11-13.

Stearn, W. T., 1961, Weihe and Nees's Rubi Germanici, *J. Soc. Bibl. Nat. Hist.*, **4**, 68-69.

Stevenson, A., with notes and list of plates provided by J. E. Dandy and W. T. Stearn, 1961, A. bibliographic study of William Curtis' 'Flora Londinensis', in *Catalogue of Botanical Books in the collection of Rachel McMasters Miller Hunt*, 2, 389-412. Pittsburgh, Pa., U.S.A.

MISCELLANEOUS

Berner, L., 1961, Sur les plantes urbaines bisontines, *Bull. Soc. Linn. Lyon*, **30**, 153-157. Notes and discussion on several species occurring in the town of Besançon which are regarded as characteristic urban types, e.g. *Poa annua, Capsella bursa-pastoris* and *Conyza canadensis*.—[E.B.B.]

Binet, P., 1961, Cultures sans sol de plantes halophiles: les enseignements de quelques essais préliminaires, *Bull. Soc. Linn. Normandie*, **10**, ser. 1, 28-39. The effect of sodium chloride on various halophytic species (e.g. of *Salicornia, Atriplex, Suaeda, Cochlearia*) is studied experimentally and discussed.—[E.B.B.]

Böcher, T. W. & Larsen, K., 1958, Experimental and cytological studies on plant species, 4. Further studies on short-lived herbs, *Biol. Skr. Kungl. Danske Vid. Selsk.*, **10** (2), 1-24. Experimental studies on 13 annual or biennial species—*Aira praecox, A. caryophyllea, Phleum arenarium, Bromus mollis, Arenaria serpyllifolia, A. leptoclados, Moehringia trinervia, Alyssum alyssoides, Teesdalia nudicaulis, Capsella bursa-pastoris, Arabidopsis thaliana, Geranium molle* and *Trifolium arvense*.—[D.H.K.]

Bouby, H., 1962, Quelques plantes intéressantes récoltées dans le Massif de Fontainebleau, *Bull. Ass. Nat. Loing*, **38**, 34-35. Notes on a few plants of interest in the area, including particularly *Geranium purpureum*.—[E.B.B.]

Clifford, H. T., 1961, Factors affecting the frequency of wild plant hybrids, *Bot. Rev.*, **27**, 561-579. The relationship between the frequencies of wild hybrids and certain properties of the parent species and the artificial F_1 generation have been investigated from a survey of the literature. There appears to be no correlation between hybrid frequency and the life form of parent species, neither are there any correlations detected between hybrid frequency and the self-compatibility or otherwise of the parent species. There appears to be a weak correlation between hybrid frequency and the fertility of the artificial F_1 generation; also between hybrid frequency and the level of ploidy of the parent species;

but neither of the correlations is statistically significant.—[Author's summary.]

Delvosalle, L., 1961, A propos de certaines cartes de dispersion, *Bull. Soc. Roy. Bot. Belg.*, **93**, 137-150. The distribution of several species as shown in the phytogeographical maps of the new Atlas de la Belgique is compared with that shown by the use of Institut Forestière Belge (I.F.B.) maps. Maps are given of the distribution of *Tamus communis, Festuca silvatica, Viola palustris* and *Gentiana ciliata*.—[E.B.B.]

Dhien, R., 1961, La végétation des stations thermales; Pouges-les-Eaux (Nièvre), *Bull. Soc. Linn. Lyon*, **30**, 222-224. The vegetation of an area where curative springs occur is listed by habitats.—[D.H.K.]

Favarger, C., 1960, Sur l'emploi des nombres de chromosomes en géographie botanique historique, *Ber. Geobot. Inst. Eidg. Techn. Hochschule Stift. Rubel*, **32**, 119-144. In a review of polyploidy the author points out that some polyploids are old and some of very recent origin. He proposes the division of polyploids into Paleopolyploids, Mesopolyploids and Neopolyploids. Taxa differentiated into "chromosome races" should be treated separately.—[D.H.K.]

Favarger, C. & Contandriopoulos, J., 1961, Essai sur l'endemisme, *Ber. Schweiz. Bot. Ges.*, **71**, 384-408.

Guillot, L. & Deschatres, R., 1962, Aspects nouveaux de la nature en Bourbonnais, *Rev. Sci. Bourbonnais, Ann.*, **1960**, 25-35. A list is provided of adventives spreading in the Bourbonnais mainly due to the activities of man.—[D.H.K.]

Haes, E. C. M., 1962, Let us protect our native alpines, *Quart. Bull. Alpine Gard. Soc.*, **30**, 23-27. A plea for the preservation and protection of areas in Britain containing arctic-alpine species.—[D.H.K.]

Hedberg, I. & O., 1961, Chromosome counts in British vascular plants, *Bot. Not.*, **114**, 397-399. A number of chromosome counts made on British vascular plants are given. The following are not given in Clapham, Tutin & Warburg, *Flora of the British Isles* (1952):—*Thalictrum alpinum* $2n=14$, *Cardaminopsis petraea* $2n=16$, *Chrysosplenium oppositifolium* $2n=42$, *Vaccinium myrtillus* $2n=24$, *Sibthorpia europaea* $2n=18$, *Vulpia bromoides* $2n=14$, *Brachypodium sylvaticum* $2n=18$, *Aira praecox* $2n=18$, and *Nardus stricta* $2n=26$.—[D.H.K.]

Kasahara, Y., 1954, Studies on the weeds of arable land in Japan, with special reference to kinds of harmful weeds, their geographic distribution, abundance, life-length, origin and history, *Ber. Ohara Inst. landwirtsch. Biol. Okayama Univ.*, **10**, 72-109.

Kleuver, A. P. & J. A. E. de, 1962, "Witte raven", *Gorteria*, **1**, 29-30. Notes on white-flowered variants of various species seen in the provinces of Gelderland and Utrecht, Netherlands.—[D.H.K.]

Knaben, G., 1961, Cyto-ecologic problems in Norwegian flora groups: distribution and significance of polyploidy, *Hereditas*, **47**, 451-479.

Liger, J., 1961, Végétation des pentes crayeuses de la vallée de la Varenne, *Rev. Soc. Sav. Haute Normandie*, **21**, 53-73. A study of the vegetation of chalk slopes in the valley of the Varenne, showing analogies between the flora of this area and others such as the Pas de Calais and the valley of the Seine. Floristic lists are provided.—[D.H.K.]

MacLeod, A. M. & Cobley, L. S. (Editors), 1961, *Contemporary Botanical Thought*. Pp. ix + 197. Botanical Society of Edinburgh. Edinburgh. Price: 30/-. The following papers are included in this work:—Morphology, by C. W. Wardlaw; Taxonomy, by J. S. L. Gilmour; Genetics, by K. Mather; Evolution, by E. J. H. Corner; and Ecology, by A. S. Watt.—[D.H.K.]

Maurizio, A. & Louveaux, J., 1961, Pollens de plantes mellifères d'Europe, *Pollen et Spores*, **3**, 219-246.

Pedersen, A., 1962, Det xerotherme floraelment ved de sydlige Indre Farvande, *Flora og Fauna*, **68**, 17-42. Studies on the xerothermic flora element in Denmark.—[D.H.K.]

Rambo, S. J., 1960, Die europäischen Unkräuter in Südbrasilien, *Sellowia*, **12**, 45-77. Studies on European weeds in the state of Rio Grande do Sul, S. Brazil. 95 species are recorded but only 27 of them are widespread and common through the whole state and less than 10 are dangerous to agriculture or stock.—[D.H.K.]

Skalinska, M., Piotrowicz, A. M. P., Sokolowska-Kulczycka, A., et al., 1961, Further additions to chromosome numbers of Polish angiosperms, *Acta Soc. Bot. Pol.*, **30**, 463-489. A further 43 Polish species have been cytologically examined and counts are now published. The following species occur also in Britain:—*Ranunculus sceleratus* $2n=32$, *Comarum palustre* $2n=42$, *Lathyrus japonicus* (*L. maritimus*) $2n=14$, *Cakile maritima* $2n=18$, *Spergularia salina* $2n=36$, *Salicornia herbacea* (*S. europaea*) $2n=18$, *Hydrocotyle vulgaris* $2n=$ c. 96, *Hottonia palustris* $2n=20$, *Samolus valerandi* $2n=26$, *Glaux maritima* $2n=30$, *Galium boreale* $2n=44$, 55 & 66, *G. palustre* $2n=24$ & 88, *Plantago maritima* $2n=12$ & 18, *Lobelia dortmanna* $2n=14$, *Tragopogon pratensis* $2n=12$, *Chrysanthemum leucanthemum* $2n=18$, 36 & c. 54, *Alisma plantago-aquatica* $2n=14$, *A. lanceolatum* $2n=26$, *Butomus umbellatus* $2n=26$, *Hydrocharis morsus-ranae* $2n=28$, *Triglochin palustre* $2n=24$, *T. maritima* $2n=24$, 30 & 48, *Acorus calamus* $2n=36$, *Ornithogalum umbellatum* $2n=27$, *Iris pseudacorus* $2n=24$, 32 & 34, *Poa chaixii* $2n=14$, *P. bulbosa* $2n=42$, *Sieglingia decumbens* $2n=36$, *Epipactis helleborine* $2n=40$, and *Listera cordata* $2n=38$.—[D.H.K.]

Skvortsov, A. K., 1960, On two rare grasses in the flora of Central Russia, *Sci. Rep. High School Moscow, Biol. Sci.*, **2**, 116-120. An account of the distribution of *Trisetum flavescens* and *Poa chaixii* in the Moscow area.—[D.H.K.]

Szaniszlo, P., 1961, Megjegyzések adventiv növenyeinkhez, *Bot. Kozl.*, **49**, 115-121. Adventives new to the Hungarian flora include *Commelina communis* L., *Lycium halimifolium* Mill. and *Wolffia arrhiza* Wimm.

Several new forms of *Lycium halimifolium*, based on fruit shape and size, are described.—[D.H.K.]

Thomas, A. S., 1962, Botany and geology of the downs of southern England, *Nature*, **193**, 214-217. In a study of changes in vegetation about 10,000 point-quadrats have been repeated for the past 8 years at fixed places along transects over the chalk in southern England.

The study has shown that there are often great differences between soils over the chalk, in reaction and in composition even when they are close together on the same slope, and soil analysis has revealed considerable difference in samples taken only a foot from each other.

The soils on which the most interesting calcicole species were found all tended to be markedly alkaline with a high content of calcium, and invariably on outcrops of hard layers of chalk.

The distribution of orchids is reviewed and it is concluded that their restricted distribution may reflect the soil preferences of the symbiotic fungi on which they depend.—[D.H.K.]

Turesson, G., 1961, Habit modifications in some widespread plant species, *Bot. Not.*, **114**, 435-452. Habit modifications of *Populus tremula, Juniperus communis, Hedera helix* and *Polygonum amphibium* are discussed.

The degree of modifiability, as well as the degree of persistency of the modification in changed environments, is treated.

The ability of vegetative reproduction in these habit modifications, followed as a rule by decrease or a total loss of sexual reproduction, is emphasized.—[D.H.K.]

Van Ooststroom, S. J. & Reichgelt, T. J., 1961, Enige voor België nieuwe adventievn, *Bull. Jard. Bot. Brux.*, **31**, 431-441. Descriptions are given of a number of adventives new to the Belgian flora; these include *Cerastium dichotomum* L., *Iberis acutiloba* Bertol., *Ononis salzmanniana* Boiss. & Reut., *Bupleurum gerardii* All. *Datura* and *innoxia* Mill.—[D.H.K.]

Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Aanwinsten voor de Nederlandse adventief-flora, 1, *Gorteria,* **1**, 20-24. This first part of a series of acquisitions to the Netherlands adventitious flora contains descriptions of *Chenopodium nitrariaceum* (F. v. Muell.) F. v. Muell. ex Benth., *Amaranthus bouchonii* Thell. and *Brassica carinata* A. Braun.—[Authors' summary.]

Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Aanwinsten voor de Nederlandse adventief-flora, 2, *Gorteria,* **1**, 25-29. Additions to the adventive flora of the Netherlands during 1960 included *Trifolium alexandrinum* L., *Senecio squalidus* L., *Matthiola incana* (L.) R.Br. and *Senecio mikanioides* Otto.—[D.H.K.]

MIDLAND REGIONAL MEETING, 1961

A Midland Regional Meeting was held in the Department of Botany, University of Leicester, on Saturday, September 9, 1961. About 60 members and guests attended, and Mr. E. K. Horwood acted as local secretary.

The meeting opened with a short address of welcome by Professor T. G. Tutin, after which Dr. W. Tutin gave the first of two papers dealing with the origin and distribution of British weeds. In outlining the history of our vegetation since the Ice Age, as revealed by the analysis of microscopic plant fragments and counts of pollen grains from peat, Dr. Tutin stressed that these islands possessed a wholly 'native' flora until the arrival of the first agriculturalists around 3,000 B.C. Well before this date, however, there is clear evidence of the presence of several species which to-day would be classed as weeds. This suggests that part of our weed flora was recruited from species occurring in open or semi-open habitats in early post-glacial times. Destruction of the forests by the early farmers is reflected in the rapid increase in the sub-fossil record of genera such as *Plantago*, *Artemisia* and *Rumex*, all of which contain species characteristic of waste or broken ground. To these were added further species associated with each of the different crops (e.g., wheat, oats, rye, flax) brought over by successive waves of invaders.

Miss A. P. Conolly brought this story down to the present with an account of the various weeds and aliens of the Lleyn Peninsula, Caernarvonshire, illustrating the distribution of many of these with the aid of dot maps. This, till recently, was a very remote area, and many species which elsewhere tend to be dismissed as ubiquitous, are here surprisingly rare, notably *Aethusa cynapium*, *Chamaenerion angustifolium*, *Silene alba*, *Papaver dubium* and *Lamium album*. The distribution of this last is particularly puzzling in Wales, for although it shows a marked association with railway stations, it was present before the building of the railways and it seems probable that its original introduction was for herbal usage.

After an interval for coffee, Dr. C. D. K. Cook gave a paper on variation in the Batrachian *Ranunculi*. Describing the group as 'a morass of man-made confusion', he explained that this has been due to the inability of herbarium taxonomists to distinguish genotypic from merely phenotypic variation. Now, by growing the various taxa under different terrestrial and aquatic conditions, the biosystematics of the group have been made much clearer. Heterophylly in this group does not follow a maturity sequence, as in *Sagittaria*, nor is it a seasonal process, as in *Rorippa amphibia;* instead, it is a specialised adaptation to environmental conditions, but there is very great variation in this respect even within individual taxa, in some strains the heterophylly being genetically controlled, in others not.

The morning finished with a meeting of members of the Society normally resident in the Midland Region, at which Dr. G. Halliday was elected to the Council as Regional Representative.

The afternoon session opened with a paper by Dr. Y. Heslop-Harrison on the cytogenetics of the genus *Rubus*. After an outline of the subgenera sections and representative species the speaker summarised the history of their investigation from Weihe and Nees to Watson with the aid of diagrams and coloured slides. The chromosomes of about half the named British microspecies have now been counted, but the cytogenetics of the genus are still incompletely unravelled and their investigation has lately entered a new and interesting phase. Several different kinds of apomixis are believed to occur in the *Eubati* and this does much to explain their taxonomic complexity. Dr. Heslop-Harrison remarked in closing that singularly little has yet been done on the ecology of brambles.

Dr. T. Pritchard, Regional Officer of the Nature Conservancy, concluded with an outline of the Conservancy's history and functions and suggested various ways in which local workers and scientific societies can help it both in its immediate work and in the wider task of educating the public in the aims of conservation.

During the tea-break, a series of exhibits were displayed in the Department. To complete a full and interesting day, history was made for the Society by the holding of an official Dinner. This took place in the University refectory and attracted an attendance of 40.—D. E. Allen.

On September 10 a field excursion was made to Holme Fen and Conington rubbish dump, where several interesting plants were found.

FIELD MEETINGS, 1960*

JUNE 4th to 6th, 1960. WEYMOUTH, DORSET

Leader: H. J. M. Bowen

About twenty-five members attended this meeting, and we were fortunate in having Professor R. Good, Dr. G. E. Thomas and other local botanists present for part of it. The object of the meeting was to search for some of the plants recorded for Weymouth and Portland, but not seen for some years, and to collect records for the Maps Scheme.

The first day was spent between Weymouth and Abbotsbury. The party divided into groups of three or four to investigate areas of potential interest, and some useful mapping was done. *Trifolium squamosum*, *Carex divisa* and *Silene anglica* var. *sylvestris* were seen by the Fleet, but dredging from the shore failed to bring up any *Lamprothamnium papulosum* from the acres of *Zostera angustifolia*. On the west side of the Fleet lagoon the leader succeeded in walking the length of the Chesil bank from Weymouth to Abbotsbury, and recorded a number of unexpected plants, including *Polypodium vulgare*, in addition to the well-known species. Mrs. Garrett refound *Moenchia erecta* at Abbotsbury castle and *Allium ampeloprasum* near East Bexington, while at Abbotsbury itself Mr. Ryves party saw *Trifolium glomeratum* and *Bromus madritensis*. A number of unusual aliens, presumably established from the tropical gardens, were also seen at Abbotsbury. Intensive hunting failed to locate *Iris spuria* in its old locality, though it was later seen in some abundance by Mr. Lousley on a private visit. Mr. and Mrs. Hall were lucky enough to rediscover *Puccinellia rupestris* and *Vicia lutea* near Rodwell, both plants which had been lost sight of for some time. At Lodmoor saltmarsh, *Ranunculus sardous*, *Puccinellia fasciculata* and *Alopecurus bulbosus* were collected, and later a number of members investigated the rubbish-tip at the west side of the marsh. This proved to be rich in species considering the season, and among the more noteworthy plants found were *Coriandrum sativum*, *Rapistrum rugosum* and *Allium moly*.

Sunday, June 5th, was spent in exploring the Isle of Portland, since no firing was expected on the Naval ranges. The blown sand at Small-mouth was the first rendezvous, and here a number of rare plants were observed, and an excursion made on to the shingle to see *Lathyrus japonicus* in full flower. An unexpected addition to the flora was *Cynosurus echinatus*, perhaps adventive from the Channel Isles, but *Polycarpon tetraphyllum* was not seen. Portland had not been comprehensively "mapped" as it extends into three "squares", two of which consist largely of sea. On the East Weare cliffs, *Matthiola incana* is now

*Field Meetings arranged by the Committee for the Study of the Scottish Flora are indicated by †.

well established, and with it are *Cerastium tomentosum*, *Lobularia maritima* and *Cheiranthus cheiri*. The top of the island is so extensively quarried and built over that it would take many days to explore it thoroughly. *Geranium rotundifolium* was found in three places, and *Vicia bithynica* in five. Thanks to Mr. Buckle's directions, some fine colonies of *Arum italicum* were seen, in addition to *A. maculatum*. *Valerianella locusta* and *V. carinata* were both seen, and *V. eriocarpa* was found abundantly on the eastern cliffs. Alien plants recorded included three *Cotoneaster* species, *C. horizontalis*, *C. microphylla* and *C. simonsii*, *Ornithogalum umbellatum* and *Phuopsis stylosa*. Near the Bill, *Pholiurus incurvus* was abundant, *Sambucus ebulus* was seen in quantity, and the short grassland had *Thesium humifusum*, *Gentianella anglica* and *Ophrys apifera*. The acid spring at Culverwell was examined, and it was agreed that it was most unlikely that *Potentilla palustris*, reported via the Maps Scheme, had occurred there. A claim that *Calluna vulgaris* exists inside the wire fence round the Portland Naval base could not be investigated for security reasons.

On Whit Monday the party met again at Winfrith Heath, on the unspoilt part some way from the Nuclear Research Station. A wide range of ephemerals, heath and bog plants was seen in this remarkably rich locality, and *Ophioglossum vulgatum* was an unexpected new record for the area. After lunch the party dispersed, some to search further areas in the district and others to brave the Whitsun traffic on the journey home.—H. J. M. Bowen.

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†JUNE 10th to 12th, 1960. ELGIN AND CULBIN SANDS

Leader: J. G. Roger.

The main purpose of this field meeting based on Elgin was to visit the Culbin Sands, a well-known extensive area of blown sea sand, now largely afforested (mainly with *Pinus sylvestris*, *P. laricio* and *P. contorta**), but also including communities of naturally established plants of special interest.

A party of ten assembled at Elgin in the evening of Friday, 10th June, and next day proceeded westward to Kintessock, thence northward, by the Forestry Commission's road through the pine plantations, towards the site of Buckie Loch. Previously, contact had been made with Mr. Milne, the Commission's Forester at Kintessock.

Much time was spent exploring the woodland of sallow, alder and birch south of Buckie Loch, particularly where *Salix cinerea* subsp. *atrocinerea* was dense over a ground flora which included *Corallorhiza trifida*, *Listera ovata*, *L. cordata*, *Goodyera repens*, *Platanthera bifolia* (in more open places), *Pyrola minor*, *Orthilia secunda* and *Trientalis europaea*. *Carex arenaria* and *Salix repens* were frequent throughout this area.

Over neighbouring open, drier, sandy areas, with young pines frequently present, *Calluna vulgaris* var. *hirsuta*, *Empetrum nigrum* and *Sarothamnus scoparius* were very conspicuous. *Moneses uniflora*

*See Ovington, J. D., 1950, The Afforestation of the Culbin Sands, *J. Ecol.*, **38**, 303-319.

and *Orthilia secunda* were found extremely locally within the shade of older pines.

On the southern part of the site of Buckie Loch, *Phragmites communis* was locally dominant giving place westward to marshy woodland mainly dominated by alder, but with birch and sallow frequent. In this rather dense woodland the following were among the conspicuous members of the ground flora:—*Angelica sylvestris, Caltha palustris, Equisetum fluviatile, Galium palustre, Filipendula ulmaria, Hydrocotyle vulgaris, Luzula sylvatica, Lychnis flos-cuculi, Menyanthes trifoliata, Potentilla palustris, Ranunculus flammula, Stellaria alsine* and *Valeriana officinalis.*

At the western end of the loch site, on mostly open marshland, *Carex diandra* was abundant, often associated with *Hydrocotyle vulgaris:* and in this area also were *Dactylorchis purpurella, D. incarnata, Iris pseudacorus* and *Typha latifolia.*

Beyond the pine plantations and west of Buckie Loch on the seaward sand, with wet hollows and dunes, were:—*Agropyron junceiforme, Ammophila arenaria, Armeria maritima, Cakile maritima, Carex extensa, Cerastium atrovirens, Chamaenerion angustifolium, Elymus arenaria, Festuca rubra, Glaux maritima, Honkenya peploides, Juncus balticus, Ligusticum scoticum, Parnassia palustris, Suaeda maritima, Thalictrum minus* and *Triglochin maritima.* Young alders were well established on the more stable sand and gravel where the ground flora included *Carex arenaria, Empetrum nigrum, Lotus corniculatus, Poa pratensis, Potentilla anserina* and *Salix repens.*

Within the time available, it was not possible to cover adequately even half of the area comprising the Culbin Sands, but most of the plant habitats and species of vascular plants characteristic of the sands were noted, reference being made in particular to the papers by D. Patton and E. J. A. Stewart, 1923 and 1924 ("The Vegetation of the Culbin Sands", *Rep. Bot. Soc. & E.C.*, **7**, 253-268, and "Additional notes on the flora of the Culbin Sands". *Trans. Bot. Soc. Edinb.*, **29**, 27-40).

Next day, Sunday, 12th June, rainy weather hindered field studies, but during the morning the party visited Quarry Wood, 1½ miles due west of Elgin, on each side of A 96 (T). On the south side of the road oak (*Quercus robur*) and beech are the dominant trees, with holly, birch and juniper occasional. The ground flora noted included: *Anemone nemorosa, Anthoxanthum odoratum, Blechnum spicant, Calluna vulgaris, Deschampsia flexuosa, Dryopteris dilatata, Holcus mollis, Luzula sylvatica* (locally dominant), *Lonicera periclymenum, Melampyrum pratense, Oxalis acetosella, Potentilla erecta, Pteridium aquilinum, Rubus fruticosus, Sarothamnus scoparius, Stellaria holostea, Vaccinium myrtillus* and *Viola riviniana.* A few very young oaks were seen. On the north side of the road, conditions were drier, with very little or no *Luzula sylvatica*, but much *Vaccinium myrtillus* and *Calluna vulgaris.* Here also were: juniper, birch, rowan, a few Scots pines, *Sarothamnus scoparius, Ulex europaeus, Erica cinerea* and *Pteridium aquilinum:* young oaks and young rowans were locally prominent.

From the Quarry Wood, visits were paid to the sea coast at Burghead, and to Findhorn Bay, but heavy rain prevented profitable field work in these areas, and the party dispersed during the afternoon.—J. GRANT ROGER.

†JUNE 17th to 19th, 1960. PERTHSHIRE

Leader: D. RATCLIFFE

Garth Field Studies Centre was the base for this week-end excursion which was attended by eleven members and friends. On the Saturday Loch Loch, at the eastern foot of Beinn a'Ghlo, was the area to receive attention, and thanks are due to Sir John Heathcote Amery, who kindly allowed access to his land. The day commenced unpromisingly, with low cloud and intermittent rain, but slowly improved, and by the time Loch Loch was reached the sun appeared.

The loch lies in an obviously glaciated valley and is almost divided into three parts by the remnants of two terminal moraines while a third is also traceable. Most of the surrounding land is peaty moorland with much heather, though not entirely devoid of interest for *Listera cordata* was noticed. However, the extensive steep slopes and crags above the loch are of calcareous schists and here, of course, the most interesting plants were found. The first promising sign was a series of flushes on fairly gentle slopes with richer grassland, which yielded, among others, *Carex capillaris, C. pulicaris, Selaginella selaginoides, Tofieldia pusilla, Alchemilla glabra, Saxifraga aizoides,* and the bryophytes *Philonotis calcarea* and *Cratoneuron commutatum* var. *falcatum.* On the drier parts *Helianthemum chamaecistus, Linum catharticum, Fragaria vesca* and *Botrychium lunaria* were seen. Mosses found included *Gymnostomum aeruginosum, Diphyscium foliosum, Grimmia funalis, Distichium capillaceum, Plagiopus oederi* and *Ctenidium molluscum.*

After lunch the party scattered, and we were rewarded during the afternoon by the sight of *Oxytropis campestris* in full flower in two places, associated in one with an impressive show of *Veronica fruticans,* which we found scattered over a widish area. Careful searching in the gulleys, on the crags and among the screes produced a fairly impressive list of species including *Saxifraga oppositifolia, Polystichum lonchitis, Saussurea alpina, Thelypteris phegopteris, Cystopteris fragilis, Asplenium viride, Chamaenerion angustifolium, Silene dioica, Helictotrichon pubescens, Luzula spicata, Salix repens, Draba incana, Antennaria dioica, Geranium sylvaticum* and *Viola lutea* var. *amoena.*

On the Sunday, which was an ideal day with a slight breeze and brilliant sunshine, the corrie on the eastern side of Carn Gorm, on the north side of Glen Lyon, proved to be equally interesting. This is a typical corrie at moderate altitude, but again the rock is calcareous schist bearing its usual rich flora. Here was a particularly fine show of willows, including *Salix reticulata, S. myrsinites* and *S. arbuscula,* and we were fortunate enough to find *Carex rupestris,* in association with a large number of less rare mountain plants, including *Dryas octopetala, Oxyria digyna, Saxifraga nivalis, S. hypnoides, S. oppositifolia, Potentilla crantzii, Draba incana, Saussurea alpina, Silene acaulis,*

Carex atrata, *Trollius europaeus*, and in the wetter places *Thalictrum alpinum*, *Saxifraga aizoides*, *Tofieldia pusilla* and *Juncus triglumis*. A diligent search in another part of the corrie produced a single plant of *Erigeron borealis*, and this was considered a suitable time at which to descend to Glen Lyon, where the party broke up after two very satisfying days in the field.—Denis Ratcliffe.

JUNE 25th and 26th, 1960. STAMFORD

Leaders: Mr. and Mrs. R. C. L. Howitt and J. H. Chandler

Twenty-two members and numerous friends attended this meeting; the object being, for the most part, to study the limestone grassland round Stamford.

On Saturday morning the party moved off to take a look at Bedford Purlieus, which is threatened by opencast ironstone mining. This very large wood, dense in parts, provided a rich assortment of plants—limestone species included *Melica nutans* in abundance, *Campanula trachelium*, *Paris quadrifolia*, *Aquilegia vulgaris*, *Ophrys insectifera*, *Platanthera chlorantha* and *Tilia cordata*. Members were most interested to see *Euphorbia lathyrus* in its native habitat. Another part of the wood afforded such species as *Convallaria majalis*, *Carex pilulifera* and *Pteridium aquilinum*. Lunch-time came all too quickly, with a large part of the wood still unexplored.

After lunch the party moved to Empingham, where one of the leaders gave a dissertation on willows. *Salix calodendron*, *S. decipiens*, *S.* × *gemminata* and *S.* × *sericans* were all present, and conveniently close together, where they could be viewed in comfort from the field side. A boggy meadow nearby produced *Dactylorchis praetermissa*, *D. incarnata* and *Blysmus compressus*.

After a pause at the village shop for various sorts of 'pop', consumed by some members in uncomfortable haste in order to get the 2d. back on the bottle, before moving off to Horn Mill for tea, some members, disdaining the 'pop', and preferring to take tea with the drainage scheme in the main street, were unfortunately left behind. The meadows above Horn Mill were rather dry, but provided a good showing of *Juncus compressus*. Also one of the most interesting plants of the meeting, *Apera interrupta*, was found on the track side near the cars, and *Scrophularia umbrosa* by the Lake.

Sunday opened hot and dry, and Barnack Hills and Holes did not produce much of interest. Two dry summers and lack of grazing had reduced this place to a rather rough and overgrown state. *Orobanche elatior* was very fine, and *Antennaria dioica* was still visible by the wall.

Lunch was taken early and a move made to Bone Mill Hollow, where for a mile the stream runs between limestone banks. The valley bottom grew *Juncus subnodulosus* and orchids, while in a small bog across the road, *Pinguicula vulgaris* and *Anagallis tenella* were found. *Hypericum montanum* and the usual limestone plants were in evidence on the banks, together with *Hyoscyamus niger* and *Onopordum acanthium*.

The second interesting discovery of the meeting, made by our President, was also a grass, *Bromus arvensis*, which was dominant over several square yards on the top of the ridge.

After a brief tea, those members who did not have trains to catch or distant places to reach before nightfall visited Luffenham quarry to see *Salvia sylvestris* and *S. verticillata*, also *Brassica elongata*. This unusual collection of aliens made a pleasant ending to the meeting.—R. C. L. Howitt.

JULY 1st to 8th, 1960. ISLE OF MAN.

Leader: D. E. Allen

"Would one get only half this party in the Isle of Man?" So, rather ominously, ran the first clue in the *Times* crossword only two weeks before this meeting was due. And as it turned out, if the week can be said to have fallen below expectation, it was precisely in the smallness of the attendance—only five members and one guest. Varying numbers of local botanists, however, were fortunately able to join the party on several days and, besides adding a welcome touch of "Manxness", helped us to cover more ground than would otherwise have been the case.

The aim of the meeting was to explore a number of underworked areas in connection with the Flora now in course of preparation. Our base was Douglas—garish and noisy, but hardly to be bettered as a centre—and here on the first evening we gathered at the Manx Museum for a general tour and an introductory talk on the island's geology by the Director, Mr. A. M. Cubbon, followed by a review of the flora and of the week's programme by the Leader. A room in an annexe to the Museum was kindly placed at our disposal for the customary evening sessions throughout the week.

The first day, Saturday, began with our picking up the hired car kindly booked for us by Miss Bing and then driving in brilliant sunshine up the east coast by way of Ramsey to Ellanbane, at the edge of the flat plain which forms the northernmost quarter of the island. Here the railway track was first inspected to see the abundance of *Kickxia elatine* which had been discovered here two years earlier. *Bidens tripartita*, a weed in adjacent fields, was found accompanying it. A nearby damp field produced *Euphrasia brevipila* and *E. nemorosa* in quantity and in the course of the walk back to the car a single specimen of *Anagallis arvensis* var. *azurea* was pointed out on the roadside. We then drove on to Sandygate, joining up with more carloads of local botanists to explore a number of peaty pools containing, amongst other things of interest, a magnificent display of *Ranunculus lingua*. At the end of the afternoon the whole party drove over to Ramsey, and on the sea-front there, by pre-arranged plan, paid what we hoped was fitting homage to the Isle of Man Cabbage, *Rhynchosinapis monensis*, growing in the very locality where John Ray first set foot in the island and discovered it for science exactly three hundred years before almost to the day.

Sunday, spent in exploring Port Soderick and its glen, was probably our most productive day. Leaving the car, we split into pairs and worked

the area in a series of strips. Different sections of the railway, to everyone's surprise, yielded more *Kickxia elantine*. *Poa nemoralis* (accidentally introduced?), *Rubus dasyphyllus* and great masses of *R. vestitus* were found by the railway at Keristal, the scarce *Trifolium arvense* and *Lathyrus montanus* on the cliffs, and *Bromus ferronii* on the rocks down by the sea. The glen gave us our first N.C.R. of the meeting, *Circaea intermedia*, as well as a new station for *Geranium columbinum*, a very rare plant in Man. *Euphorbia exigua* was noted here as a railway track colonist for the first time in the island—after the end of the meeting it was found in this same habitat in two further places to the south.

On Monday, we paid our first visit to the west coast, to examine the lower and (unexplored) upper parts of Glen Maye. In the former, we searched for an *Orobanche* of uncertain identity which had been reported there earlier, but met with no success. The planned drive in the afternoon over the southern hills and into the Foxdale valley was marred by very low cloud, but, on calling at some old lead-mine spoilheaps near The Eairy to see *Botrychium lunaria* growing in great quantities in its best-known Manx station, we were fortunate enough to light upon a colony of very small whitish-flowered Spotted Orchids, closely resembling solitary specimens which had been noticed in previous years in other parts of the island. Fresh examples were sent off at once to Kew, and our tentative identification, *Dactylorchis fuchsii* subsp. *okellyi*, was in due course confirmed. Outside Ireland, this very distinct-looking race has apparently so far only been found in Kintyre. A bramble new to the island, *Rubus rubristylus*, was collected growing almost next to the orchids.

Tuesday was Tynwald Day, a public holiday in Man, and we felt bound to spend the morning (a wet one) watching the traditional ceremony at St. Johns. Afterwards, we drove over the Staarvey road to Ballaugh, to explore a tract of sandy heathland along the coast. The best finds here were *Viola tricolor* subsp. *curtisii*, *Poa compressa* and *Coronopus didymus*. An earlier station for *Teesdalia nudicaulis* was also re-located.

Steady, drenching rain greeted us on Wednesday. The Baldwin valleys proved too fruitless—and wet—to warrant our continuing, and after taking refuge, in desperation, in a museum of witchcraft (surely a novel venue for the B.S.B.I.?) we retreated home to dry clothes and an early tea.

Thursday was spent working through the curraghs along the central valley. These produced, amongst much of interest, *Polygonum nodosum* (N.C.R.), *Rubus calvatus* (N.C.R.), *Scutellaria minor* and, in the middle of one curragh far from any houses, a large patch of *Alstroemeria aurantiaca* accompanied by one of the garden forms of *Thalictrum minus*. An abundance of *Filago minima* and still more *Kickxia elatine* were found on the railway track. In the evening some of the party paid a visit to a promising new dump on the outskirts of Douglas, and this produced two more N.C.R.'s: *Epilobium adenocaulon* and *Camelina sativa*.

The meeting ended, as it began, with a day of perfect weather. This was devoted to exploring one of the tributaries of the Silverburn—an

unwise choice, as it turned out, for the country proved not only unexpectedly rough—a veritable Grand National of tall earth banks surmounted by gorse and/or barbed wire—but floristically poor, almost our only finds of interest being *Mentha* × *verticillata* (N.C.R.) and a bramble pronounced by the experts to be either *Rubus lindebergii* (N.C.R.) or a species closely related. The day finished with a visit to the 'Dumb River', one of the island's very few large ditches, which is filled for over a mile with the sterile hybrid between *Veronica anagallis-aquatica* and *V. catenata*. While we were inspecting this, a *Potamogeton* was spotted deep down in the water. It proved to be *P. crispus*: new to the south of the island—and a stylish close to a very fruitful week.—D. E. Allen.

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†JULY 9th and 10th, 1960. ST. CYRUS

Leaders: C. H. Gimingham and Mrs. A. H. Sommerville

Although unfortunately only a few bookings were made for this meeting, the small party had two enjoyable days examining the rich coastal flora of St. Cyrus.

July 9th was spent on the cliffs, sand-dunes and salt marsh where the numerous interesting species well known for the area were examined. Additions were made to the existing lists, including *Carex contigua* on the cliff, which had not previously been noted there; *Hieracium subrude* (det. P. D. Sell and C. West) from the dune pasture; and the hybrid *Agropyron junceiforme* × *repens* (conf. Dr. A. Melderis) from the margin of the salt-marsh. Further, several flowering specimens of *Coeloglossum viride*, not seen for a number of years and thought to have become extinct in the area as a result of the spread of bracken, were found on the dune pasture.

The following day the coast to the north of St. Cyrus was explored, where, among a further set of interesting species, *Artemisia maritima* was seen on one of the rocky stacks, and *Anagallis arvensis* on a rock close to the shore. In the rocky ravine known as the Den of Fenella *Phyllitis scolopendrium* was abundant with some *Cystopteris fragilis*; and specimens of *Carex pendula* and *Dactylorchis fuchsii* were seen.

The first excursion was led by Dr. C. H. Gimingham and the second by Mrs. A. H. Sommerville.—C. H. Gimingham.

JULY 19th to 31st, 1960. SWITZERLAND AND ITALY

Leaders: M. E. Bradshaw and Professor F. Chodat

Seventeen members attended the third overseas meeting organised by the Junior Activities Committee. All the local arrangements and the details of the programme were in the hands of Professor Chodat, of the Institut de Botanique in the University of Geneva, and it is to him and his assistants that we must offer our sincere thanks for ensuring the success of the meeting. Prof. Chodat also accompanied us on all the excursions and his lectures on local geography and ecology enabled us

to understand better the reasons why certain plants grew where they did; this quite apart from identifying specimens.

For the first six days we were accommodated in a chalet owned by the University in Bourg-St. Pierre, in the Val d'Entremont. From here we made excursions to study the flora of the meadows, forests and alpine meadows. The geology of the region is very complex, but for botanical purposes it is probably sufficient to consider most of the rocks as being composed of a more or less base-rich micaceous schist, known as the "schiste lustrée". The resulting soil is usually slightly acid and supports a generally calcifuge flora, but occasional calcareous pockets and a tendency for the soil to be rich in exchangeable bases result in a rather unexpected distribution of certain plants.

Surprise was expresssed by some of the party who had not been to the Alps before, that the vegetation of the meadows should contain such a relatively small proportion of grasses and so many flowering plants. Many of the meadows had been mown, and in these, *Colchicum alpinum* and *C. autumnale* were coming up in large numbers, but in others, *Lilium martagon*, *Phyteuma spicatum*, *P. orbiculare*, *Rhinanthus alectorolophus* and *Campanula rhomboidalis* were flowering freely. In more rocky places, *Dianthus carthusianorum* and *D. caryophyllus* were very prominent, with *Silene rupestris* in rock crevices.

Our first long excursion took us up through the forest and we were able to examine its flora in detail. It is largely composed of *Larix decidua* and *Picea abies*, while *Alnus viridis*, with its very flexible branches, is characteristic of avalanche tracks, though tending to form an understorey in other parts as well. The ground flora is quite different from that of the Northern Coniferous Forests, and despite the density of trees, is rich and extensive. *Adenostyles alliariae* and *Cicerbita alpina* were very noticeable here, together with numerous smaller species. Above the tree line, which is frequently at an artificially low level due to felling and the inability of the trees to regenerate because of grazing, is found the Rhodoretum. This is an association of ericoid shrubs in which *Rhododendron ferrugineum* is characteristic and *Vaccinium* spp. and *Juniperus communis* subsp. *nana* very common. *Bartsia alpina* was found here in some quantity.

On our second trip, we went up the Valsorey with the object of examining the true alps or alpine pastures which are the summer grazing for the cattle. A long climb through a region where the forest should have been took us to the foot of a short, steep ascent, where we were fortunate to see a small patch of *Aquilegia alpina*, and at the top, *Leontopodium alpinum*, a plant of little ecological significance but which still retains its popular appeal. At this point the party split, the more energetic to climb to the Cabine de Valsorey, the remainder to botanise on the moraines. The climb to the Cabine took us through the alps, where *Gentiana verna*, *Sieversia montana*, *Androsace* spp. and *Viola calcarata* were all seen, while *Alchemilla pentaphylla* was especially characteristic in the vicinity of late snow patches. Higher up, *Ranunculus glacialis* suggested the presence of more permanent snow, some of which had to be crossed before reaching the Cabine, at 3036 m., in time for lunch. The descent was along the moraine of the Grand

Combin glacier, where we found *Artemisia genipi*, very rare due to its use in the preparation of a liqueur, and *Campanula cenisia*, and eventually rejoined the rest of the party who were examining a curious community on glacial alluvium composed largely of *Carex bicolor* and *Juncus triglumis*.

The next day was largely occupied in recovery, but a short trip in the afternoon showed us one of the specialities of the district, *Centaurea rhapontica*, and later we walked through some interesting heath and returned through an example of the Megaphorbiée, the dense, scrubby woodland that tends to form in damp sheltered situations.

Our second long excursion took us to the Combe de Là, between Val d'Entrement and Val Ferret. The valley is interesting because, while the eastern slopes are of the usual micaceous schist, the western slopes are of limestone, so steeply sloping that the lower reaches are barely stabilised scree. The schists bear either Rhodoretum or *Empetrum-Arctostaphylos* heath, sometimes with *Dryas octopetala*, and there are more or less scattered trees of *Pinus cembra*. This species is local throughout the forest, for it has been much sought after for timber and its edible seed, and this restricts its ability to regenerate. The limestone slopes have a purely herbaceous flora, though *Pinus maritima* exploits footholds on the inaccessible ledges. The most prominent in the herbaceous flora were *Helianthemum alpestre* and *H. chamaecistus*, with *Onobrychis montana* and *Coronilla vaginata*, and it was noted that *Silene rupestris* was replaced by the superficially similar *Gypsophila repens* in the rock crevices.

Sunday provided an opportunity for rest and relaxation and voluntary botanical projects before our stay in Bourg-St. Pierre was concluded, for the following morning we were to leave for the Col du Grand St. Bernard and Italy. The object of this part of the trip was to examine some of the refugia from which it is supposed that the Alps were revegetated after the last glaciation. Certainly, Italy made it quite clear that now, as probably then, it was warmer than Switzerland.

From the Col we made our way down for some distance on foot to see some of the specialities of this pass. The hybrid *Ranunculus aconitifolius* × *glacialis* left few people in doubt as to its origin. A little lower down, *Poa cenisia* was found growing in scree and *Cryptogramma crispa* was also abundant. Near the village of Bosses, *Armeria arenaria* was plentiful in a field: this was the first plant we had seen with a Mediterranean distribution. We were then taken to Aosta by bus, where the temperature was more appropriate to North Africa. Not far from the town is the Colline de Porrosan, a very dry exposure on acidic rock. The vegetation simulates certain regions of the Mediterranean coast and is given the name of garide. The composition of the flora, which includes *Quercus pubescens*, *Andropogon ischaemum*, *Eryngium campestre* and *Odontites lutea*, enhances this view.

After a night spent just outside Aosta, a visit to a similar piece of garide at Chatillon showed us more of these Mediterranean species including *Thymus vulgaris*, *Stipa capillata*, *Ephedra helvetica* and *Plantago cynops*, while *Alyssum alpestre* and *Nothochlaena marantae* were found in a *Castanea* wood nearby. In the afternoon, we were

driven up the Cogne valley, at such a speed that botanising from the windows was not only practicable but became a virtual necessity. We spent the night at Champlong.

Our excursion from here was a pleasant ascent in the direction of the Fenêtre de Champorcher, which took us through a valley, the northern slope of which was supposed to have been one of the alpine refugia. Certainly, it was the home of many new plants. Probably the most interesting were *Astragalus alopecuroides*, which is largely confined to this part of the Alps, and *A. exscapus*, which produces its flowers almost at ground level. Near the top of the valley were some very fine specimens of *Leontopodium alpinum* and also some extremely floriferous alps in which probably the most prominent species were *Hieracium tomentosum* and *Pedicularis gyroflexa*. Also in this region were found the very beautiful *Sempervivum grandiflorum* and the rare *Saponaria lutea*.

We returned the following day to Bourg-St. Pierre, to spend the night and to set off the following morning for Zermatt. En route, we stopped to examine an example of garide on the Mont d'Orge, at Sion in the Vallée de Valais. The species present were essentially similar to those found in Italy in similar situations, though one or two new plants were found, notably *Onosma helvetica*.

At Zermatt, we took the train to the summit of the Gornergrat. This was the highest point we reached during the fortnight and it has one of the best and most accessible high alpine floras. We soon found *Eritrichium nanum* and several saxifrages, while the descent past late snow patches revealed *Alchemilla pentaphylla* and *Cerastium cerastioides*. Among the stones nearby were *Thlaspi rotundifolium*, *Draba aizoides* and *Phyteuma pedemontanum*, the last only about 1″ high. The latter part of the descent was hastened by heavy rain, the first really bad weather we had during the whole trip, but not before we had found *Lloydia serotina* and *Oxytropis lapponica* near the path; both plants are rare in this locality. The forest vegetation around Zermatt is markedly different from that at Bourg-St. Pierre for, from the alps, one goes straight into the forest with the Rhodoretum as an understorey; both *Adenostyles* and *Cicerbita* are noteworthy by their almost complete absence.—R. B. Ivimey-Cook.

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†JULY 30th to AUGUST 6th, 1960. DUNS, BERWICKSHIRE.

Leader: Dr. F. H. Perring

The centre of activity for this botanical foray into Berwickshire (v.c. 81) was Duns, the county town. This has a population of only about 2,500, and though the party was rather scattered amongst a number of hotels, members were all close together, and it was easy to gather at the Black Bull each evening. Here, in a large back-room the twenty of us met on the Saturday evening to discuss plans for the week.

There were two main objects: firstly, to brush up the 22 10 km. squares which cover the county for the Maps Scheme. Plenty had been done in the past, but there were numerous gaps even for some of the

common species. Secondly, the critical groups seemed to be in need of attention: little had been done in recent years on *Rubus*, *Hieracium*, *Euphrasia*, *Rosa*, etc., and it was agreed that we should collect material in these groups to be sent to experts.

During the week, however, a third objective established itself—we found, in Duns, a strong team of local botanists, including A. G. Long, G. Grahame and I. McWhan. For some years these gentlemen have been working on the flora of the county and our visit has provided a great many new and interesting records for them which we hope has helped set them on their way to the production of a new 'Flora of Berwickshire'. If we were able to help them in this way, then it may perhaps be taken as part-payment of the debt owed to Duns by the visitors, whose stay was made so much more profitable and instructive by the time and energy which these three kind people gave so freely. Never, in my experience, has the ground been so wonderfully prepared by local botanists as it was on this occasion.

Mr. McWhan had prepared for us a concise history of the study of plants in the county and had compiled a card for each 10 km. square giving all the old records; Mr. Grahame had prepared an index giving a summary of all that was known about each square. Thus each party of 3 or 4 which tackled particular squares had plenty to stimulate their interest. On each day we were able to divide into 6 or more groups, and in this way every square received at least two visits during the week, and in general we were able to add about 100 new records for each.

Berwickshire is remarkably diverse in its topography and soils, with the result that whereas in the upland areas of the Lammermuirs, which rise to 1750′, the flora was poor and monotonous and 300 species may be near the maximum, the coastal areas were very rich, probably some of the richest in Scotland, and when we left more than 550 species had been recorded for the Eyemouth square.

The most striking plant-geographical fact is the restriction of many species to a narrow coastal strip: these are not maritime species but mainly arable and ruderal species which only find the dry open conditions they require in this area. This was brought home to me at the end of a day spent working in a square which had no coast line. Towards evening we were walking eastwards down a road in the N.E. corner when we suddenly came across *Hordeum murinum* and *Silene cucubalus* for the first time that day. Coming to the top of a rise we suddenly saw, a mile away, the sea. Study of many distribution maps of ruderal species convinces one that proximity to the sea is of tremendous importance in north and west Britain; that in these areas many species do not occur more than a few miles inland.

Another impressive contrast is largely determined by geology. The south of the shire is underlaid by Carboniferous Limestone and to this area the calcicole species are largely confined.

A species of considerable interest is the Field Maple, *Acer campestre*. It is not generally accepted as a native tree in Scotland, yet it appears to be quite frequent on the Carboniferous Limestone in native-looking habitats.

The Merse is crossed and dissected by the Tweed and its tributaries, and the gravel banks and islands provide a variety of habitats. The two Rorippas, *R. islandica* and *R. sylvestris*, both occur and *Impatiens glandulifera* has now colonised large stretches. Another species which is perhaps more common in Berwickshire than anywhere else in Britain is *Scrophularia umbrosa*. *S. aquatica* seems to be quite absent, though there were one or two alarms at the beginning of the week. The latter species appears to be very rare in Scotland and, except for a few localities on the south and west coasts, records for it must be regarded with scepticism unless supported by herbarium material.

To the north and west of the Carboniferous Limestone of the Merse lies the old Red Sandstone, from which protrude a number of volcanic cones usually extremely hard and acidic. They produce a characteristic flora including *Cerastium atrovirens*, *Sagina ciliata*, *Viola tricolor*, *Scleranthus annuus*, *Koeleria gracilis* and *Aira praecox*.

Thus there is a contrast within the Merse as well as between the mainly basic Merse and the mainly acidic area of the Silurian slates which underlie most of the north of the county.

The rich variety of this rolling upland area is too diverse to describe in this short report—but it ranges from the ericaceous grouse moors of the Lammermuirs, where we found *Euphrasia scottica* in a flush at over 1000′, to the deep and impressive denes like Edmunds Dene with its damp wooded streams and secret waterfalls yielding *Thelypteris dryopteris* and *Melica uniflora*.

No description of our journey would be complete without mention of the coast—with the finest cliffs in the eastern seaboard, very reminiscent of the Lizard Peninsula in Cornwall; an elevated plain which falls suddenly into the sea—and coves and headlands difficult to reach from the land. The whole makes a natural nature reserve.

The most famous locality undoubtedly is Dowlaw Dene, visited in the past by many famous English and Scottish Botanists, standing as it does not far off the old main road which joined the two countries. Today it is still a rewarding excursion with its fern-festooned rocky alder wood rising to open scrubby grassland with *Gnaphalium sylvaticum*, *Helianthemum chamaecistus*, *Koeleria gracilis*, and opening out to steep seaward scree slopes carpeted with *Sedum rosea*, as colourful as it is unexpected at 50′ in S.E. Scotland. The beach, reached with difficulty, is not very exciting here, but there is still a little *Asplenium marinum* on the rocks, and *Eupatorium cannabinum* hangs down the dripping cliffs. Elsewhere, for example at Pease Burn, the shore line produced *Glaucium flavum*, now very rare in E. Scotland, *Agropyron junceiforme*, *Cakile maritima*, *Elymus arenarius*, *Salsola kali* and *Atriplex laciniata*, which are not common on this coast. Further south, near St. Abb's Head, *Minuartia verna* was refound, and inland there were often fascinating shallow pools full of *Apium inundatum* and *Peplis portula*. The margins were thick with *Ranunculus trichophyllus* and *Scirpus setaceus*.

But this is not a rugged countryside and, though in mid-week when for three days we were caught in a persistent cold mist coming in off the sea—a 'haar'—and all was gloom and discomfort, my abiding

memory will be of the last day spent investigating the glory of Duns Park and Lake in warm, exhilarating sunshine. The lake is full of *Ranunculus lingua*, *Acorus calamus*, *Typha latifolia*, and the beech woods still contain *Pyrola minor*. And from the hills above the lake the view revealed Berwickshire in all her varied charms.

This is a county which is undeservedly unknown. We hope more botanists will visit it and contribute to the new flora which Mr. Long and his friends are preparing. Its fossil flora has already yielded startling results which have been won by Mr. Long with patience, care and imagination. One evening he fascinated us with an account of the early Carboniferous flora. The flora to-day has surely equal fascination.—F. H. Perring.

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†AUGUST 6th to 20th, 1960. SHETLAND ISLES

Leaders: R. C. Palmer and R. Mackechnie

Lerwick

The chief object of this meeting was to visit underworked areas in Shetland and obtain data for the proposed new 'Flora of Shetland'. The first week was spent on Mainland, where our headquarters was the Queen's Hotel, Lerwick. Five members were present for the first week and a sixth arrived later. Despite the rather disappointing attendance, valuable work was done and many lists of species compiled.

The main contingent arrived on Friday, August 5th, and met after dinner in the hotel conservatory—this was to be our regular evening stronghold—in order to discuss the week's arrangements with Mr. W. Scott, chief editor of the projected flora. If some of the plants mentioned in the following account seem unduly ordinary, it must be remembered that many common plants acquire a rarity of their own so far north; thus, many shade-loving plants are naturally enough local in these treeless islands, so that it is a simple if not infallible method to pick out on the map ravines likely to produce them.

On Saturday we drove to Newing on the coast of South Nesting Bay where we saw a number of typical Shetland plants.

On Sunday we were joined for the day by Mr. W. Scott and Dr. E. F. Warburg, and visited Voe; after a brief halt when one of our contingent had to be rescued from a muddy ditch by a coach-load of obliging Shetlanders, we proceeded westwards to Gonfirth.

One member was deposited at Gonfirth Loch where the rocks had a few good plants, *Salix herbacea* at c. 400 ft., *Hymenophyllum wilsonii* and starved *Thelypteris limbosperma;* four worked the area round Grobsness and the two others searched a ravine east of Grobsness. After reassembling for lunch, the party again divided. Three of us explored the North Burn of Gonfirth, in the lower part of which *Salix aurita* formed bushes of a size exceptional for these parts, while higher up the cliffs had *Rosa dumalis*, *Lonicera periclymenum* and a fine display of one of the Alpestrian hawkweeds. The rest of the party followed up the Burn of Lunklet several miles to the south; here the flora was somewhat similar but this time the hawkweed was spotted-leaved *Hieracium sparsifolium*.

On Monday we visited the Eshaness peninsula west of Hillswick. At Hamna Voe *Mertensia maritima* was seen, mostly barren (even in Shetland it is decreasing), and *Ophioglossum vulgatum* in hillside turf above Cross-voes and Post Office, but in general the day was disappointing.

On Tuesday four of the party visited West Burrafirth on the north coast of Sandsting. *Sagina nodosa* and *Mertensia maritima* were found in the bay, and *Rosa dumalis* on the sea-cliffs, with an interesting hawkweed. *Juncus acutiflorus*, very scarce in the islands, turned up on a roadside, its usual Shetland habitat. The two others made for Marlee Loch (really an arm of the sea) but saw no sign of the *Zostera* from which this loch is said to take its name. Not far away, however, a capital discovery was made in the shape of a nice flowering colony of *Utricularia minor*; this seems to be the first time it has been observed to flower in Shetland. After lunch, the party drove west of Walls; four of us stopped at the Voe of Footabrough, which had a fairly rich flora, including the only *Alchemilla* (*A. filicaulis*) seen during the week; the two others proceeded to the Voe of Dale where *Ligusticum scoticum* was seen and *Mentha spicata* and *Polygonum cuspidatum* grew naturalised along a burn.

On Wednesday morning the Royal visit monopolised our attention. In the afternoon we took the Sumburgh road and, in the teeth of a strong wind, scoured the Aith Voe area near Cunningsburgh. *Ligusticum scoticum* was found flourishing on the shore as well as on cliffs; *Ranunculus hederaceus*, rare so far north in the island, was detected in a roadside ditch; the weeds included *Lamium moluccellifolium* and *Bromus lepidus*.

Thursday was devoted to exploring the remote region south of the main road between Walls and Weisdale Voe. Half of the party visited Culswick and the other half visited Silwick. At Culswick an extensive swamp produced much *Polygonum amphibium*, a little *Veronica scutellata*, with clumps of *Stachys* × *ambigua*, *Mentha* × *piperita* and a willow resembling *Salix phylicifolia*. Fields nearby had *Avena fatua*, last recorded from Shetland in 1845. Silwick was less fruitful but here, as at Culswick, the cliffs had *Silene acaulis*. Lunch was eaten in a pleasantly sunny south-facing geo at Sand; the adjacent dunes proved to be overrun with *Ammophila arenaria* (local in Shetland compared to *Elymus arenarius*), while *Carum carvi* was naturalised in grass by the shore.

On Friday half the party left by steamship for Unst. The rest of us visited Swining in the almost unknown territory of Lunnasting. We examined the Swining Burn with indifferent results, trudged over the dreariest of peat-moors to Mill Loch, then following down the burn from the loch were rewarded with a very rich flora on the dripping cliffs of the ravine with *Rosa dumalis*, *Lonicera periclymenum*, *Hymenophyllum wilsonii* and *Oxalis acetosella*, the last an excellent find, since till recently it has been known only from a tiny area in Northmaven. Returning along the coast, we were invited into a small croft for tea and almost overwhelmed by the hospitality offered to us there.

As leader of the expedition for the first week and collaborator in the projected Flora, I should like to thank all the members for their energy

and patience in investigating what, seen outside its context, must too often have seemed a dull flora, and in particular Mr. B. W. Ribbons and Miss A. Laird, whose cars enabled us to reach places well beyond the reach of Shetland's normal public transport.

When the rest of the party left for Unst, I was joined by Mr. W. Scott and, on Saturday, 13th August, we searched parts of the island of Bressay, but little of interest was found except *Holcus mollis*, plentiful enough along roadsides near Maryfield to suggest it may have been widely overlooked in Shetland.

On Sunday, we explored the almost unknown ground west of Ronas Hill, a bleak boulder-strewn area intersected by several torrents. For a while we were bombarded by a freak hailstorm in the middle of very open country, and there was little to reward us but the discovery that some of the mountain plants well known from Ronas Hill proper, notably *Arctous alpinus*, extend to its north-western slopes. *Deschampsia setacea* was seen in stony boggy ground near Swabie Water, and *Drosera anglica* refound in one of its very few Shetland stations by the Roerwater Burn.

On Monday we were shown *Anagallis arvensis* in a garden at Scalloway; it has only once or twice before been recorded from Shetland. Lerwick rubbish-dump was explored and provided a new vice-county record—*Alopecurus myosuroides*, while adjacent waste ground produced *Mentha longifolia*, *Cicerbita macrophylla*, *Calystegia sepium* and (for the fifth year) *Sisymbrium orientale*. Later we studied the Epilobiums below Fort Charlotte and confirmed the presence of two virtually or entirely unrecorded species, *E. obscurum* and *E. roseum*.

On Tuesday we visited the island of Yell, little known botanically and certainly not inspiring at a first glance since it is mostly peat-moor and not very high at that. At Ulsta we separated. Mr. Scott went to locate the second reported Shetland station for *Chamaepericlymenum suecicum*, on the south coast of the island. Here, on a peaty bank just above sea-level it forms an extensive patch and reaches an unprecedented size. It is a most unlikely-looking station and the plant is evidently adventive (people in the vicinity have observed a progressive increase in the size of the patch) but its source remains to be discovered. The writer visited one of the botanical oases of Yell, a sea-facing ravine on the west coast named the Dale of Lumbister. Here he found *Lonicera periclymenum*, *Hieracium sparsifolium*, *Salix repens* subsp. *argentea* and *Asplenium marinum* in a new locality; several islands in the Loch of Lumbister were also examined and an intriguing hawkweed found on one.

Wednesday saw us at Kirkiegarth and Bardister Lochs near Walls, two of the best lochs in Shetland for aquatics. *Isoetes lacustris*, *Ranunculus trichophyllus* subsp. *drouetii*, *Subularia aquatica* and assorted pondweeds were seen; *Elatine hexandra* was found in quantity near Beeby's locality of 1890, though Druce had searched here in vain forty years ago.

On Thursday, the last day of our active botanising, we visited the island of Noss, but found little here except a plague of midges!—R. C. Palmer.

UNST

The long valley which connects Burrafirth in the north of Unst with Uyeasound in the south, and which contains the Lochs of Cliff and Watlee as well as the Burn of Mailand seems to be a fairly well-defined geological dividing line. In the narrower western part of the island the outcropping rock is non-porous gneiss; in the course of time peat has formed here and this part of Unst now bears a moorland vegetation similar to that covering much of northern Scotland. But to the east of this valley there are extensive exposures of serpentine rock, with large deposits of iron ore, some soapstone, asbestos, porcelain clay and even gold. Several of these minerals are now being worked commercially. The botanical interest of this part of Unst has been recognised for more than a century; the topography is unlike that of any other part of Scotland, and to me the landscape recalled the Burren district in County Clare—low, rounded hills, loose, gravelly soil (although the prevailing colour is not grey, but a bleached brown) and sparse, tussocky vegetation.

Our party of eight, serviced by a solitary car, made Hermaness Hill its first objective. This is the extreme north of Unst; apart from the satisfaction of gazing down on Muckle Flugga, Britain's farthest north, the trip yielded *Vaccinium uliginosum* and *Luzula sylvatica*. The following day, at the Loch of Watlee, *Callitriche hermaphroditica* and *Potamogeton praelongus* were seen, but none of the exclusively serpentine plants were found. On the Hill of Colvadale a marshy hollow produced *Schoenus nigricans*, *Eleocharis quinqueflora* and several species of *Carex*, but no *Juncus triglumis*. It had been decided to spend but little time on the well-explored ground north and east of Baltasound; a morning here revealed *Arenaria norvegica* and *Cerastium nigrescens* sparingly distributed over at least one area. There was much *Silene acaulis* and *Plantago maritima* in great variety, as well as a little *Cardaminopsis petraea* and some small, vinous plants of *Rubus saxatilis*. *Minuartia rubella* was not found. Nearer the sea, and within the cultivated land, were *Lamium moluccellifolium*, *Rumex longifolius* and a single colony (the only one we saw in Shetland) of *Senecio jacobaea*. But *S. aquaticus*, so abundant in the damp pastures of Dunrossness in Mainland, was not seen in Unst.

Burrafirth, with its glistening micaceous sands, gave us our only record of *Gnaphalium sylvaticum;* like G. C. Druce, we failed to find *Lathyrus japonicus* there, though eventually we did see this beautiful plant elsewhere in Unst. At Norwick we admired fine plants of *Gentianella amarella* subsp. *septentrionalis*, saw *Ligusticum scoticum* growing on sand dunes and found some of the dunes covered with *Agropyron* × *laxum*. The Dale of Woodwick, on the west coast, did not produce the hoped-for *Campanula rotundifolia;* of about 100 species recorded there *Salix repens* and *Jasione montana* were the most noteworthy. In the Burn of Mailand a submerged trailing form of *Potamogeton polygonifolius* attracted attention; here, also, was a *Sparganium* which seemed nearest to *S. angustifolium*. The entire course of the Burn of Voesgarth was searched, without success, for *Juniperus communis* subsp. *nana; Lycopodium selago* occurred here. Our last excur-

sion in Unst, to Sandwick, produced nothing of botanical note; an enormous rabbit warren and a look at Muness Castle were the highlights of the day.

Some of the party spent the following week in the southern part of Mainland, at Dunrossness and Sumburgh. At the latter place *Trifolium dubium* grew on the links, in one of its few Shetland localities, but intensive search failed to reveal *Carex maritima* here, nor was it seen later at Spiggie, another of its reported stations. Fine *Gentianella amarella* subsp. *septentrionalis* grew at Spiggie. At Boddam, close by, a few square yards of shingle contained what may be Shetland's entire stock of *Geranium robertianum*, and *Carum carvi*, presumably an old introduction, still flourished by the roadside. In the meadows here great quantities of *Senecio aquaticus* were in full flower; this is a small form, described by Druce as var. *ornatus*, which is widely distributed on the main island. This variety, like var. *zetlandica* of *Silene dioica*, seems to be a matter for personal taste; plants approaching the latter, and in full flower, were seen on every excursion we made in Shetland. All were male; the female plants were long past flowering and had shed their seeds. Near Boddam, on the shore, grew the only plant of *Chamaenerion angustifolium* which I saw away from dwellings; the Shetland gardens are surrounded by stout walls 4 or 5 feet high, and the plant is often grown as a border to the lawn, just inside the wall. I doubt if the species sets fertile seed in Shetland; those I saw had capsules about 1·5 cm. long and apparently deformed. Occasionally a few stems grew just outside the gardens, but I fancy they came under, not over, the garden wall. *Epilobium hirsutum* is sometimes cultivated, but is less popular.

The Bron Loch, in Dunrossness, proved interesting; an old record of *Carex limosa* was confirmed here, and gatherings of species of *Potamogeton* and *Utricularia* were made for future identification. Large quantities of fruiting *Scilla verna* grew on the turfy headlands of Dunrossness, but *Endymion non-scriptus* was not seen on any excursion. At Grutness, the Shetland terminus of the Fair Isle boat, were seedlings of *Mertensia maritima*. Our final expedition was to Garths Ness, near Quendale, a reported locality for *Eryngium maritimum*, but this rocky promontory never looked a likely place, so we were not surprised at its absence.

I hope that the results of our activities in Shetland prove helpful to Messrs. Scott and Palmer in their work on the projected Flora; they will, I know, be grateful for any assistance botanists can give. Perhaps I could suggest that intending visitors might pay special attention to the distribution and status of the species of *Cochlearia* and *Myosotis* in Shetland; plants of the former genus were scarcer than I had expected, while some of the *Myosotis* looked at raised taxonomic doubts.

In view of the considerable number of plant records made by non-botanists in recent years, it is pleasant to announce that this party seems to have added one, the Large White, to the list of butterflies breeding in Shetland.—R. Mackechnie.

AUGUST 27th and 28th, 1960. BARNARD CASTLE.

Leaders: Miss C. M. Rob and W. A. Sledge

This joint meeting of the B.S.B.I. and the Botanical Section of the Yorkshire Naturalists' Union was held to investigate the Stainmoor area. Records from this large moorland district are few, and it was hoped the ground would be interesting.

Unfortunately, the late date was unavoidable, and had it been possible to have the meeting a month earlier, more plants would have rewarded those who attended.

In all, about twenty members were present on one or both days; the weather was fairly good, but rain and low cloud prevented a very extensive visit to Shackleborough Moss, and none of the rarer plants were seen.

On Saturday's excursion, to Deepdale, which is on Millstone grit, *Calluna vulgaris* was in perfect condition; other plants noted were *Empetrum nigrum*, *Rumex tenuifolius*, *Viola lutea*, *Vaccinum oxycoccos*. From Deepdale, the Pennine way was followed to the Greta Valley where the limestone occurs, and the railway and river bank to Bowes. The hybrid Woundwort, *Stachys* × *ambigua*, was seen near the car park at Bowes. *Rumex longifolius*, both *Geranium pratense* and *G. sylvaticum*, *Mentha rotundifolia*, *Selaginella selaginoides* and *Carduus acanthoides* were also noted, the latter at 1,028 ft.

A few small plants of *Cryptogramma crispa* in stones by the railway, about a mile north of Bowes, were an unexpected find. Although plentiful on the Teesdale basalt it is rare elsewhere in v.c. 65. *Myosotis brevifolia* occurred both in Deepdale and Baldersdale, in small quantity.

The visit to the well known station for *Saxifraga hirculus* was disappointing, for in spite of hard searching no sign of even a fruit was seen. As there were six flowers the week previous, much time was spent searching before going on to Shackleborough. Here it was very obvious that an earlier visit would have been more rewarding. The object of going to this area was to try and refind the locality for *Carex limosa* recorded by William Fogg more than 50 years ago. Some very promising ground was seen but no sedges.

Although few new plants were added to the total for the 10 km. square, the meeting was well worthwhile, as some almost unworked ground was examined.—C. M. Rob.

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†SEPT. 17th to 20th, 1960. AUTUMN CRYPTOGAMIC FORAY AT GARTH.

Leader: D. M. Henderson

The cryptogamic foray held at Garth, Fortingal, on the week-end 17th-20th September, was attended by only five members. A visit to the Black Wood of Rannoch in glorious weather on the first day produced a good collection of the commoner end-of-season agarics of northern pine-woods and many of the characteristic bryophytes. Wet weather hampered operations on the second day, but a happy forenoon was spent in the beech woods at the foot of Glen Lyon. Here the prize was a fine group of the rather uncommon Ascomycete, *Spathularia flavida*.—D. M. Henderson.

FIELD MEETINGS, 1961*

†MAY 27th, 1961. STIRLINGSHIRE

Leader: Miss E. P. Beattie

This week-end turned out to be a rather unhappy choice as it followed a holiday week-end and most members of the party felt that they could only spare the Saturday.

The purpose of the meeting was to collect records for the Maps Scheme and to keep an eye open for localities for quite a number of "homeless" records.

As the party was a small one (five) and only for one day, we decided to concentrate on the Stirling square as many common plants had not been scored off the card. Quite a large number of different habitats were visited and although each contributed a few "wanted" plants, none was of special interest. A flying visit was also paid to Flanders Moss to see *Ledum groenlandicum* in bloom but, unfortunately, owing to the unusually early season, it was past its best—E. P. Beattie.

†JUNE 3rd to 10th, 1961. ISLE OF ARRAN

Leader: Miss U. K. Duncan

Professor J. H. Balfour was probably the first to make a study of the flora of Arran in connection with the unusually varied geogical formation of the island, and his papers on the subject, published in *The Trans. and Procs. of the Botanical Society of Edinburgh, The Phytologist* and a small volume entitled "*Botanical Excursions made by Professor John Hutton Balfour in 1846-1878*", have formed the basis of subsequent work done by botanists visiting the island, including the three members who attended the field meeting there in June 1961 (though they had no intention of emulating the Professor's lengthy walks).

We found that the areas singled out by him were without doubt the richest in the island. They lie chiefly round the coast, and the more notable plants can be placed roughly in four groups according to habitat:—

1. River gorges and waterfalls (*Sorbus arranensis, S. pseudofennica, Osmunda regalis,* now rare, *Hymenophyllum wilsonii* and *Juniperus communis* subsp. *nana*). 2. Damp shady rocks near the coast (ferns in abundance, including *Dryopteris aemula* and *Hymenophyllum tunbrigense*). 3. Sandy, shingly and rocky sea-shores (*Crambe maritima, Rhynchosinapis monensis, Raphanus maritimus, Ligusticum scoticum, Mertensia maritima, Calystegia soldanella* and *Polygonum raii*). 4. Sea-cliffs (*Geranium sanguineum* and *Asplenium marinum*). A visit later in the summer would, of course, add many more.

*Field Meetings arranged by the Committee for the Study of the Scottish Flora are indicated by †

The inland bogs, so far as we explored them (and one should remember that there are at least sixty square miles of moorland in North Arran alone that are inaccessible by road) yielded nothing more interesting than *Drosera anglica*, found occasionally along with the much more abundant *D. rotundifolia* and an intermediate taxon with, so far, no sign of inflorescence, which may be the hybrid *D.* × *obovata*. Both this and *D. intermedia* are to be expected in Arran, but we were too early in the season to be able to work out the distribution of these species in the island.

When the others had left, the surviving member of the party climbed Goat Fell, the highest point in the island, but returned without having seen the famous view of Ireland and the Outer Hebrides and with nothing more interesting than *Alchemilla alpina*, as mist and rain hindered her activities. Except for this venture, the "inner igneous circle" was avoided, as advised by another nineteenth century botanist, W. Ivison Macada , "except by those having a perfectly good head".

Plants belonging to various critical genera were collected with enthusiasm throughout the meeting (including *Rubi*, for which the island used to be botanically famous), but in several cases it was found to be too early in the season to get mature specimens. Finally, many additions were made during this busy week to the grid squares, although a good start had already been made to mapping the area. But this work seems endless. Can it ever be said with confidence that any square has been completed?

During the week about six new vice-county records were made.—URSULA K. DUNCAN.

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†JUNE 17th, 1961. STOB GARBH [Near Am Binnein]

Leaders: DENIS RATCLIFFE and J. G. ROGER

This was a joint meeting of the C.S.S.F., the Botanical Society of Edinburgh, the Edinburgh Natural History Society and the Andersonian Naturalists of Glasgow, and was attended by about 40 people. The weather allowed the more energetic members to reach the southern slopes of Stob Garbh from Inverlocharig, near Loch Doine, but from lunchtime onwards it was unpleasantly wet. Attention was confined principally to a steep, broken, rocky area, the Creagan Dubha, which proved to be of a hard, rather acidic rock with occasional slightly richer patches. The more interesting plants of the better rock ledges and other places at 1700-2000 ft. were: *Saussurea alpina, Trollius europaeus Polystichum lonchitis, Salix arbuscula, Asplenium viride, Galium boreale, Draba incana, Oxyria digyna, Silene acaulis, Sibbaldia procumbens* and *Armeria maritima.* In the few base-rich wetter places were: *Tofieldia pusilla, Saxifraga stellaris, Juncus triglumis* and *Saxifraga aizoides.*

On the higher acid ground, above 2,000 ft., *Vaccinium uliginosum* and *Luzula spicata* were fairly common.

Of bryophtes few were collected but *Philonotis calcarea* and *Orthothecium rufescens* were noted.

Increasingly wet weather finally drove a much-reduced, bedraggled party back to the vehicles about 5.0 p.m.—DENIS RATCLIFFE.

†June 30th to July 2nd, 1961. GLENALMOND, PERTHSHIRE
Leader: DEREK A. RATCLIFFE

A small party of five members met at Crieff to examine the hills around Glenalmond and Loch Earn, a district worked by Victorian botanists but much neglected in recent years. Attention was focussed on the montane flora, in the hope of adding to the known species and confirming certain interesting old records.

SATURDAY, 1st JULY. BEN VORLICH, LOCH EARN

The approach was made from the north side, by Glen Vorlich, passing through damp birch and alder woods to the grasslands and flush bogs of the lower slopes. *Juncus acutiflorus* bogs were widespread, and many flushed sites had an abundance of sedges, mainly *Carex demissa*, *C. echinata*, *C. hostiana*, *C. nigra*, and *C. panicea*. A few calcareous open and stony flushes had *Saxifraga aizoides*, *Eriophorum* species and *Eleocharis pauciflora*, and *Polygonum viviparum* was found in the richer grassland. With rising altitude the ground became more heathery, and *Listera cordata* was found on a damp *Calluna* slope. On the gently inclined north spur of Ben Vorlich, patches of *Calluna*—*Eriophorum vaginatum* blanket-bog produced *Rubus chamaemorus* in abundance.

Above 2,000 ft. *Vaccinium myrtillus* communities became dominant, but with patches of grassland locally. The shallow north-east corrie was fed by extensive springs and rills which evidently came from calcareous substrata and along with the adjoining intermittently flushed grasslands were found to be rewarding. In wet, open ground were *Juncus triglumis*, *Saxifraga oppositifolia*, *S. aizoides*, *S. stellaris*, *Epilobium anagallidifolium*, *E. alsinifolium*, *Armeria maritima*, *Cochlearia alpina*, *Thalictrum alpinum* and *Equisetum variegatum*, while the rather drier, closed swards had an abundance of *Silene acaulis*, *Saxifraga hypnoides*, *Cerastium alpinum* and grazed-down taller herbs such as *Alchemilla glabra* and *Geum rivale*. *Carex capillaris* was present sparingly.

The party moved on to the rugged slopes beyond, finding that many of the small, broken crags were formed of calcareous schist and had quite a rich flora. The whole face was rather dry with an absence of large, damp, ungrazed ledges, so that tall herb communities were poorly developed, although some of the characteristic species, such as *Trollius europaeus*, *Geranium sylvaticum* and *Angelica sylvestris*, were present. The dry rocks held some of the above-mentioned montane species in quantity, along with *Sedum rosea*, *Oxyria digyna*, *Saussurea alpina*, *Polygonum viviparum* and *Galium boreale*. Some species were found only in small quantity, probably due to the limited extent of suitable habitats, and these included *Polystichum lonchitis*, *Asplenium viride*, *Draba incana*, *Saxifraga nivalis*, *Cardaminopsis petraea*, *Antennaria dioica*, *Arabis hirsuta*, *Helictotrichon pratense*, *Botrychium lunaria* and *Luzula spicata*. More acidic rocks yielded *Salix herbacea*, *Carex bigelowii*, *Juncus trifidus* (rare) and some particularly fine tufts of *Hieracium holosericeum*. *Alchemilla alpina* was in profusion in a wide range of habitats, and *Empetrum hermaphroditum* occurred plentifully in the *Vaccinium* heaths.

Time did not allow examination of the promising-looking corrie of Stuc a' Chroin to the south-west, but a rock on the slope facing the N.E. crags of Ben Vorlich, yielded *Potentilla crantzii*, and *Salix nigricans* was found in Glen Vorlich on the return journey.

Sunday, 2nd July. Ben Chonzie

Armed with a permit and the key to a locked gate, the party motored to Glen Turret Lodge as a starting point. The way lay over an extensive system of heathery moraines filling the upper part of the glen, and *Listera cordata* was soon spotted amongst damp *Calluna* heath. Boggy hollows between the moraines contained either the poor *Carex echinata—Sphagnum* type of flush bog, or the richer kind with *Carex hostiana* and *C. demissa*. Stony streams and their alluvial banks had quantities of *Saxifraga aizoides*, *Alchemilla alpina* and *Epilobium nerterioides*, and a few plants of *Sedum villosum* were seen; while the shallow blanket bogs of more level ground were thickly studded with *Rubus chamaemorus*.

Little time was lost in reaching the extensive cliffs which surround the head of Glen Turret, and the party was rewarded by a hunting ground strongly reminiscent of the richest Breadalbane hills. Most of the outcropping rock was a highly calcareous schist and supported a wealth of calcicolous vegetation. Although the cliffs were rather dry, the numerous broad ledges had well-developed tall herb communities with *Geum rivale*, *Trollius europaeus*, *Geranium sylvaticum*, *Angelica sylvestris*, *Valeriana officinalis* and *Filipendula ulmaria*. Most of the montane species seen on Ben Vorlich were present, often plentifully, and the abundance of *Polystichum lonchitis*, *Potentilla crantzii*, *Draba incana* and *Viola lutea* was particularly striking. *Saxifraga oppositifolia*, *S. hypnoides*, *S. aizoides*, *Silene acaulis*, *Galium boreale*, *Alchemilla alpina*, *Oxyria digyna*, *Arabis hirsuta*, *Sedum rosea*, *Helictotrichon pratense* and *Asplenium viride* were all plentiful. A few species such as *Cerastium alpinum*, *Juncus triglumis* and *Thalictrum alpinum* were less frequent than on Ben Vorlich, and some expected plants, notably *Saxifraga nivalis*, were not found.

Ben Chonzie produced a number of species not encountered on Ben Vorlich. The non-viviparous form of *Poa alpina* was an interesting find, locally plentiful, and there was a good deal of *Silene maritima*, *Rubus saxatilis*, *Anthyllis vulneraria* and *Polystichum lobatum*. The rare or local species included *Carex atrata*, *C. vaginata*, *Saussurea alpina*, *Salix lapponum*, *S. arbuscula*, *Tofieldia pusilla*, *Geranium lucidum*, *Galium pumilum*, *Arabidopsis thaliana*, *Asplenium ruta-muraria* and *Woodsia alpina*. A record which we failed to confirm was that of *Veronica fruticans*, but the day ended appropriately with the re-discovery of the real gem of this hill, *Oxytropis halleri*. A strong and flourishing colony of this plant, mostly in full flower and really beautiful in its dark rock setting, was found on the very last piece of rock to be examined.

The week-end was judged by all to be a rewarding one. Apart from the simple pleasure of seeing so many interesting plants in their native haunts, there was the satisfaction of confirming most of the old records, and of finding several new plants on both hills.—D. A. Ratcliffe.

†JULY 1st to 8th, 1961. EASDALE AND THE GARVELLACHS

Leader: Miss C. W. MUIRHEAD

On Saturday, July 1st, four members of the Society met at Easdale, on the Isle of Seil (to be joined the next day by the fifth) to discuss what seemed to be a highly optimistic programme. The islands in the Firth of Lorne appeared to be practically unknown botanically and it was proposed to visit, weather permitting, about eight of them, including the Garvellachs, for the purpose of recording. At the outset we realised that it might be quite impossible to land on the Garvellachs, in particular, as they lie about six miles out from the mainland. The leader had, however, previous assurance from Mr. MacLachlan of Cullipool that he would take us to any island and never had any serious doubt about the matter. We did, in fact, visit seven of these islands and the following approximate numbers of species were recorded from them (as far as at present identified):—

Isle of Seil	c. 300 spp.
Easdale Island	136 spp.
Luing	110 spp.
Lunga	162 spp.
Garbh Eileach	216 spp.
Eileach an Naoimh	145 spp.
Dùn Chonnuill	100 spp.

The only island previously visited was that of Seil and our records brought the number of species known in this 10 kil. square almost to 400.

SUNDAY, 2nd JULY, was a really beautiful day, sunny and extraordinarily clear. Too clear, as we later discovered, but Mull, Jura and all the small islands seem enchanted. We explored An Grianan and Sloc an t'Siomain, the bay to the north of Ellanbeich, and saw *Vicia sylvatica* in quantity on the cliffs with *Eupatorium cannabinum, Hypericum androsaemum, Arabis hirsuta, Sedum rosea, Agrimonia eupatoria* and *Circaea intermedia.* There is an interesting mixture of rock at Easdale, with slate at Ellenabeich, basalt cliffs above the village and limestone outcropping on An Grianan and about the bay. In the afternoon we crossed the ferry to Easdale Island which is a very small island to the west of Seil, less than half a mile long, almost entirely of slate and extensively quarried. Here we saw *Euphrasia occidentalis, Orobanche alba, Hieracium* spp., *Vulpia bromoides, Botrychium lunaria* and only two species of *Carex, C. flacca* and *C. leporina,* in spite of some search.

MONDAY, 3rd JULY, ISLE OF LUING

During the night the weather broke in a most appalling manner, which most of us could not help hearing, and, in the ensuing gale, all thought of the outlying islands was out of the question. It was possible to cross the ferry to the Isle of Luing which lies south of Seil Island, even if we were reduced to recording from the car. Luing is an island mainly of slate, very green, with low small hills, about 5 miles long, with some cultivation at the southern end, but the odds were against us and we did no justice to the island at all. We went down to Toberonochy, which even in the deluge was a charming village, half buried in its own

fuchsias, then crossed to Black Mill Bay, where there is only one house and a telephone box. Here the weather undoubtedly won, and with Lunga and Scarba looming tantalisingly close through the driving rain we were forced to retreat while still in comparatively good order, with about 100 species recorded for the island.

Tuesday, 4th July, Isle of Lunga.

Although the wind was still high and the Garvellach Islands still not to be contemplated, Mr. MacLachlan, sen., assured us cheerfully that we could easily make Lunga, and as we left Cullipool and slipped quietly through the islets of Poll Gorm the clouds began to lift. There were seals on the skerries, and with Lunga ahead, and the black cliffs of Scarba one could feel the island spell beginning to take hold. Lunga appears to be an island disintegrated and now consists of several pieces, like a jig-saw. About 1½ miles long and varying in width, the rock is mainly slate and quartzite with calcareous shales. We landed on the rocks below the only cottage, now uninhabited, and saw *Corydalis claviculata* in bracken nearby. In the marshy trickle above the cottage, *Ranunculus hederaceus*, *Carex pilulifera*, *C. demissa*, *C. echinata*, *C. pulicaris*, *C. leporina* and *Chara delicatula* var. *barbata* were seen, and we crossed the moorland to Tobar Challuim Chille, a small lochan on the western shore with *Eleocharis multicaulis* and very fine *Carex curta*. The vegetation of the rocky bays on the west was rank and a curious mixture of acid-loving and calcicolous species, particularly evident in the bryophytes, and the coast from here round to Mhor Fhir should repay a closer investigation. We crossed Bidean Iolaire to the east of the island again, past a ruined croft with a single tree of *Prunus avium* and back to the boat where we discovered that Mr. MacLachlan had also been plant collecting in our absence, in self-defence perhaps, and had found a fine specimen of white *Erica tetralix*. A rapid trip across the bay to some wooded rocks produced *Carex laevigata* and *Chrysosplenium oppositifolium*, a species quite rare in these islands. By this time the wind was blowing up again and we landed at Cullipool soaked and stiff with salt, but quite ready for more sea and still more islands.

Wednesday, 5th July, Garbh Eileach

Although the weather looked distinctly threatening still, it was good to hear the cheerful voice of Mr. MacLachlan on the telephone assuring us that we would surely make Garbh Eileach to-day, although not the Holy Isle, and we broke all records to Cuan Ferry and Cullipool. The wind was falling and the sail to the Garvellachs past Fladda and Belnahua a sheer delight. Belnahua is a tiny shell of an island, slate, but practically quarried away and no longer inhabited.

The Garvellachs, or Isles of the Sea, are a chain of islands lying between Mull and Scarba, about four and a half miles west of Luing. The two largest islands, Garbh Eileach and Eileach an Naoimh (the Holy Isle) are about 1¼ miles long with two smaller islands, A'Chùli and Dùn Chonnuill, less than half a mile in length, with numerous outlying rocks and skerries. The geological structure is extremely interesting, with quartzite and limestone rocks predominating and with a line of cliffs

mainly of limestone along the N.W. shore of the larger islands. After the rather starved vegetation of the slate rocks of Seil, the general luxuriance of the vegetation is striking and the alkaline marsh in the centre of the Garbh Eileach unusually rich in species. Large clumps of *Carex paniculata* and *Molinia caerulea* predominate and altogether 17 species of *Carex* were seen on the island, including *C. lepidocarpa* and *C. remota*. In a small rocky copse *Epilobium hirsutum* was seen. We crossed to Bealach an Tarabairt, a deep cleft in the limestone cliffs on the west, and saw *Dryas octopetala* and *Draba incana* with *Juniperus communis* subsp. *nana* and *Phyllitis scolopendrium* on the cliffs and *Koeleria gracilis* abundant in dry rocky turf. While following the cliff top to the north we found we were being observed with considerable interest by the island herd of goats. By now the day was sunny and the views of Mull and the nearby islands and mainland quite wonderful. At the north eastern end of Garbh Eileach the cliffs are wooded and the vegetation surprisingly luxuriant. *Quercus robur*, *Fraxinus excelsior* and *Betula pubescens* clothed the rocks, with an undergrowth of very tall *Eupatorium cannabinum*, enormous clumps of *Phyllitis scolopendrium* in clefts of rocks with *Rubus saxatilis* and *Hypericum androsaemum*. We had to climb out of the cliff again, unfortunately, and the memory of the unequal struggle with bracken 5-6 ft. high lingers yet, but it was with much regret that we finally tore ourselves away from the island.

THURSDAY, 6th JULY, EILEACH AN NAOIMH AND DUN CHONNUILL

This time the day really did dawn bright and clear and we sailed directly to the Holy Isle, the most outlying of the Isles of the Sea, past A'Chùli, where the sea was booming in a narrow chasm, but otherwise calm, to land at the foot of the limestone cliffs, at the western end of Eileach an Naoimh. It was an excitement to land on such a small, precipitous island and while we consumed sandwiches at the foot of the Clarsach Rock, a magnificent natural archway in the cliff, the seals on the skerries gazed at us in astonishment and swam close in to watch. In a minute brackish pool we saw *Potamogeton berchtoldii* and an unusual form of *Nitella opaca*, with *Schoenus nigricans* and *Samolus valerandi* in the turf. The island is narrow and slopes steeply into the sea from the cliffs on the north west. On the rocky cliff top *Draba incana* was growing with *Arabis hirsuta*, *Juniperus communis* subsp. *nana*, *Koeleria gracilis* and *Rubus saxatilis*. *Salix repens*, which appears to be rare in these islands, was seen once, and *Coeloglossum viride* here and there, but *Dryas octopetala* strangely enough appeared to be absent. As we came down to the ruins of St. Columba's Chapel *Saxifraga tridactylites* was growing in rough boulder scree with *Agrimonia eupatoria*. But perhaps the most interesting of all was the solitary plant of *Inula helenium* growing in the ruins of the Chapel, a relic of cultivation on a small island so long uninhabited and now so seldom visited. Back to the boat we could see no signs of our long-suffering boatman and thinking rather anxiously of the Cuan Ferry we searched and called until the tarpaulin in the bottom of the boat stirred slightly, to uncover a sleeping form, which was suddenly galvanised into action. As we sailed from the Holy Isle we could see the beehive cells of the monks on the rocks, and hear nothing but the gulls and the oyster-catchers and the sound of the sea.

By now time was extremely short but the temptation to land on Dùn Chonnuill in a calm sea irresistible. The island is very small and sheer on all sides and there was only time for a rapid scramble round without climbing to the fort on the cliff top, unfortunately. *Koeleria gracilis* is abundant with *Mercurialis perennis* and *Agrimonia eupatoria*, and *Ligusticum scoticum* and *Asplenium marinum* were growing on the sea rocks with very fine hart's-tongue fern. *Stellaria holostea*, apparently rare in the Garvellachs, was on the cliffs with *Arabis hirsuta*. But it was no good, we had to be content with less than an hour on Dun Chonnuill and reluctantly leave the Garvellachs with A'Chuli still unvisited. It was a day that we will all remember, however, and the now familiar sail back to Cullipool to the accompaniment of Gaelic songs not least of all.

7th JULY, SEIL ISLAND

Once more the weather was in a decline and our immediate surroundings practically obliterated by rain and mist. Two of our members had to leave, and as it was not advisable to cross to the island of Shuna as planned, we set off to explore the north end of Seil Island beyond Ardencaple House. At Clachan Bridge, *Erinus alpinus* had finished flowering, and in the salt-marsh on the mainland side, *Carex extensa*, *Blysmus rufus*, *Sparganium erectum* subsp. *neglectum* and *Calystegia pulchra* were found. Below Ardencaple House in the slate debris of the old quarries we saw *Juniperus communis* itself, for the first time, with *Cotoneaster microphylla* escaping from the gardens of ruined cottages and *Euphrasia brevipila* and *E. confusa* in the turf.

Although this was a slightly unusual kind of field meeting and very much at the mercy of circumstance and elements quite beyond our control, we managed to visit seven out of the eight islands originally planned, if not according to time-table. This, however, only made it more interesting because until about 9 a.m. no-one could say with any certainty just where we would be that day. In addition to the lists made for each island at least 14 species new to either v.c. 98 or 102 were recorded (excluding *Hieracium* spp. not yet determined).

I should like here to thank all the members of the party for their absolutely unfailing support at all times, and cold courage when necessary. Whatever the landing was like, we all survived dry, and in particular we are grateful to Dr. Denis Ratcliffe for his transport and for the fact that not once did we miss the last ferry at Cuan.

But above all, we should like to thank Mr. MacLachlan (who navigated) and his father for all they did to help us and just for adding so enormously to the enjoyment of seeing these islands. With or without the Gaelic, the mere sight of them both was an assurance that the day would be good.—C. W. MUIRHEAD.

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†JULY 7th to 13th, 1961. MULL

Leader: DENIS RATCLIFFE

The purpose of this meeting was to investigate areas of the Isle of Mull previously little visited by botanists. Several cars were available so that the quite considerable distances involved offered no problem.

Ten people attended and were accommodated in the Salen area.

meeting at the Glen Forsa House Hotel.

Glen Cannel was visited, in rain, on Saturday, July 8th. This is a long glen running north to south through a complex area of volcanic rocks. Near the head of the glen several areas of cliff were investigated, but the rock proved to be mostly rather acid, and *Oxyria digyna* the only plant of note, though the bryophytes were of some interest. *Pinguicula lusitanica* was frequent and *Eleocharis multicaulis* occasional on boggy ground, and in drier grassland below the cliffs a few leaves of *Ranunculus auricomus* were noted. July 9th was showery and the party spent the morning on the shores of Loch na Keal and the afternoon on the northern end of the Ardmeanach peninsula. Woodland near the Loch produced *Dryopteris aemula*, plentiful *Hymenophyllum wilsonii* and an abundance of bryophytes, in evidence of the extremely oceanic climate. The woodland was very degraded, almost entirely birch except in gullies, and with little, if any, regeneration. The Ardmeanach peninsula was also visited on July 11th, a fine sunny day, and the combined visit produced several interesting plants. This peninsula is a plateau of Tertiary basalt lavas, surrounded by cliffs facing the sea, which here and there are composed of older, occasionally calcareous, rocks. The lava is also slightly calcareous in places. There are extensive areas of bare rock and wet gravelly material, both almost devoid of vegetation. On the latter, *Koenigia islandica* is in places abundant, associated with few other species. *Juncus triglumis* and *Galium boreale* are locally frequent and *Cherleria sedoides* and *Sedum villosum* were each found in single isolated patches. *Dryas octopetala* was found in several places on cliff ledges facing the sea, and nearby, *Sorbus rupicola*. On inland cliffs, *Saussurea alpina* was frequent, and a single plant of *Polystichum lonchitis* was noted.

On the morning of July 10th, woodland near Craigmure produced *Dryopteris aemula*, *Hymenophyllum tunbrigense*, *H. wilsonii* and several western bryophytes. This was a mixed woodland on steep slopes, little grazed or disturbed. *Blysmus rufus* was seen in a salt-marsh nearby. The party progressed to Loch Buie and separated widely. In shady woodland in a ravine, *Dryopteris aemula*, *Hymenophyllum tunbrigense* and *H. wilsonii* were again found, and, on the hills to the south, *Carex paupercula* was discovered on boggy ground on the watershed, and in a damp hollow on the southern slopes *Lycopodium alpinum*, the latter being rather out of its usual habitat.

The last whole day, July 12th, was spent in visiting, in heavy rain, Carsaig Bay on the south coast of the Ross of Mull. Here there is a variety of rocks older than the tertiary basalt. In very wet woodland, on a steep slope, *Carex pendula* was found, and, on the drier, rocky slopes, *Carlina vulgaris;* these finds confirmed previous records made by a 1939 B.S.B.I. meeting, of which the voucher specimens were lost. Nearby, the most unexpected find of the week was made—*Erigeron acris*, otherwise known in Scotland only from Banff and Angus.

The morning of the day of departure was spent in torrential rain at the north end of the island, where *Vicia sylvatica* (Quinish), *Glyceria declinata* (Quinish) and *Sparganium angustifolium* (Loch Peallash), were interesting finds.—DENIS RATCLIFFE.

†JULY 21st to 23rd, 1961. SELKIRKSHIRE

Leader: Miss E. P. Beattie

The purpose of this meeting was twofold, firstly to augment the list of species already recorded for the squares in lowland Selkirkshire, and secondly to try and find localities for a number of "homeless" records made in the somewhat distant past. The latter were mostly aliens. Of the five persons attending the meeting, three were locals.

On the Saturday morning, the party was divided into two, and search was concentrated on the area to the west and south of Galashiels, taking in a portion of the rivers Tweed and Yarrow. Although quite a number of fairly common plants were scored off the cards, nothing of exceptional interest was found. We had our picnic lunch in Bowhill Estate and after it visited one of the areas where Dr. M. Bradshaw in 1956 found the Russian alchemilla, *Alchemilla tytthantha* Juz. It is quite distinctive, and occurs near the head gardener's house in considerable abundance. Unfortunately, the massed effect was spoilt, as the area had been scythed a few days previously, so that there were not many whole plants. We next visited Ettrickbridgend, but all alien species have disappeared from that area. Many stretches of the River Ettrick were examined in trying to find localities for the "homeless" ones, but nary an alien did we see—not even at Selkirk sewage works.

On the Sunday, we first explored the area south of Galashiels, taking in Faldonside House. This was the home of the botanist, the late Mr. W. B. Boyd, who, in the course of his lifetime, enriched his garden with many botanical treasures, gathered during his extensive wanderings throughout Scotland. His daughter had died in the spring of 1961, aged 90, and a niece from London was looking after the house until a new owner could be found. She invited us to have a look round the garden. It certainly was very much the treasure-trove garden of a botanist, but of the large collection of sedges which Boyd showed Druce in August 1910, all that we could discover was *Carex pendula*. In the nearby wood a number of plants had become naturalised (including *Campanula persicifolia, Lilium martagon, Geranium pyrenaicum* (with white flowers) and *Geranium robertianum* (with white flowers). It is strange how so many gardeners, even botanical ones, have a weakness for the white variety.

A visit was paid to Galashiels sewage works Here, a few of the commonest wool aliens were found—*Medicago arabica, M. polymorpha, Erodium moschatum, Xanthium spinosum, Apera spica-venti* and a few others. The loveliest sight of all was afforded by the ultra-large silken heads of that beautiful grass, *Polypogon monspeliensis,* agleam in the sun.

Although quite a number of additions had been made to the Galashiels and Selkirk squares, it is sad to have to record that the alien flora of Tweedside is coming to a close. Galashiels has expanded and there is a housing scheme adjacent to the sewage works, with the result that it has been necessary to change the town's sewage system

from a liquid one to a solid one. A visit later in the season showed that work has already begun. Thus the saga of "The Adventive Flora of Tweedside" has, after all these years, unfortunately ended.—E. P. BEATTIE.

JULY 29th to 30th. STAFFORDSHIRE

Leader: E. S. EDEES

The purpose of this meeting was to study representative species of Staffordshire *Rubi* against a background of typical Staffordshire scenery. The party of 22 met on Friday evening at the Biological Department of the University College of North Staffordshire for an introductory talk by the leader, and on Saturday spent a full day exploring the countryside between Newcastle and Eccleshall. On Sunday, we went to Back Hillswood near Leek and concluded the meeting with a visit to the secluded home of Mr. G. A. Lovenbury, a prominent Staffordshire naturalist, at Bradnop. The following *Rubi* were seen during the week-end in addition to half a dozen species which cannot yet be satisfactorily named: *Rubus scissus, R. sublustris, R. calvatus, R. carpinifolius, R. nemoralis, R. durescens, R. lindleianus, R. muenteri, R. macrophyllus, R. obesifolius, R. polyanthemus, R. cardiophyllus, R. lindebergii, R. sprengelii, R. vestitus, R. eifeliensis, R. criniger, R. daltrii, R. taeniarum, R. echinatoides, R. rubristylus, R. pallidus, R. disjunctus, R. apricus,* and *R. dasyphyllus.*

Two of these, viz., *R. disjunctus* and *R. apricus*, may not have been correctly determined, but we saw the plants to which the late W. C. R. Watson gave these names during his visit to Staffordshire in 1950.—E. S. EDEES.

AUGUST 12th-19th, 1961. LAKELAND

Leaders: S. JEEVES and C. T. PRIME

Altogether twenty-four members attended this meeting, which was held at the Council for Nature's Holiday Centre at Brantwood, near Coniston.

On the first day, Sunday, August 13th, the party made for the mountains and explored Tilberthwaite Ghyll, where some of the common mountain species, e.g., *Saxifraga aizoides, Pinguicula vulgaris, Festuca vivipara* and many others were to be seen. In the afternoon, Windermere was visited, where a rich lakeside flora was found, including an interesting alien loosestrife, *Lysimachia terrestris* which seems to be spreading in the area. Other lakeside species included *Juncus tenuis, Scirpus lacustris, Comarum palustre, Lysimachia vulgaris* and, rather surprisingly, *Serratula tinctoria*, as well as many others. At the head of the lake, a few plants of *Juncus filiformis* were seen, still holding their own where they have been known for some years.

On Monday and Tuesday, we were remarkably fortunate in having Canon Hervey as Leader, and the Monday morning was spent on Humphrey Head, where we saw *Veronica hybrida* growing to perfection, together with many other interesting limestone species, e.g., *Sorbus lancastriensis, Helianthemum canum,* and *Sesleria coerulea.* Despite continued search,

we did not see *Linosyris vulgaris*. The marshes at the foot of Humphrey Head yielded amongst other species: *Carex extensa*, *C. distans*, and *C. disticha*, as well as *Salicornia ramosissima* and *S. europaea*. Later on the same day, some members of the party were able to penetrate the fastnesses of Walney Island, and to see a fine sand and shingle flora, including *Mertensia maritima*, but time only allowed them to make but a very short stay.

Tuesday was the highlight of the week, for we were able to see most of the alpines of Helvellyn. Under Canon Hervey's intrepid leadership, members scrambled up screes, made traverses across crags, and slid down slopes which they would never have attempted by themselves. It was all well worth it, for we saw five species of Saxifrage, *Sedum rosea*, *Alchemilla glabra*, *A. alpina*, *Saussurea alpina*, *Silene acaulis*, *Salix herbacea*, *S. lapponum*, *Crepis paludosa*, *Carex bigelowii*, *Hieracium holosericeum* and *H. anglicum*. On this day, the weather was beautiful and we were able to enjoy superb mountain views, and to have their chief features pointed out and explained by Canon Hervey.

Wednesday was spent in Roudsea Wood, now under the control of the Nature Conservancy. The interests of this classic site were expounded under the guidance of the forester-in-charge. We were able to pass from a limestone quarry, in which, incidentally, grew *Erinus alpinus* as well as a characteristic flora, to a peat moss growing *Andromeda polifolia* and *Vaccinium oxycoccos*, within a matter of yards. Fen marsh with *Carex flava*, and high oak wood were also within the area of Roudsea Wood, and towards the Leven estuary it was possible to see a small alder-willow carr showing stages in the succession from salt-marsh to fen. Time was left for a quick visit to Esthwaite North fen, where a transition from open water to woodland was seen. A rich marsh flora, including *Ranunculus lingua* and *Osmunda regalis*, was found, as well as many other typical species.

On Thursday, the party visited Blea Tarn which was fringed with *Lobelia dortmanna*, and nearby *Drosera rotundifolia* and *D. intermedia* were growing side by side. Other interesting plants seen in this area were *Littorella lacustris*, *Carex demissa*, *C. hostiana*, *C. dioica*, *Rhynchospora alba*, *Menyanthes trifoliata*, *Mimulus guttatus*, *Isoetes lacustris*, and *Sparganium minimum*. On towards Hell Ghyll the following were found: *Hymenophyllum wilsonii*, *Asplenium viride*, *Thelypteris phegopteris*, *Lycopodium clavatum*, *L. alpinum*, *L. selago*, *Selaginelia selaginoides*, as well as many flowering plants previously seen during the week.

On Friday, the party visited the limestone of Cunswick Scar, where the species seen included *Convallaria majalis*, *Alchemilla vestita*, *A. xanthochlora*, *A. glabra*, *Galium pumilum*, *Minuartia verna*, *Polystichum lobatum* and *Dryopteris dilatata*. The damp wood below the Scar yielded *Botrychium lunaria*, *Athyrium filix-foemina*, while in Cunswick Tarn and its immediate surroundings the party ended by finding such interesting plants as *Cladium mariscus*, *Parnassia palustris*, *Pedicularis palustris*, *Trollius europaeus*, and *Primula farinosa*.

The Society's best thanks are due to Canon Hervey who gave us two wonderful days, and to Dr. Dalby, who took over the leadership of the party when the official leader was called away, and to Mr. S. Jeeves who enlivened the evenings with beautiful slides of the neighbourhood and with colour films of the Oxford and Cambridge expedition to central South America.

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†SEPTEMBER 30th to OCTOBER 2nd, 1961. CRYPTOGAMIC FORAY AT GARTH

A report of this Meeting appears in the *Trans. Bot. Soc. Edinb.*, **40**, 1962.

OCTOBER, 7th 1961. AN ALIEN HUNT IN NORTH LONDON

Leaders: J. G. Dony and D. H. Kent

No less than 63 members and friends met at Rickmansworth station, and proceeded by coach and private cars to the Rickmansworth U.D.C. refuse-tip. Among the more interesting plants seen there were *Chrysanthemum segetum, Medicago polymorpha, Cannabis sativa* and *Lolium temulentum.*

The party then travelled to Aldenham Reservoir where lunch was taken. The bolder spirits who braved the vast sward of fruiting *Bidens tripartita* to reach the strand of the reservoir, were rewarded with *Eleocharis acicularis, Alopecurus aequalis* and *Mentha* × *verticillata.*

After lunch, the party visited the present refuse-tip of the Bushey U.D.C. where a number of the more common bird-seed adventives were seen, more interesting items included *Nicandra physaeodes* and *Coriandrum sativum.* The next site visited was the now disused tip belonging to the same authority—here were seen a number of established adventives, including *Saponaria officinalis, Impatiens parviflora, Foeniculum vulgare, Artemisia verlotorum* and *Echinochloa crus-galli.*

The final call of the day was to the vast refuse-tip belonging to Uxbridge Borough Council, at New Years Green. Interesting adventives noted here included *Sisymbrium loeselii, Linaria repens, Amaranthus hybridus* subsp. *incurvatus* var. *cruentus, Anthemis tinctoria, Tamarix gallica, Guizotia abyssinica* and *Phalaris minor.*—D. H. Kent.

PERSONALIA AND NOTICES TO MEMBERS

LATHYRUS

Dr. Karin Olsson, Institute of Systematic Botany of the University of Lund, Botanical Garden and Botanical Museum, Lund, Sweden, is working on the taxonomy and cytology of *Lathyrus palustris, L. pratensis* and *L. sylvestris* and would be grateful for living plants, seed and herbarium material.

EPILOBIUM NERTERIOIDES Cunn.

Miss M. B. Gerrans, Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, is studying the distribution of *Epilobium nerterioides* in the British Isles and would be grateful for records, herbarium specimens and fresh material.

POLYGONUM CONVOLVULUS AND P. DUMETORUM

Dr. J. Timson, Hatfield College of Technology, Hatfield, Herts., is studying *Polygonum convolvulus* and *P. dumetorum* and would be grateful for fresh specimens and herbarium material, also ripe fruits of either species.

BUDDLEJA DAVIDII Franch.

D. H. Kent, 75 Adelaide Road, London, W.13, is studying the historical spread of *Buddleja davidii* in the British Isles, and would be grateful for records, especially of the occurrence of the plant in wild habitats before 1939.

SIBTHORPIA EUROPAEA L.

Miss M. B. Gerrans, Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, is studying the distribution of *Sibthorpia europaea* in Britain and would be grateful for records, herbarium specimens and fresh material.

KOELERIA

Dr. J. Ujhelyi, Dèpartement Botanique, Musèe d'Histoire Naturalle, Budapest XIV, Vajdahunyadvár, Hungary, is engaged on a revision of *Koeleria*. He would be grateful for seeds or living plants (in polythene bags) of British species.

NIKITA BOTANICAL GARDEN, CRIMEA, U.S.S.R.

The Nikita Botanical Garden, Crimea, U.S.S.R., is anxious to acquire herbarium material of common British plants. Members who have material which they are willing to give, or who are otherwise disposed to help, are asked to write to John Ounsted, The Headmaster, Leighton Park School, Reading, giving details.

REVISION OF THE FLORA OF BERKSHIRE

It is hoped to collect records for a new Flora of Berkshire during the ten years 1962-1972. The following suggestions are made in case you would like to help.

1. Records will be collected from each 5 km. × 5 km. Grid Square in the county. Lists from any square or squares will be welcomed, but if you wish to concentrate on any particular square it would be helpful to inform a representative of the local Natural History Society of your intention, in order to avoid overlapping.

The Representatives are:

All squares E. of 800: F. Ambrose, Glendora, Cookham Rise.

All squares E. of 550 and W. of 800: Miss K. I. Butler, 18 Morgan Road, Reading (Lists); Mrs. N. Simmonds, Reading Museum, Blagrave Street, Reading (Specimens).

All squares S. of 750 and W. of 550: Miss L. M. Watts, Crumplehorn Cottage, Inkpen Common.

All squares between 750 and 900, and W. of 550: Dr. H. J. M. Bowen, Pomander House, Harwell.

All squares N. of 900 and W. of 550: Mr. Perry, Botany School, South Parks Road, Oxford.

2. B.S.B.I. Maps Scheme cards should be used for collecting records wherever possible. They may be obtained from the representatives mentioned above. It would be useful to mark each name with an abundance symbol; i.e., *a* for abundant, *f* for frequent, *o* for occasional or *r* for rare. Individual cards may be used for rare species.

3. Doubtful records should only be sent in if accompanied by a specimen. It is sugested that records and dried specimens should be sent once a year to one of the representatives listed above. Non-critical plants will be named by them if identifiable, and critical plants will be sent on to the appropriate expert. Postage must be paid by the contributors.

Dated lists of old records would be welcomed by Dr. Bowen, as would locations of Herbarium material. Records of rare species will be treated as confidential, and grid-references to them will not be published in the flora.

FLORA OF NORFOLK

Dr. C. P. Petch and E. L. Swann (282 Wootton Road, King's Lynn, Norfolk), are collecting data relating to the flora of Norfolk. The latter would be glad to receive any information on the subject, particularly with reference to collections (other than those in the National Herbaria) and personal records and notes.

NORTH STAFFORDSHIRE JOURNAL OF FIELD STUDIES

The University of North Staffordshire and the North Staffordshire Field Club have combined to produce a new periodical—North Staffordshire Journal of Field Studies (incorporating the Transactions of the North Staffordshire Field Club).

The first number of the journal was published in 1961, and it will in future appear annually. The annual subscription is £1 5s. (for those

who register for not less than three years, £1 2s. 6d. per annum.) Applications should be addressed to Professor J. M. T. Charlton, Dept. of Classics, University College of North Staffordshire, Keele, Staffordshire.

THE NATIONAL NATURE WEEK

As many members of the Society will know, the Council has decided to support the National Nature Week Exhibition, which is being sponsored by the Council for Nature and which is being held in the Royal Horticultural Society Halls in May this year. Plans for our exhibit, which will illustrate the Society's aims and achievements, are well in hand and the Council has made the necessary financial support available. There are, however, many needs that can only be supplied by the members of the Society themselves. For example, we shall need some good plant portraits, suitable for considerable enlargement, and also a good photo of members on a field meeting or similar activity. If anyone has such a thing, a photo of a field meeting as far back in the history of the Society as possible would be particularly welcome. It could form an interesting comparison with a picture of a recent meeting and serve to emphasise the tradition and continuity of our activities. If any of our keen photographers has suitable facilities and would be prepared to offer his services for making enlargements for the exhibit we should be particularly grateful. Nearer the time we shall be asking for volunteers to help man the exhibit, to deal with enquiries and to (we hope) recruit new members from the crowds that will come to the Exhibition. We shall be delighted to receive offers of help and suggestions of all kinds from members. This is an important undertaking in which all major national Natural History Societies, Naturalists Trusts, etc., together with organisations like the Nature Conservancy and Forestry Commission, are taking part. It should make a very significant contribution towards Conservation and Natural History Education in this country. The B.S.B.I. exhibit is Your exhibit—please give it your enthusiastic support.—John F. M. Cannon, Hon. Secretary, B.S.B.I. Special Exhibition Committee, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

B.S.B.I. DISTRIBUTION MAPS SCHEME

The following items are available, post free, from The Director, B.S.B.I. Maps Scheme, University Botanic Garden, 1 Brookside, Cambridge.

(1) 35 mm. film strips of 100 selected pairs of maps from the *Atlas of the British Flora*, price £2 per set.

(2) Regional Record Cards, price 15/- per hundred.

ARCHIVES OF THE SOCIETY

It has been decided by Council that the Society should collect together pamphlets, articles, photographs and other materials relevant to its history and organization. Any member who possesses items which may be of interest in this connection is asked to contact D. E. Allen, Botanical Society of the British Isles, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

"WATSONIA", Vol. 5 Part 4.

The above part of *Watsonia* was issued to members in November 1962, but owing to a misunderstanding with our printer, an out-of-date membership list was used for the circulation.

Members who joined the Society before 31st December 1962, and who have not received a copy, are invited to write to Mr. E. B. Bangerter, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

B.S.B.I. BOOK SERVICE

Many county Floras and other botanical books are out of print and difficult to obtain and the officers of the Society receive many enquiries from members as to where they may be obtained.

A card index of members' desiderata has now been prepared with the object of assisting them to obtain books they need to carry out their studies.

The index has been prepared by the Hon. Assistant Secretary, Mr. D. H. Kent, 75 Adelaide Road, London, W.13, and members desiring to make use of this facility are invited to write to him giving details of the books which they are anxious to acquire. A stamped addressed postcard, for reply, should be sent for each book required. It must be pointed out that some botanical works are very scarce indeed and it may be some time before they can be tracked down; every effort will, however, be made to trace copies of books required.

Members who have botanical books for disposal are also invited to write to Mr. Kent giving details of the volumes concerned and their prices.

THREATS TO BRITISH FLORA

Members are urged to report to Dr. D. H. Dalby, 108 Gordon Road, Camberley, Surrey, 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 SPRAY DAMAGE

Any damage due to the spraying of roadside verges with toxic chemicals should be reported immediately to the Secretary of the B.S.B.I. Conservation Committee (Dr. D. H. Dalby, 108 Gordon Road, Camberley, Surrey), who will send a form listing the detailed information required by the Nature Conservancy. These forms have been prepared after discussions between the B.S.B.I. and the Conservancy, and when completed will be forwarded to the Conservancy who are carrying out active work on this subject.

TRANSPLANT AND INTRODUCTION EXPERIMENTS

The Secretary of the Conservation Committee (Dr. D. H. Dalby, 108 Gordon Road, Camberley, Surrey) would be glad to hear from anyone who is carrying out any experiments involving the transplanting of species from one locality to another, or who is engaged in the introduction of species by seed or any other means. It is becoming very necessary to keep a central record of experiments of this nature, and it is hoped that this request will meet with active support. The Secretary will gladly send a short list of the information required in the recording of such experiments.

ADVERTISEMENTS

A limited number of relevant advertisements will be accepted for the Society's publications as space permits. Enquiries should be addressed to D. H. Kent, 75 Adelaide Road, London, W.13.

BOOK REVIEW

Welsh Timber Trees, Native and Introduced. Third edition, by H. A. Hyde. Pp. xi. + 172, with 28 plates and 53 figures in the text. National Museum of Wales, Cardiff, 1961. Price 18/-.

Welsh Timber Trees was published first in 1931: this, the third edition, has been completely rewritten and enlarged, and is virtually a new book.

The main text of the work is devoted to descriptions of the chief timber trees of Wales, and, in many cases, line drawings of twigs, leaves, flowers and fruits are provided. A wealth of other information is given, ranging from historical data to the economic uses of timber derived from the various genera and species.

A useful feature of the book is the descriptions of a number of foreign trees which, though commonly planted, do not find their way into the standard floras.

Several keys are provided, e.g. to the identification of coniferous genera and of deciduous trees by means of their winter twigs. Under a number of genera, keys are given to the identification of species important to forestry.

Omissions are few, though it seems probable that *Betula* × *aurata* Borkh. (*B. pendula* × *pubescens*) is widely planted in Wales as elsewhere in Britain. *Prunus cerasus* L., which is invariably a shrub, is included, but *P. padus* L., which is usually a small tree, is omitted; *Pyrus communis* L. is also excluded.

The whole work is of a very high standard, and the nomenclature in particular is accurate and up-to-date. The line drawings by Miss E. A. Jenkins show considerable detail, and enhance the usefulness of the book.—D. H. Kent.

LIST OF MEMBERS AND SUBSCRIBERS

(up to and including 1st December 1962)

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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.

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1955 S California, University of, The Serials Dept., General Library, Berkeley 4, California, U.S.A.
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1931 S Cambridge, University of, Botany School, Downing Street, Cambridge.
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1917 S Cardiff, National Museum of Wales, Dept. of Botany (Keeper, S. G. Harrison, B.Sc., F.L.S,). Cardiff.
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CONTENTS

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Continued on inside of back cover.

PLANT NOTES FROM SOUTH-EAST CAERNARVONSHIRE

By Evan Roberts and R. H. Roberts

The portion of Caernarvonshire (v.c. 49) which lies south and east of a line from Pont Dolgarrog, through Llyn Cowlyd and Capel Curig to Beddgelert, is one from which few plant records exist. This, perhaps, is not surprising, for J. E. Griffith, author of the *Flora of Anglesey and Carnarvonshire* (1895), lived in Bangor, and A. Wilson, author of "The Flora of a Portion of North-East Caernarvonshire" (1946-47), lived at Ro Wen. To both of them the south-east of the county was relatively remote and inaccessible; it may also have seemed botanically uninviting, lacking as it does the attractions of the main Snowdonian massif.

To the east it consists mainly of a series of undulating upland ridges separating the valleys of the upper Conway River and its main tributaries, the Machno, the Lledr, the Llugwy and the Afon Ddu. To the west the higher hills, of which Moel Siabod is the loftiest, separate the upper Lledr valley from Nant y Gwryd, Nant Gwynant and the valley of the Glaslyn. Within this area the country varies in altitude from a little above sea level at its north-eastern limit, near Dolgarrog Station, to 2,860 ft. at the summit of Moel Siabod. Thence it gradually descends almost to sea level again at its south-western limit in the Glaslyn valley.

Over most of the area rainfall is heavy, though it shows a sharp increase inland from about 60 ins. in the Glaslyn valley to considerably over 100 ins. a year on the higher ground south of Capel Curig; from here to the north-east there is a corresponding decrease as the ground drops towards the Conway Valley (Howell, 1946).

General accounts of the geology of the area are given by Ramsay (1866) and Harker (1889), while more detailed descriptions of some districts are contained in papers by Williams (1922), Williams & Bulman (1931) and Davies (1936). The area around Penmachno was studied by the late Prof. P. G. H. Boswell, whose unpublished field maps we were generously allowed to consult.

While the rocks of the area are on the whole lacking in bases, there are nevertheless several places where lime-rich rocks occur. The most important are the calcareous volcanic tuffs in the Blaenau Dolwyddelan—Nant Gwynant area and between Capel Curig and the Crafnant Valley; the numerous outcrops of dolerite; and the narrow outcrops of Ordovician limestone between Ysbyty Ifan and Penmachno, as well as in the woods north of Betws y Coed.

Although most of the coarser volcanic tuffs and agglomerates are of a rhyolitic and highly acid character, these, too, on closer examination have been found to vary in their composition. For

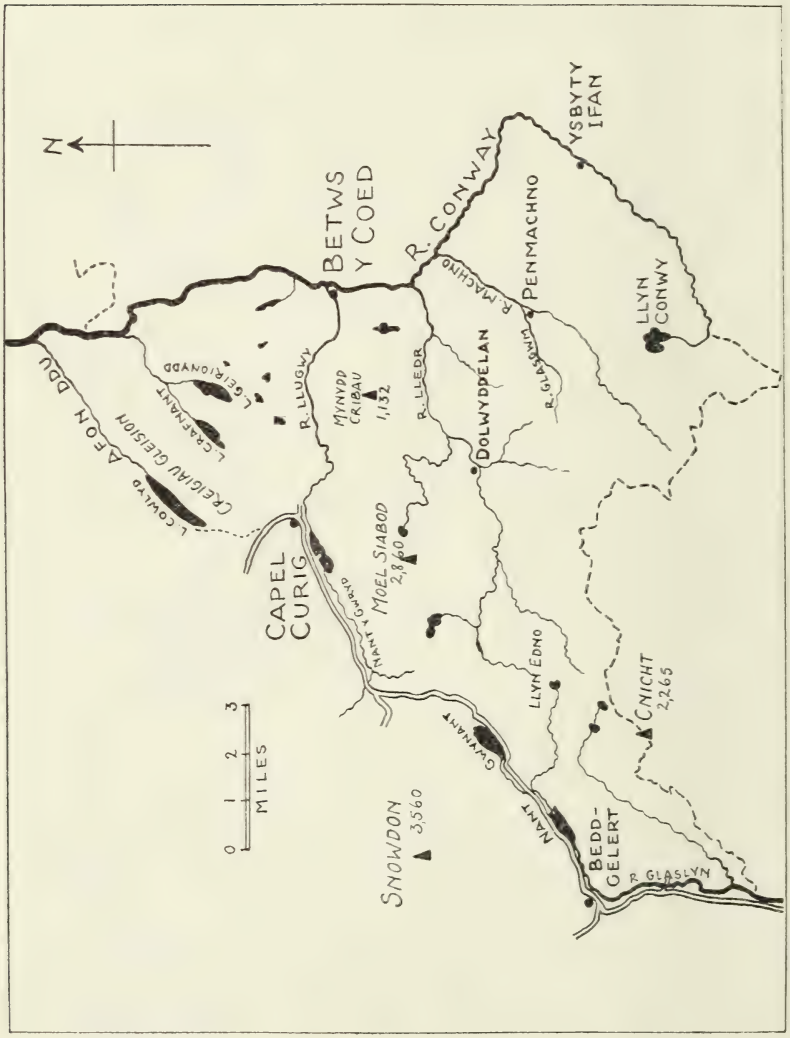

Fig. 1.—Sketch map of S.-E. Caernarvonshire

example, the upper cliff of Clogwyn Cyrau, at Betws y Coed, has at its base a narrow bed with a high content of calcium carbonate —a feature which is repeated to a lesser degree on the small scarps overlooking the Llugwy valley to the west. Near Penmachno a narrow outcrop of coarse volcanic tuff is locally quite rich in lime (Prof. P. G. H. Boswell, *in litt.*).

The sedimentary rocks also show considerable variation and are not uniformly lacking in bases, as has been often assumed. Locally, some bands in the shales and grits are markedly calcareous and their influence on the flora, though not spectacular, is often quite pronounced. Some of the places where base-rich sedimentary rocks occur are Pencraig, near the Swallow Falls; Cyfyng, in the Lledr Valley; one or two places near Dolwyddelan, particularly on the side of the valley south of the village; on the south side of the Machno valley, especially between Dugoed and Hwylfa; and north of Betws y Coed, along the top of the scarp east of Llyn y Parc.

The area from which the following plant records have been made (Fig. 1) has been defined rather arbitrarily as follows. On the north-west the boundary has been taken as the Afon Ddu from its outfall into the River Conway to its source in Llyn Cowlyd; thence the footpath from the upper end of the lake to Capel Curig, and from there the road through Penygwryd and Beddgelert to the point below Aberglaslyn where it practically adjoins the county boundary. We have dealt here with that part of the county which lies to the south and east of this line. In part it overlaps that covered by Wilson, but we have done this in order to include records either of species not given by Wilson or which he considered rare.

Though it can make no claim to be outstanding, the area is not devoid of botanical interest. The general scarcity of base-rich soils, coupled with the high rainfall over most of the area, account for the very restricted distribution of some species (e.g. *Knautia arvensis, Euonymus europaeus* and *Helictotrichon pubescens*) and the complete absence of others of a calcicolous nature. Of the plants showing a preference for moderately lime-rich habitats the majority in our area are those found in damp, or even boggy, base-flushed situations. A few are Arctic-alpine species whose restriction to cliffs of lime-rich rocks at the higher altitudes is well known.

The following records are a short selection from those compiled in the area mainly in the last 20 years, but some of them are quite recent and of these a few are additions to the county list; others confirm the continued occurrence of plants recorded here by Griffith, Wilson and other botanists. Nevertheless, the present list includes over forty taxa not recorded by Wilson and about the same number of plants which he considered either rare or of very restricted occurrence in the area dealt with in his paper.

Plants for which no records are given by either Griffith (1895) or Wilson (1946-47) are indicated by an asterisk (*), although

many of these are recorded either from the county as a whole by Hyde & Wade (1934, 1948), or from its extreme south-west by Conolly & Smith (1959).

'Aliens', whether established in natural or man-made habitats, or mere adventives, are indicated by a dagger (†), but this does not imply that some of those not so marked are necessarily in a native habitat in this area; for example, *Taxus baccata*, though possibly native in some parts of the county, is almost certainly bird-sown in the localities listed by us.

Except where dates are given, the plants have been seen by us in their various localities since 1953, even though they may have been first recorded before that date. The increasing afforestation of much of the area threatens many of the plants listed below; *Hammarbya paludosa* may be cited as one which has already disappeared owing to the drainage of the small bog where it was last seen in 1946.

The following abbreviations are used:—N.I.W.—*Nature in Wales;* coll.—collected by; det.—determined by; spec. conf.—specimen confirmed by.

LIST OF VASCULAR PLANTS

The order and nomenclature of the plants in the following list are almost entirely those of the *List of British Vascular Plants*, by J. E. Dandy (1958).

*1/2. Lycopodium inundatum L. One locality only: in the Nant Bwlch yr Heyrn area, R. Bunce.

2/1. Selaginella selaginoides (L.) Link. Cwm y Foel, Moel Siabod; Ceunant Mawr, Nant Gwynant; marshy ground near Llyn Crafnant; Creigiau Gleision.

3/1. Isoetes lacustris L. Llyn y Garth, Nant y Gwryd; Llyn y Foel, Moel Siabod; Pools near Cyffdy Mine and Nant Bwlch yr Heyrn; Llyn Crafnant.

3/2. I. echinospora Durieu. Still grows in Llyn Crafnant (cf. J. E. Griffith, 1895).

*4/9×5. Equisetum × litorale Kühlew. Ditch near Ynys Ferlas in the Glaslyn valley.

5/1. Osmunda regalis L. Neighbourhood of Llyn Ty'n y Mynydd; one plant in the woods north of Betws y Coed; Hafnau Talywaen, Capel Curig.

7/1. Hymenophyllum tunbrigense (L.) Sm. One locality: on damp, shady rocks and tree trunks in the woods near Betws y Coed (cf. J. E. Griffith, 1895).

7/2. H. wilsonii Hook. Locally plentiful: woods near Betws y Coed (cf. Hyde & Wade, 1948); near Conway Falls; Craig Nyth y Gigfran; Coed Bryn Engan; abundant along streams flowing into the River Llugwy below Pont Cyfyng; on north-facing, damp rocks on the lower slopes of Moel Siabod; Bwlch Ehediad; Ceunant Mawr; Creigiau Gleision; Crafnant valley.

15/2. Asplenium obovatum Viv. Occurs in rock crevices in one place 100 yds. outside our area near Capel Curig.

15/6. A. viride Huds. Craig Nyth y Gigfran; Garreg Amlwg; Coed Bryn Engan; Bwlch Ehediad; Ceunant Mawr; Craig Llyn Llagi; Blaen Crafnant; Craig Bwlch Cwm Glas; Creigiau Gleision.

15/8. A. septentrionale (L.) Hoffm. Old lead mine near Betws y Coed; on lead mine waste between Betws y Coed and Nant Bwlch yr Heyrn; on rocks near Llyn Bychan; on rocks at Ffridd Siân, Nant Bwlch yr Heyrn; walls between Gwydir and Trefriw (cf. Hyde & Wade, 1948; J. E. Griffith, 1895).

16/1. Ceterach officinarum DC. Mainly on mortared walls. Betws y Coed; near Beaver Pool; walls of old school, Penmachno; near Roman Bridge station; Gwydir; Rhos Quarry, Capel Curig; above the Swallow Falls; near Gwydir Forester School; church wall, Capel Curig; on calcareous rocks, Moel Wen, Crafnant.

19/1. Cystopteris fragilis (L.) Bernh. Cwm y Foel, Moel Siabod; Crafnant valley; Creigiau Gleision.

*21/2. Dryopteris borreri Newm. Frequent in woods around Betws y Coed and between it and Gwydir; woods near Capel Curig; Crafnant valley; near Hafod Garegog, Glaslyn valley.

22/1. Polystichum setiferum (Forsk.) Woynar. Locally abundant in woods from Betws y Coed to Gwydir; below the Swallow Falls.

22/2. P. aculeatum (L.) Roth. Near the Swallow Falls; Craig Nyth y Gigfran; Garreg Amlwg; Cwm y Foel; Craig Llyn Llagi; Creigiau'r Geuallt; Craig Bwlch Cwm Glas; Crafnant; var. cambricum, Clogwyn Cyrau.

22/3. P. lonchitis (L.) Roth. In the Llyn Cowlyd area (cf. Wilson, 1946-47).

24/3. Thelypteris phegopteris (L.) Slosson. Frequent. Rhiwddolion road; Miner's Bridge, Betws y Coed; below Bwlch y Maen, Lledr valley; Blaenau Dolwyddelan; Penrhyn, Penmachno, J. Lloyd Morris; Craig Forus; Y Drum; Tan y Garth; Craig Nyth y Gigfran; Foel Bach; Cwm y Foel; Craig Llyn Llagi; Clogwyn Mawr; Nant Crafnant; Creigiau Gleision.

24/4. T. dryopteris (L.) Slosson. Craig Forus; on slate waste tip, Rhos Slate Quarry; Craig Nyth y Gigfran; Foel Bach; Ceunant Mawr, Nant Gwynant; Creigiau Gleision.

*25/1. Polypodium interjectum Shivas. On mortared walls, common.

28/1. Botrychium lunaria (L.) Sw. Apparently confined to base-rich soils. Coed Mawr, Blaenau Dolwyddelan; near Nant Bwlch yr Heyrn, R. Bunce; Moel Wen, Crafnant.

29/1. Ophioglossum vulgatum L. Under hazel bushes, Coed Mawr, Blaenau Dolwyddelan.

34/1. Juniperus communis subsp. nana Syme. Garreg Amlwg and near the summit of Moel Siabod; Moel Meirch, above Llyn Edno.

35/1. Taxus baccata L. Cliffs above Coed Cynhelier and Hendre Gethin, Betws y Coed; Craig Pen y Ffridd, Llanrhychwyn; Mynydd Deulyn, above Llyn Geirionydd.

37/1. TROLLIUS EUROPAEUS L. Glasgwm, near Penmachno; Wybrnant; near Pentre Du. Betws y Coed; Bryn Cathlwyd; banks of River Llugwy from Pont Cyfyng to Craig Forus; Crafnant valley; Ceunant Mawr, Nant Gwynant; marsh near River Glaslyn.

50/3. THALICTRUM MINUS L. subsp. MINUS. Craig Llyn Llagi; Creigiau Gleision.

T. MINUS subsp. MAJUS (Crantz) Clapham. Clogwyn Cyrau, Betws y Coed; stream near Llyn y Parc; roadside, Nant Bwlch yr Heyrn; scree slope, Ffridd Siân, Nant Gwydir.

55/1. NYMPHAEA ALBA L. Llyn y Parc (cf. A. Wilson, 1946-47); Llyn Goddion Duon; Llyn Bychan; Llyn Geirionydd.

56/1. NUPHAR LUTEA (L.) Sm. Afon Ystumiau; River Llugwy below Bryn Engan; Llyn y Garth; Llyn Geirionydd.

†58/6. PAPAVER SOMNIFERUM L. Rubbish dump north of Betws y Coed.

65/3. CORYDALIS CLAVICULATA (L.) DC. On outcrops of acid rocks. Frequent.

79/3. LEPIDIUM HETEROPHYLLUM Benth. Roadside below the Fish Inn, Lledr valley; Craig Forus; roadside by Dolgam, and meadows at Dolbryn Coch, Capel Curig.

84/4. THLASPI ALPESTRE L. On lead mine waste or walls: Aberllyn, Betws y Coed; Nant Bwlch yr Heyrn; between Gwydir and Trefriw (cf. Wilson, 1946-47).

100/4. ARABIS HIRSUTA (L.) Scop. Crimpiau, Crafnant valley; Creigau Gleision.

*102/2. RORIPPA MICROPHYLLA (Boenn.) Hyland. Streams at Cae Mawr and Royal Farm, Capel Curig.

113/11. VIOLA LUTEA Huds. Frequent from Ysbyty Ifan to Penmachno and the Glasgwm valley. Not seen elsewhere (cf. Griffith, 1895).

115/1. HYPERICUM ANDROSAEMUM L. Occasional in woods around Betws y Coed; Ceunant Mawr, Nant Gwynant; Moel Wen, Crafnant.

115/13. H. MONTANUM L. One locality in the Crafnant valley.

115/14. H. ELODES L. Bogs. Near Llyn Elsi; between Penmachno and Ysbyty Ifan; Cors Llyngar; Bryn Coch, Bryn Engan and Bryn Cathlwyd, Capel Curig; near Llynau Mymbyr.

123/2. SILENE MARITIMA With. On wet rocks near the railway north of Betws y Coed (cf. Wilson, 1946-47).

143/1. SPERGULARIA RUBRA (L.) J. & C. Presl. Near Rhos Quarry and Pont y Garth, Capel Curig.

*149/1. MONTIA FONTANA L. subsp. FONTANA. Edge of pool near Ynys Ferlas, Glaslyn valley.

†149/3. M. SIBIRICA (L.) Howell. Cae Awr cottage, Capel Curig.

162/2. TILIA CORDATA Mill. Woods north of Betws y Coed.

163/1. MALVA MOSCHATA L. Meadows below Fish Inn, Lledr valley; near Beaver Pool, Betws y Coed.

†*168/3. GERANIUM ENDRESSII Gay. Glasgwm valley, near Penmachno, M. MORRIS (*N.I.W.*, **5**, 858).

†171/4. IMPATIENS GLANDULIFERA Royle. Banks of River Llugwy near Capel Curig and Betws y Coed; near Trefriw Wells.

177/1. Euonymus europaeus L. Several bushes among calcareous scree, Clogwyn Cyrau, Betws y Coed; garden hedge, Ty Hyll, Capel Curig.

185/2. Genista anglica L. Heathy ground at Dugoed, and behind the school, Penmachno; near Rhos Quarry and Nyth Bran, Capel Curig.

192/4. Trifolium medium L. One plant near the old gasworks, Betws y Coed; road-side near the Swallow Falls, P. M. Benoit.

206/9. Vicia orobus DC. Hafodlas, Betws y Coed (cf. Hyde & Wade, 1948); near Lledr Bridge; Rhiwddolion; Roman Bridge; Henrhiw, Penmachno; Glasgwm valley; Bryntyrch, Capel Curig; Ty'n y Mynydd, Nant Bwlch yr Heyrn.

206/10. V. sylvatica L. Upper Crafnant valley.

212/2. Potentilla palustris (L.) Scop. Marshes near River Glaslyn; Nant y Gwryd; Cors Llyngar, Mynydd Cribau.

212/14. P. anglica Laichard. Hedgebank between Penmachno and Conway Falls.

216/3. Geum rivale L. Stream near Llyn y Parc; near the railway, Roman Bridge; Ceunant Mawr; Foel Bach; Cwm y Foel; Craig Forus; Clogwyn Mawr, Capel Curig; Moel Wen, Crafnant; Creigiau Gleision.

217/1. Dryas octopetala L. Neighbourhood of Llyn Cowlyd (cf. Wilson, 1946-47).

218/1. Agrimonia eupatoria L. Below the Fish Inn, Lledr valley; meadows by the River Conway above Betws y Coed; Moel Wen, Crafnant; near Trefriw Wells.

*220/3(2). Alchemilla filicaulis subsp. vestita (Buser) M. E. Bradshaw. Moel Wen, Crafnant.

*220/3(10). A. glabra Neygenf. Machno valley; Llugwy valley; marshes by the River Glaslyn; Crimpiau, Crafnant valley; Moel Wen, Crafnant.

225/4. Rosa pimpinellifolia L. Craig Nyth y Gigfran, Capel Curig.

226/6. Prunus padus L. Banks of the River Llugwy near Betws y Coed; Caer Llugwy, Capel Curig.

†*227/2. Cotoneaster simonsii Bak. Scree on Clogwyn Cyrau, and hedgebank, Betws y Coed; Hafnau Talywaen, Capel Curig.

†*227/4. C. microphyllus Wall. ex Lindl. Craig Mynydd Deulyn, above Llyn Geirionydd; Clogwyn Cyrau, Betws y Coed.

235/1. Sedum rosea (L.) Scop. Craig Llyn Llagi; Moel Siabod; Creigiau Gleision.

235/2. S. telephium L. Creigiau'r Geuallt, Capel Curig; Crimpiau, Crafnant valley; Moel Wen, Crafnant.

235/10. S. forsteranum Sm. At two places in the upper Crafnant valley.

239/2. Saxifraga stellaris L. Chwarel y Foel, Capel Curig; Moel Siabod; Ceunant Mawr; near Llyn yr Adar; Creigiau Gleision.

239/15. S. hypnoides L. Moel Siabod; Ceunant Mawr; Creigiau Gleison.

239/17. S. oppositifolia L. Moel Siabod; Ceunant Mawr; Creigiau Gleision, above Llyn Cowlyd.

243/1. Parnassia palustris L. Wet flush at Pencraig, Betws y Coed; Cyfyng, Lledr valley; Cwm Penamnen; near Rhos quarry and Hafnau Talywaen, Capel Curig; Siabod side of Llynau Mymbyr; Moel Wen, Crafnant; near the footpath from Geirionydd to Crafnant; Ceunant Mawr, Nant Gwynant.

247/3. Drosera intermedia Hayne. Cors Geuallt and Cors Foel Goch, Capel Curig.

†*254/13. Epilobium nerterioides Cunn. Near Hafodlas quarry, Betws y Coed; Rhos quarry, Capel Curig; above Gwydir; near Llyn y Foel; above Cwm Penmachno; between Penygwryd and Nant Gwynant; Crafnant valley; Creigiau Gleision.

*258/2. Circaea intermedia Ehrh. Coed yr Allt Goch, north of Betws y Coed; above Gwydir Uchaf, spec. conf. P. M. Benoit.

*258/3. C. alpina L. In the woods near Capel Curig, spec. conf. Peter Raven.

†276/1. Myrrhis odorata (L.) Scop. Field opposite Derlwyn, and near Pentre Du Farm, Betws y Coed.

285/4. Apium inundatum (L.) Reichb. f. Pool near Ynys Ferlas, Glaslyn valley.

291/1. Carum verticillatum (L.) Koch. Marsh near River Glaslyn, Miss B. M. C. Morgan, 1947; still there, 1962.

†*319/2. Euphorbia lathyrus L. A persistent weed in flower beds at St. Mary's Church, and in gardens in Betws y Coed.

†*320/19. Polygonum cuspidatum Sieb. & Zucc. Waste ground in Betws y Coed.

324/1. Oxyria digyna (L.) Hill. Ceunant Mawr, Nant Gwynant; upper Crafnant; Creigiau Gleision.

342/3. Populus tremula L. Near Llyn yr Adar; Foel Bach; Garreg Amlwg; Y Drum, and by the old Roman Fort, Capel Curig.

343/9. Salix viminalis L. Occasional near ruined cottages: Ysgubor Wen, Cae'r Lloia, Cae Awr, Ty Bont and Dolgoch, Capel Curig.

343/16. S. repens L. Near Afon Ystumiau; Bryn Coch and Bryn Engan, Capel Curig.

358/1. Vaccinium vitis-idaea L. Moel Siabod; Moel Meirch; near Llynau Diwaenydd; Chwarel y Foel, Capel Curig; Creigiau Gleision.

358/4. V. oxycoccos L. Bog near Llyn Elsi, Betws y Coed; between Penmachno and Ysbyty Ifan; Mynydd Cribau; Adwywen and near Nyth Bran, Capel Curig.

†*370/5. Lysimachia punctata L. Bank of River Llugwy, below Betws y Coed; Afon Geuallt, Capel Curig.

†*375/1. Buddleja davidii Franch. Waste ground near the railway north of Betws y Coed.

382/4. Centaurium erythraea Rafn. Rough pasture, Ty'n y Bryn, Betws y Coed; near Rhiwddolion.

385/1. Gentianella campestris (L.) Börner. Dry, hilly pasture near Dolwyddelan.

386/1. Menyanthes trifoliata L. Bogs near Llyn Elsi, Betws y Coed; Cors Llyngar; near Afon Ystumiau; Llyn y Foel; below Bryn Engan; Llyn yr Adar; Cors Geuallt and Cors Foel Goch, Capel Curig.

†395/1. PENTAGLOTTIS SEMPERVIRENS (L.) Tausch. Between the railway and the road north of Betws y Coed, and near Pentre Du.

413/1. SOLANUM DULCAMARA L. Roadside bank near Coed Derw, Betws y Coed.

416/1. VERBASCUM THAPSUS L. Rubbish tip near Betws y Coed.

†*420/3. LINARIA REPENS (L.) Mill. Road-side bank and walls, Betws y Coed; road-side between Ty Hyll and Ty'n y Mynydd; between Crafnant and Geirionydd.

†425/1. MIMULUS GUTTATUS DC. Bwlch Dolwyddelan; near the Woollen Mill, Penmachno, M. MORRIS.

†*425/1×2. M. GUTTATUS × LUTEUS. Stream near Penmachno, coll. M. MORRIS, det. R. H. ROBERTS.

430/6. VERONICA MONTANA L. Occasional in woods around Betws y Coed, but decreasing in the Forestry Commission plantations.

*435/1(17). EUPHRASIA BOREALIS Wettst. Y Drum; marsh near Llyn Garth, Nant y Gwryd.

439/1. LATHRAEA SQUAMARIA L. Under hazels in the woods near The Towers, Capel Curig, Mr. RILEY.

442/4. UTRICULARIA MINOR L. In several peaty pools from Cyffty Mine to Nant Bwlch yr Heyrn; pools in Cors Llyngar.

446/1. LYCOPUS EUROPAEUS L. Marshy ground below the Fish Inn, Lledr valley.

458/1. BETONICA OFFICINALIS L. Rough pastures. Nant Bwlch yr Heyrn; several places in the Lledr valley; Rhiwddolion.

461/1. GALEOBDOLON LUTEUM Huds. Woods on Clogwyn Cyrau, Betws y Coed; Coed yr Allt Goch; woods between Gwydir and Trefriw (cf. A. Wilson, 1946-47).

469/1. SCUTELLARIA GALERICULATA L. Banks of River Llugwy below Pont Cyfyng; marshes near River Glaslyn.

469/2. S. MINOR Huds. Bryn Cathlwyd, Capel Curig; near Llynau Mymbyr.

473/1. LITTORELLA UNIFLORA (L.) Aschers. Abundant in the lakes and tarns. Llyn Elsi; Llyn Garth; Llyn y Foel.

474/1. WAHLENBERGIA HEDERACEA (L.) Reichb. Near Pont Gethin, Lledr valley; below Llyn Geirionydd; near Tanygarth, Capel Curig.

480/2. LOBELIA DORTMANNA L. Llyn y Garth, Nant y Gwryd; Llyn Crafnant.

485/1. GALIUM ODORATUM (L.) Scop. Frequent in the woods around Betws y Coed; on the outcrops of calcareous tuff, Coed Mawr, Blaenau Dolwyddelan; Craig Forus and Tanygarth, Capel Curig.

485/2. G. BOREALE L. Cliffs of Craig Llyn Llagi; Foel Bach, near Moel Siabod.

485/4. G. VERUM L. Dry bank near Pencraig, Betws y Coed.

488/3. VIBURNUM OPULUS L. Hedges between Craig Forus and Tanygarth, and Cae Gwegi, Capel Curig; by the River Llugwy, near Betws y Coed; between Gwydir and Llanrhychwyn.

†*489/1. SYMPHORICARPOS RIVULARIS Suksd. Hedges near Penmachno; Betws y Coed; near Pont Cyfyng, Capel Curig.

498/1. KNAUTIA ARVENSIS (L.) Coult. Rough pasture, Ty'n y Bryn, Betws y Coed.

†*504/1. Ambrosia artemisiifolia L. Waste ground at Penrhyn Farm, Penmachno, M. Morris (*N.I.W.*, **5**, 858).

†506/7. Senecio viscosus L. Road-side near Coed Derw, Betws y Coed; road-side, Capel Curig.

†509/4. Petasites fragrans (Vill.) C. Presl. Near the old gas works, Betws y Coed.

†512/1. Inula helenium L. Rough pasture at Cwm Lanerch and near Pentre Du Farm, Betws y Coed.

517/1. Antennaria dioica (L.) Gaertn. Foel Bach; near the summit of Moel Siabod; Crimpiau, Crafnant valley; Creigiau Gleision.

537/1. Carlina vulgaris L. Dry bank near Cyfyng, Lledr valley.

545/1. Serratula tinctoria L. Damp flush by the River Llugwy, Betws y Coed; damp places between Craig Forus and Tanygarth, and near Bryn Engan, Capel Curig; near Llyn y Garth, Nant y Gwryd.

†558/2(7). Hieracium aurantiacum L. Well established on roadside bank, Betws y Coed.

559/8. Crepis paludosa (L.) Moench. Stream banks and wet flushes between the Swallow Falls and Betws y Coed (cf. Hyde & Wade, 1934).

574/1. Triglochin palustris L. Rhos y Goelcerth, Capel Curig; near Llynau Mymbyr.

†605/2. Juncus tenuis Willd. Ty'n y Coed, Penmachno, M. Morris; near Llyn y Foel, Moel Siabod.

*605/22. J. kochii F. W. Schultz. Shores of Llyn y Parc, Betws y Coed, abundant.

614/1. Narcissus pseudo-narcissus L. Meadow near the River Llugwy, north of Betws y Coed.

625/2. Epipactis helleborine (L.) Crantz. In small numbers between Betws y Coed and Gwydir (cf. A. Wilson, 1946-47); under beeches between Gwydir and Trefriw.

628/1. Listera ovata (L.) R. Br. Under beeches in Coed yr Allt Goch; meadows in the lower Lledr valley; Penrhyn Farm, Penmachno; Ty'n y Mynydd, Nant Bwlch yr Heyrn.

628/2. L. cordata (L.) R. Br. One locality only: Coed Bryn Engan, Capel Curig.

631/1. Hammarbya paludosa (L.) Kuntze. Bog near Bryn Cathlwyd, Capel Curig, 1946; now lost through drainage.

636/1. Gymnadenia conopsea (L.) R. Br. Between Fedw Deg and Wybrnant; Rhiwddolion; Pencraig and Ty'n y Mynydd, Betws y Coed; Foty, above the Swallow Falls; Cae Awr and Bryn Coch, Capel Curig; near Llyn Crafnant.

638/1. Platanthera chlorantha (Custer) Reichb. Near Ynys Ferlas. Glaslyn valley; meadows near the River Llugwy: Bryntyrch, Dolbryn Coch, Glyn Llugwy, Craig Forus; Ty'n y Mynydd, Nant Bwlch yr Heyrn; meadows below Fish Inn, Lledr valley; Penrhyn, Penmachno; Ty'n y Bryn, Betws y Coed.

638/2. P. bifolia (L.) Rich. Ty'n y Mynydd, Nant Bwlch yr Heyrn; meadow near River Glaslyn, 1947, Miss B. M. C. Morgan.

642/7. Orchis mascula (L.) L. Coed yr Allt Goch; near Trawsafon, Betws y Coed; Ceunant Mawr, Nant Gwynant; Moel Wen, Crafnant.

*643/2b×5. Dactylorchis maculata subsp. ericetorum × purpurella. Ty'n y Mynydd, Nant Bwlch yr Heyrn.

643/3. D. incarnata (L.) Vermeul. Bryn Coch and Rhos y Goelcerth, Capel Curig; marshy meadow near River Glaslyn.

*643/5. D. purpurella (T. & T. A. Steph.) Vermeul. Ty'n y Mynydd, Nant Bwlch yr Heyrn; Royal Farm, Capel Curig; frequent in the Machno valley: Tyddyn Uchaf, Waen Llan, Penrhyn, near the Woollen Mills.

*643/6. D. majalis subsp. cambrensis R. H. Roberts. Marsh near River Glaslyn.

652/3. Sparganium angustifolium Michx. Llyn Elsi; Llyn y Foel, Capel Curig.

655/8. Scirpus lacustris L. Llyn Goddion Duon; Cors Foel Goch, Capel Curig; Llyn Geirionydd (cf. A. Wilson, 1946-47).

655/12. Scirpus fluitans L. Afon Ystumiau; Cors Geuallt, Capel Curig.

656/2. Eleocharis acicularis (L.) Roem. & Schult. Llyn y Foel, Moel Siabod.

656/4. E. multicaulis (Sm.) Sm. Cors Geuallt, Capel Curig; boggy ground near Llyn Bodgynydd (cf. A. Wilson, 1946-47).

660/1. Rhynchospora alba (L.) Vahl. Cors Llyngar, Mynydd Cribau; Cors Foel Goch and Cae Gwegi, Capel Curig; near Ty'n y Mynydd, Nant Bwlch yr Heyrn.

663/1. Carex laevigata Sm. Ty'n y Coed. Penmachno, M. Morris (*N.I.W.*, **5**, 858).

663/4. C. hostiana DC. Wet flushes, Coed Mawr, Blaenau Dolwyddelan.

663/8. C. demissa Hornem. Near Roman Bridge; between Wybrnant and the Glasgwm valley; near Llyn Elsi; Bryn Coch, Capel Curig; Moel Siabod.

663/12. C. sylvatica Huds. Bryn Brethynau, Capel Curig.

663/13. C. capillaris L. Cowlyd neighbourhood, E. Price Evans, 1946 (cf. A. Wilson, 1946-47), seen several times since. A second locality for this species in Wales was discovered on a remote part of Snowdon, in 1962, by Dr. R. Elfyn Hughes.

663/22. C. pendula Huds. Woods between the Swallow Falls and Betws y Coed.

663/24. C. pallescens L. Pencraig and near Tanycastell, Betws y Coed.

663/28. C. limosa L. Cwm, Nant y Gwryd; Cors Llyngar, Mynydd Cribau; Bryn Coch, Capel Curig.

663/33. C. lasiocarpa Ehrh. Llyn Bodgynydd.

663/54. C. paniculata L. Mynydd Cribau; Cefn Glas.

663/72. C. curta Gooden. Below Llanrhychwyn.

663/81. C. dioica L. Bryn Coch, Rhos y Goelcerth and Cors Foel Goch, Capel Curig; near Rhiwddolion.

681/1. Melica uniflora Retz. Glyn Llugwy; upper Crafnant; between the Swallow Falls and Betws y Coed; frequent in the woods from Betws y Coed to Gwydir.

685/1. Agropyron caninum (L.) Beauv. Upper valley of the Crafnant; between Craig Forus and Tan y garth, Capel Curig.

693/2. Helictotrichon pubescens (Huds.) Pilg. One locality in the Crafnant valley.

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THE BOTANICAL SOCIETY (OF LONDON), 1721-1726.

By Phyllis I. Edwards

Many of the amateur naturalists of this period banded together to form clubs. Their members made collections, performed experiments, extended their knowledge by correspondence, and sometimes achieved the honour of presenting information before the Royal Society. The Temple House Coffee Club was one of the most important of the earlier of these groups, having as members, in 1691, such important naturalists as Lister, Sherard, Doody, Petiver, Dale, Dubois, Plukenet, Buddle and Sir Hans Sloane.

Between 1721 and 1726 a similar group of botanists formed a Botanical Society. In the Department of Botany, British Museum (Natural History), is a small MS. lettered "Botanical Society of London, 1724-26", which was given by Professor Thomas Martyn to Sir Joseph Banks. The MS. includes a letter to Dr. J. Marten [*sic.*], Secretary to the Botanical Society; from this I think it should be inferred that 'of London' was not part of the name of the Society. In a footnote in Turner's *Extracts from the literary and scientific correspondence of Richard Richardson,* 1835, p. 287, it is stated that the Society was formed by J. Martyn and Dillenius. Martyn apparently tried to persuade Sir Hans Sloane to be its first President but he appears to have declined, as Dillenius assumed this office and Martyn that of Secretary. Meetings were held weekly, at first in the Rainbow Coffee House in Watling Street, later in a private house. There would appear to have been more than seventeen members as stated in some references. They included those mentioned by Gorham in *Memoirs of John Martyn and of Thomas Martyn,* 1830; Vincent Bacon, J. Chandler, Joseph Forsitt, Robert Fisher, Joseph Harris, Horsman, Samuel Latham, J. Letherland, John Paine, J. Richmond and Walter Tullidelph. The MS. proceedings of the Society mentions Bedford, Dillenius, Thomas Dale, Hall, Thomas and Samuel Harris and Rand. Philip Miller and Charles Deering were also members. Gorman states that every member, in his turn, was expected to exhibit a certain number of plants, to make observations on any special characters exhibited by them, and on their use.

The MS. minutes include several lists of plants and also mention single specimens from specific localities around London. Only some of these early records appear to have been published. 'Species of Fungus gathered about Dulwich', and 'Plants collected on a walk to Dulwich', were included in J. Martyn's *Methodus plantarum circa Cantabrigiam nascentium,* 1727. This

was a revised edition of John Ray's *Catalogus plantarum circa Cantabrigiam nascentium,* 1660, and his two supplementary appendices published in 1663 and 1685. The plants were not arranged alphabetically as in Ray's *Catalogus,* but according to Martyn's own system of classification. This work was written for the students of Cambridge University where Martyn was Professor. 'Plants found near Grantham' was published in the *Naturalist* for 1898, pp. 177-9. There is no indication in the MS. that 'Plants observed in fields near Chatham and in the Isle of Shepey' and 'Plants gathered in a journey to Sherness' have been recorded.

This is merely a short note to draw attention to this most interesting MS. which may well prove to contain some 'first records'.

FURTHER INFORMATION ABOUT THE EARLY HISTORY OF THE SOCIETY

By J. E. Lousley

The Botanical Society of London, from which our Society is descended, was founded in 1836, and after twenty years of great activity it was faced with a sudden crisis in 1856. Little information about this period has been preserved and some additional facts were given in a recent note (Lousley, 1962).

It happens that, by a fortunate chance, copies of the circular sent out to members in December 1856 have been preserved in the library of the Royal Botanic Gardens, Kew. H. C. Watson used the reverse side of 31 copies of this notice to copy out the list of the *Hortus Siccus* of the Horticultural Society of Cornwall made by Mrs. Elizabeth A. Warren and sent to him on loan. No doubt these were surplus copies of the circular which he was using as scrap paper, and the particular use he happened to make of them have led to their preservation bound up in a volume of Watson's manuscripts. The circular makes it clear that whereas the financial difficulties of the Society necessitated putting it into liquidation, those responsible for its affairs were trying to find a way of continuing the work. It is evident that the account books had disappeared, the rent and other liabilities were in arrears, that it was suspected that subscriptions had been collected irregularly, and that the committee were anxious that communications should be addressed to the Society and not to individuals. George Edgar Dennes, who had been Secretary since 1839, disappeared in 1856 and is believed to have emigrated to Australia (Britten, 1922). Perhaps the £30 given to him on compassionate grounds out of the proceeds of liquidation (Lousley, 1962) helped to pay his passage-money.

The circular to members reads as follows: —

BOTANICAL SOCIETY OF LONDON

At a Meeting of the Resident Members of the Botanical Society of London, held in the Rooms of the Society, on the 24th of November, 1856, the following Resolutions were passed unanimously: —

1 That it is expedient to dissolve the Botanical Society of London, as at present existing; reserving to its Members the right of reconstituting themselves into a Society bearing the same name, and for the same general objects.

2 That the Books and other property of the Society shall be sold, in order to raise a fund for paying the arrears of rent and other outstanding claims on the Society.

3 That Mr. Reynolds (*Treasurer*), Mr. Syme (*Curator*) and Mr. Hewett Watson are appointed a Committee to carry out the two preceding Resolutions, and to wind up the affairs of the Society, in such manner as they shall find expedient.

4 That the foregoing Resolutions be printed, and a copy be forwarded by post to each of the Members of the Society whose addresses can be ascertained

It is requested by the Committee, that the several Members of the Society will, as early as convenient, give a reply to the subjoined queries. Their answers can be addressed to the '*Botanical Society*—20, *Bedford Street*—*Covent Garden*—*London*'.

1 Are you a Life Member, or an Annual Subscriber?

2 If a Life Member, in what year was your Life-composition paid?

3 If an Annual Subscriber, on what date, and to whom, was your last subscription paid?

4 In the event of the Botanical Society being re-constituted for the promotion of British Botany, are you willing to continue your Membership in the renovated Society?

Another Circular will be issued, in order to give an account of the proceedings taken under the foregoing Resolutions. Meanwhile, inquiries may be addressed to the '*Botanical Society*', as above, without adding to the address the name of any Member.

December, 1856.

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PLANT NOTES

8/P. **Pteris cretica** L., 1767, *Mant.*, **1**, 130. v.c. 16, W. Kent; Eltham, Elmstead and Keston: growing between brickwork of old walls in sheltered parts of the localities cited. Plants several years old with fertile fronds have been found (Williams, 1961).

Plant up to 15 cm. tall, erect, wiry; straw-coloured or pale brown. Fronds 15-30 cm. long, 10-20 cm. broad; lateral pinnae usually 2 to 6, opposite; upper pinnae sometimes a little decurrent, 7·5 to 15 cm. long, 13-20 mm. broad, sterile, much the broadest and spiny-toothed, lower pairs often cleft nearly to the base into 2 or 3 linear pinnules. Indusia pale, membranous.

Widespread in the Tropics, extending to North and South America, India, Persia, Arabia, the Caucasus and the Mediterranean region. Established on old walls in Holland (Segal, 1962) and occurring spontaneously for a long time on the damp walls of the botanical houses at the Jardin des Plants in Paris, and in similar situations at Kew (Britten, 1880).

Introduced into Britain about 1820, and now a very popular pot fern.

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—D. H. Kent.

209/H. **Holodiscus discolor** (Pursh) Maxim., 1879, *Act. Hort. Petrop.*, **6**, 254; *Spiraea discolor* Pursh, 1814, *F. Amer. sept.*, **1**, 342; *S. ariaefolia* Sm., 1819, in *Rees' Cyclop.*, **33**, *Spiraea* no. 16, & Lindley, 1830 in *Bot. Reg.*, **16**, *t.* 1365; *H. discolor* var. *ariaefolius* Aschers. & Graebn., 1900, *Syn. Mitteleur. Fl.*, **6** (**1**), 30; *Sericotheca discolor* Rydb., 1908, *N. Amer. Fl.*, **22**, 262. V.-c. 16, W. Kent; Very well established on old walls of the lane leading into Knole Park from Sevenoaks Church. Plants of all sizes from small seedlings to old woody ones, Aug., 1962, K. E. Bull (*Hb. Lousley*). V.-c. 92, S. Aberdeen; Growing out of brickwork near railway bridge, Bieldside, Aug. 25, 1961, D. McClintock (*Hb. Lousley*).

A spreading shrub 50 cm.-1.5 m. tall, older bark dark brown or grey, twigs light reddish-brown, villous. Leaves ovate, pubescent below, 3-4·5 × 2-2·5 cm. with cuneate base and 5-6 deep teeth on each side, the teeth serrate and the larger terminating in a mucro. Petioles about 5 mm. Inflorescence rather lax, compound, villous, 4-7 × 4-6 cm., with linear bracts 1-2 mm. long. Sepals 5, ovate, 1·5-2 mm. long, light brown; petals 5, oval, c. 2 mm. long, creamy-white; stamens about 20; styles 5, distinct, villous. (This description is based on the British material cited above, which grew on walls and brickwork. Garden plants are much larger, with larger dense and very compound panicles).

This shrub is a native of western North America from British Columbia to California, where it is known as "Cream Bush" or "Ocean Spray". In

Britain it is perfectly hardy and propagated easily by division, or by seed which it ripens in abundance (Loudon, 1853). Horticulturalists still endeavour to separate *H. ariaefolia* from *H. discolor* as a variety (e.g. Chittenden, 1951), but Smith when describing his species in 1819 wrote "Can this be the same species with our last? [*S. discolor* Pursh]. We have not had an opportunity of comparing specimens"; Lindley (1830) had no doubt that they were the same species; Ley, in his revision of the genus (1943), treated them as the "same form"; and Munz (1959) with his knowledge of the Californian populations treats the names as synonymous. It is evident that *ariaefolius* cannot be kept up even as a variety.

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J. E. LOUSLEY.

226/S. **Prunus serotina** Ehrh., 1788, *Beitr.*, **3**, 20. The Rum Cherry, a widespread tree of dry woods in eastern North America appears to be well established in Surrey, and deserves inclusion in the British list. On June 17, 1962, I was botanizing with Mrs. B. Welch, and others members of the Surrey Flora Committee, in private woodland near Weybridge (National Grid 51/06) when we noticed seedlings of *Prunus serotina* Ehrh. in large numbers. Although the tree was no doubt originally planted in these grounds it was spreading from seed, and there were bushes of various ages. In July 1925 the species was shown by the Rev. W. A. Shaw to J. E. Little and Prebentary R. J. Burdon in a copse near Peper Harrow (Nat. Grid 41/94), where it was naturalized and self-sown. In the following September the Rev. Shaw wrote, "Crowds of Missel-Thrushes are stripping off all the berries as fast as possible, and Hawfinches are very partial to the kernels of the stones, or it would spread more on the Common here" (Little, 1925, *Herb. Cantab.* and *Herb. Mus. Brit.*).

It may have been established in Surrey very much earlier than this. Loudon (1853) wrote of his "*Cerasus virginiana* Michx."—"The fruit is frequently ripened in the neighbourhood of London, and plants in copse woods, which have arisen from self-sown seeds are to be met with in different parts of Surrey". Since Loudon said he had "no doubt whatever" that his "*C. virginiana*" and "*C. (v) serotina*" were one and the same species, his note on the former is likely to refer to *P. serotina*. Material from an old tree on Frensham Common (Nat. Grid 41/84) was collected by W. E. Farenden in 1942 (*Hb. Mus. Brit.*).

Prunus serotina is likely to be confused with *P. padus* by botanists using only British floras and not familiar with the Bird Cherry. Both have their flowers in elongate racemes terminating the new leafy branchlets of the season, but whereas the racemes of *padus* are loose and drooping with the pedicels 10-15 mm. long, and the petals 6-10 mm. long, those of *serotina* are cylindric and slender, with the flowers on shorter (3-6 mm.) pedicles, and the petals only about 4 mm. long. In the south of England *P. padus* is not native but there are numerous records of trees believed to be bird-sown from those planted in gardens and parks.

It is known that *Amelanchier confusa* has been recorded as *P. padus* (Kent & Lousley, 1957) and *Prunus serotina* is even more likely to be taken for this species. All records of Bird Cherry from southern England should be reviewed.

P. serotina is established and spread from bird-sown seed in Holland, north Germany, and elsewhere in Europe (Aschers. & Graebn., 1907; Hegi, 1923; Heukels, 1933). The closely related North American *P. virginiana* L., which has slender ascending teeth to the leaf serrations, and sepals which are soon deciduous, is similarly established on the Continent. As it is sometimes planted in England and the fruits are attractive to birds it is quite likely to be found wild. For this reason material of southern Bird Cherries should be checked against the characters of *P. virginiana* as well as *P. serotina*. Clear statements of the characters will be found in Gleason (1952), Fernald (1950), and Rehder (1947). I am grateful to P. D. Sell for details of Little's material at Cambridge.

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J. E. LOUSLEY.

497/S. DIPSACUS STRIGOSUS Willd. In three recent papers (Hansen, A., Notes on Danish plants, 4, *Bot. Tidsskr.*, **58** (1962); Hansen, A., Dipsacus pilosus ist kaum in Schweden vorhanden, *Bot. Not.*, **115** (1962): Hansen, A., Eine neue Adventivpflanze in Schleswig-Holstein, *Die Heimat* (Kiel), **69** (1962)) the author has treated the distribution in Europe of an adventive *Dipsacus* species, viz. *D. strigosus* Willd., a native of regions around the Black Sea, and of western Asia. It has been shown that the species has been recorded as an adventive from Denmark, Sweden, Finland, north-western Germany and southern Spain.

During a visit to Kew Herbarium, in July 1962, I became aware that this plant had been found in Britain. Since then I have had the opportunity of examining specimens from the herbarium of the British Museum (Natural History), and have also searched British botanical literature for records.

D. strigosus has been found in Britain as follows:—

V.c. 17, SURREY: Mortlake, 1842, W. W. SAUNDERS (*Hb. Mus. Brit.*). Riverside, Kew, 1855, A. BLACK (*Hb. Kew*): two large plants by the side of a ditch close to the Thames at Kew, 1871, H. TRIMEN, *J. Bot.*, **10**, 268 (1872)—the only record found in the literature!

V.c. 23, OXON.: several plants on waste ground, Manor Road, Oxford, 1944, A. P. D. JONES, ex *Hb. J. P. M. Brenan* (*Hb. Kew*).

V.c. 29, CAMBRIDGE: waste ground near Botanic Garden, Cambridge, 1863, F. J. HANBURY (*Hb. Mus. Brit.*): waste ground (near Botanic Garden?),

Cambridge, 1908, R. S. Adamson (*Hb. Mus. Brit.*).

V.c. 34, W. Glos.: Bristol, 1858, J. Smith (*Hb. Mus. Brit.*).

It is possible that the plants at Kew originated from the Royal Botanic Gardens, and those at Oxford and Cambridge from the respective Botanic Gardens.

D. strigosus is included in G. C. Druce's *British Plant List*, ed. 2 (1928), but is not given in J. E. Dandy's *List of British Vascular Plants* (1958) or in Clapham, Tutin and Warburg's *Flora of the British Isles*, editions 1 and 2 (1952 and 1962). It is possible that the species may be established in a number of places in the British Isles, but owing to confusion with *D. pilosus*, is overlooked. In Denmark and Sweden new localities for the species are found each year and it is probably well established in some places.—A. Hansen.

625/1. **Sparganium erectum** L. In *Watsonia*, **5**, pt. 1, 4 (1961) subspecies *microcarpum* (Neuman) Hylander, *Nordisk Kärlväxtflora* **1**, 83 (1953) and subspecies *oocarpum* (Čelak.) C. D. K. Cook, *loc. cit.* were incorrectly cited as Domin had made these two combinations earlier in his Plantarum Čechoslovakiae Enumeratio, *Preslia* **13**, 53 (1935). The correct citations should be: **S. erectum** subsp. **microcarpum** (Neuman) Domin and **S. erectum** subsp. **oocarpum** (Čelak.) Domin.—C. D. K. Cook.

PLANT RECORDS

Compiled by E. C. WALLACE

"Plant Records" are now arranged in the order given in the *List of British Vascular Plants* (*L.B.V.P.*) by J. E. Dandy (1958).

Records where no date is given are for the year 1962.

The following signs are used:—

§ before the *L.B.V.P.* number: to indicate that the paragraph contains information necessitating a correction to an annotated copy of the *Comital Flora*.

† before the *L.B.V.P.* 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*. Some of these records may, however, appear as dots on maps of the particular species in the *Atlas of the British Flora*.

‡ before the record: to indicate a record additional to an annotated copy of the *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 National Grid Co-ordinates, made as accurate as is thought advisable, are added to all records. These will not be published, but the original cards containing them will be filed, and may be made available for reference.

1/1. LYCOPODIUM SELAGO L. 78, Peebles; Cademuir Forest, a single plant, T. M. BELL.

1/4. LYCOPODIUM CLAVATUM L. 78, Peebles; plentiful in Cademuir section of Glentress Forest; Glensax; Kipps, T. M. BELL.

1/5. LYCOPODIUM ALPINUM L. 75, Ayr; Rowantree Hill, Barr, c. 1,600 ft., A. McG. STIRLING.

§4/1. EQUISETUM HYEMALE L. *99, Dunbarton; hillside flush, with *Saxifraga aizoides*, at 750 ft., Glen Luss, E. TODD, *comm.* A. McG. STIRLING.

§4/4. EQUISETUM VARIEGATUM Schleich. ex Weber and Mohr. *94, Banff; by river Avon; one mile south of Tomintoul, J. WALTON (*Hb. Univ. Glasgow*), comm. A. McG. STIRLING.

§4/9×5. Equisetum × litorale Kühlew. ex Rupr. *49, Caern.; ditch near Ynys Ferlas, Glaslyn Valley, R. H. Roberts. ‡52, Anglesey; plentiful near Llyn Rhos Ddu, Newborough Warren Nature Reserve; marsh west of Penycefn (conf. P. Taylor); Rhosygad, near Pentraeth, R. H. Roberts (1963, *Nature in Wales*, **8**, 74). *H. 28, Sligo; rough dry ground, Strandhill, M. McC. Webster.

§7/1. Hymenophyllum tunbrigense (L.) Sm. ‡47, Montg.; frequent on wet shady rocks in a ravine near Corris, P. M. Benoit and Mr. and Mrs. D. Paish (1962, *Nature in Wales*, **8**, 29).

7/2. Hymenophyllum wilsonii Hook. 47, Montg.; frequent on wet shady rocks in a ravine near Corris, Mr. and Mrs. D. Paish (1962, *Nature in Wales*, **8**, 29).

11/1. Adiantum capillus-veneris L. †16, W. Kent; stonework of old well, by ruins of Scotney Castle, Lamberhurst, 1960, K. E. Bull.

§14/1. Phyllitis scolopendrium (L.) Newm. *107, E. Sutherland; wet basic rocks near Cambusmore, Golspie, B.S.B.I., Field Meeting.

§15/6 Asplenium viride Huds. *107, E. Sutherland; Ben Griam Bog, rare, B.S.B.I. Field Meeting.

§16/1. Ceterach officinarum DC. *78, Peebles; old wall, Peebles, T. M. Bell. *96, Easterness; wall by main Inverness-Fort Augustus road, four miles from Inverness, M. McC. Webster.

19/1. Cystopteris fragilis (L.) Bernh. 78, Peebles; Edinburgh Road, Peebles, T. M. Bell. H.19, Kildare; wall on outskirts of Monasterevin, rare, M. McC. Webster.

21/2. Dryopteris borreri Newm. 48, Mer.; in mouth of old mine workings, Cwm Nantcol, J. N. Mills.

22/3. Polystichum lonchitis (L.) Roth. 49, Caern.; a new locality in Snowdonia (locality withheld), G. B. Evans and P. W. Strachan, det. A. C. Jermy. 107, E. Sutherland; Ben Griam Bog, B.S.B.I. Field Meeting.

§25/1. Polypodium vulgare L. *sensu stricto*. *96b, Nairn; wall near Auldearn: *H.12, Wexford; wall, Ballyorystal: *H.14, Leix; wall west of Durrow, M. McC. Webster, all det. F. H. Perring.

§25/A. Polypodium australe Fée. *46, Card.; old mortared wall, Cardigan, in quantity, 1961, P. M. Benoit, conf. M. G. Shivas.

§25/I. Polypodium interjectum Shivas. *O, Sarnia; walls, St. Annes, Alderney: *H.11, Kilkenny; wall, Kilkenny: *H.13, Carlow; bank, Bunclody: *H.19, Kildare; wall, Monasterevin, etc.; common everywhere, M. McC. Webster, all det. F. H. Perring.

28/1. Botrychium lunaria (L) Sw. 107, E. Sutherland; railway embankment near Knockfin, abundant, M. McC. Webster.

§29/1. Ophioglossum vulgatum L. ‡74, Wigtown; old quarry near Kirkcowan, A. McG. Stirling. But see *Top. Bot. Suppl.* 1—Ed. 98, Argyll; Isle of Shuna, Appin, A. A. Slack and A. McG. Stirling.

§34/1. Juniperus communis L. *79, Selkirk; one bush beside burn, Lochraig Rig, c. 1,800 ft., J. R. Ironside Wood.

†43/3. Anemone apennina L. 78, Peebles; naturalised in Traquair Churchyard, near Innerleithen, E. P. Beattie.

46/3. Ranunculus bulbosus L. 96b, Nairn; Dunbar golf course, abundant: 107, E. Sutherland; base-rich outcrop by Torrish, rare, M. McC. Webster.

§46/21. Ranunculus trichophyllus Chaix. *78, Peebles; Leithen Water, north of Innerleithen, T. M. Bell.

46/22c. Ranunculus peltatus subsp. pseudofluitans (Syme) C. Cook. 78, Peebles; Leithen Water, north of Innerleithen, T. M. Bell (as *R. pseudofluitans*).

§46/23. Ranunculus baudotii Godr. 71, Man; C. I. Paton's records, hitherto accepted, prove to be forms of *R. aquatilis* and *R. peltatus*. No other reliable records exists, D. E. Allen. Enclose v.c. 71 in brackets in *C.F.*—Ed.

†53/2. Berberis glaucocarpa Stapf. 6. N. Som.; hedgerow near East Pennard, 1959; perhaps bird-sown from the large naturalised colonies in S. Somerset, J. T. Hamblen-Knight, det. F. H. Perring.

†54/1. Mahonia aquifolium (Pursh) Nutt. 78, Peebles, spreading along roadside near Traquair, E. P. Beattie.

55/1. Nymphaea alba L. 107, E. Sutherland; lochan above Torrish House, M. Mc.C. Webster.

§58/3. Papaver lecoqii Lam. *71, Man, weed in garden, Glen Wyllin, W. F. S. Field Meeting, comm. D. E. Allen.

58/5. Papaver argemone L. 83, Edinb.; railway siding, Fushiebridge: 95, Moray; railway line, Forres, M. McC. Webster.

†65/4. Corydalis lutea (L.) DC. 78, Peebles; wall near Tweed, Peebles, T. M. Bell.

§66/7. Fumaria micrantha Lag. *H.25, Roscommon; rubbish-tip, north of Roscommon, M. McC. Webster, conf. P. D. Sell.

72/1. Diplotaxis muralis (L.) DC. H.13, Carlow; railway yard, Borris, M. McC. Webster.

79/2. Lepidium campestre (L.) R. Br. 78, Peebles; Peebles-Biggar road about 5 miles from Peebles, T. M. Bell.

§80/1. Coronopus squamatus (Forsk.) Aschers. ‡98, Argyll; waste ground near the harbour, Ellenabeich, Isle of Seil, 1961, C. W. Muirhead (1962, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 327).

§80/2. Coronopus didymus (L.) Sm. *89, E. Perth; garden weed, Baledmund, rare, M. McC. Webster.

§†81/1. Cardaria draba (L.) Desv. *78, Peebles; old railway near Peebles gasworks, T. M. Bell.

84/1. Thlaspi arvense L. 89, E. Perth; arable field, Moulin, M. McC. Webster.

85/1. Teesdalia nudicaulis (L.) R. Br. 78, Peebles; plentiful on sandy soil, Leithen valley, about 1½ miles north of Innerleithen, T. M. Bell. 107, E. Sutherland; Cuthill Link, near Dornoch, B.S.B.I. Field Meeting.

†86/2. Capsella rubella Reut. 96, Easterness; distillery yard, Tomatin, M. McC. Webster, conf. J. E. Lousley.

94/4. Draba muralis L. *81, Berwick; garden weed, Chapel-on-Leader, Earlston: 89, E. Perth; garden weed, Baledmund, Moulin, in quantity, with some plants over one foot tall, M. McC. Webster.

95/2. Erophila spathulata Láng. O, Sarnia; short turf by sea, Fort Albert, Longy Common, Alderney, M. McC. Webster.

§98/3. Barbarea intermedia Bor. *O, Sarnia; arable ground south of St. Annes, Alderney, c. 300 plants, M. McC. Webster. *71, Man; Kewaigue; Pulrose; Sandygate, etc.: widespread, but hitherto overlooked through confusion with *B. vulgaris*, which appears to be much rarer, D. E. Allen. 89, E. Perth; rough ground, Moulin: *97, Westerness; gravel path, Benavie, M. McC. Webster.

99/1. Cardaminopsis petraea (L.) Hiit. 107, E. Sutherland; plentiful on Ben Griam Bog, B.S.B.I. Field Meeting.

102/2×1. Rorippa × sterilis Airy Shaw. 47, Montg.; banks of stream near Guilsfield, Welshpool, without either parent, P. M. Benoit (1962, *Nature in Wales*, **8**, 72).

112/1. Reseda luteola L. 78, Peebles; old railway just north of Peebles station, T. M. Bell.

112/2. Reseda lutea L. †83, Edinb.; railway tip, Borthwick, A. Younger and M. McCallum Webster.

113/6×4. Viola canina × riviniana. 52, Anglesey; several fine plants, with the parents, near the Abbey ruins on Llanddwyn Island, P. M. Benoit (1960, *Nature in Wales*, **6**, 94).

§115/1. Hypericum androsaemum L. ‡86, Stirling; near Inversnaid Hotel, Loch Lomond, A. McG. Stirling. But see *Top. Bot. Suppl.* 1—**Ed.**

115/8. Hypericum tetrapterum Fr. 78, Peebles; stream bank near Nether Horsburgh, T. M. Bell.

†115/9. Hypericum humifusum L. *78, Peebles; old railway, south of Peebles station, T. M. Bell.

†123/8. Silene armeria L. 16, W. Kent; waste ground, Tunbridge Wells, 1960, K. E. Bull.

123/12. Silene noctiflora L. 83, Edinb.; railway tip, Borthwick, A. Younger and M. McCallum Webster.

†131/3. Cerastium tomentosum L. 78, Peebles; spreading along roadside at Traquair village, near Innerleithen, E. P. Beattie.

131/4. Cerastium alpinum L. 107, E. Sutherland; Ben Griam Bog, frequent, B.S.B.I. Field Meeting.

§131/10. Cerastium atrovirens Bab. ‡102, S. Ebudes; on rocks by the sea, Garbh Eileach, 1961, C.W. Muirhead; Dun Chonnuil; Eileach an Naoimh, 1961 (1962, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 328).

131/12. Cerastium semidecandrum L. 96b, Nairn; golf course, Nairn, abundant, M. McC. Webster.

§133/1. Stellaria nemorum L. *82, Haddington; dense woodland, Yester, Gifford, A. Younger, comm. M. McC. Webster.

§133/6. Stellaria palustris Retz. *H.27, W. Mayo; meadow, south of bridge at south end of Lough Culbin, M. McC. Webster.

136/1. Sagina apetala Ard. 89, E. Perth; garden weed, Baledmund, Moulin, M. McC. Webster.

136/9. Sagina subulata (Sw.) C. Presl. 48, Mer.; dry stony track above Barmouth, P. M. Benoit (1961, *Nature in Wales*, **7**, 60). Apparently the first record for v.c. 48 this century, P. M. Benoit. 107, E. Sutherland; railway line near Knockfin, M. McC. Webster.

137/4. Minuartia hybrida (Vill.) Schishk. H.25, Roscommon; verge of railway line, Knockcogeny, M. McC. Webster.

§141/2. Arenaria leptoclados (Reichb.) Guss. ‡102, S. Ebudes; Dun Chonnuil, Eilachan Naoimh, 1961, C. W. Muirhead (1962, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 328).

†141/6. Arenaria balearica L. 107, E. Sutherland; basic rocks near Cambusmore, Golspie, B.S.B.I. Field Meeting.

149/1c. Montia fontana subsp. amporitana Senn. (*M. fontana* subsp. *intermedia* (Beeby) Walters). O. Sarnia; sandy field where water had lain, Alderney, M. McC. Webster.

§154/14. Chenopodium rubrum L. *H.13, Carlow; dominant on mounds of lime-sludge from Carlow lime quarry, by roadside near Bunclody and Graiguenaspidogue, E. Booth and M. McC. Webster, conf. J. P. M. Brenan.

167/1. Radiola linoides Roth. 75, Ayr; damp places among dunes, Gailes, A. McG. Stirling.

§†170/2. Oxalis corniculata L. 79, Selkirk; greenhouse weed, Yarrow Feus, J. R. Ironside Wood. *82, Haddington; bank in Biel Estate, near Dunbar: 83, Edinb.; Craiglockhart Dell, Edinburgh: *84, Linlithgow; Dalmeny Estate, South Queensferry, an extensive colony amongst grass: *85, Fife; in interstices of pavement in a street, St. Andrews, E. P. Beattie.

†170/7. Oxalis corymbosa DC. *71, Man; garden weed, Glen Wyllin, W.F.S. Field Meeting, comm. D. E. Allen.

§†171/4. Impatiens glandulifera Royle. ‡10, Wight; Shalfleet Manor, 1961, Miss L. Kennedy (1962, *Proc. Isle of Wight N.H. & Arch. Soc.*, **5**, 269). *19, N. Essex; by river Chelmer near Felsted, 1959: *79, Selkirk; beside river Tweed, Walkerburn, 1960, J. R. Ironside Walker.

173/3. Acer campestre L. 78, Peebles; wood to south of Innerleithen, T. M. Bell.

§190/5. Medicago polymorpha L. *†96, Easterness; Tomatin distillery yard, M. McC. Webster.

192/24. Trifolium micranthum Viv. H.13, Carlow; gravel drive, Ravenswood, E. Booth, comm. A. McC. Webster.

192/0. Trifolium occidentale D. E. Coombe. O. Sarnia; fixed dunes, Crabby Bay, Alderney, M. McC. Webster, det. D. E. Coombe.

193/1. Anthyllis vulneraria L. 96, Easterness; railway embankment, Culloden, M. McC. Webster.

†206/5. Vicia tenuifolia Roth. 83, Edinb.; verge to road near Fushiebridge station, M. McC. Webster, conf. at Botany School, Cambridge.

206/10. Vicia sylvatica L. 65, N.-W. York; by the river, Barnard Castle: 98, Argyll; lower slopes of Aonoch Eagach, on north side of Glensop, 1946, J. N. Mills.

§207/6. Lathyrus sylvestris L. *107, E. Sutherland; sea-cliffs between Helmsdale and The Ord, B.S.B.I. Field Meeting.

207/11. Lathyrus montanus Bernh. 111, Orkney; roadside, Rousay, 1961, Mrs. A. Thompson, comm. E. R. Bullard.

§†209/1. Spiraea salicifolia L. *112, Zetland; pasture below Halligarth, Baltasound, R. C. Palmer.

211/1. Rubus chamaemorus L. 78, Peebles; plentiful on Dun Rig, south of Peebles, at 1,800 ft.; The Kipps, north of Peebles, T. M. Bell.

†211/5. Rubus parviflorus Nutt. H.27, W. Mayo; roadside near habitation, Pontoon, M. McC. Webster, det. P. D. Sell.

211/11 (17). Rubus sublustris Lees. 64, Mid-W. York; Escholt canal: 82, Haddington; railway line, Saltown station, M. McC. Webster, all det. E. S. Edees.

211/11 (18). Rubus latifolius Bab. 88, Mid Perth; Fearnam: 95, Moray; Brodie; Forres; Garmouth, 1961: 96, Easterness; Inverness; Kirkhill: 96b, Nairn; Nairn, 1961: 107, E. Sutherland; Brora; Rogart, M. McC. Webster, all det. E. S. Edees.

211/11 (52). Rubus nemoralis P. J. Muell. 88, Mid Perth; Fearnan: 96, Easterness; Kirkhill, 1961: H.13, Carlow; Ballinree Bog, M. McC. Webster, det. E. S. Edees.

211/11 (113). Rubus polyanthemus Lindeb. 64, Mid-W. York; Escholt canal, M. McC. Webster, det. E. S. Edees.

†211/11 (139). Rubus procerus P. J. Muell. 64, Mid-W. York; Escholt canal, M. McC. Webster, det E. S. Edees.

211/11 (356). Rubus dasyphyllus (Rogers). Rogers. 64, Mid.-W. York; Escholt canal, M. McC. Webster, det. E. S. Edees.

†216/2. Geum macrophyllum Willd. 96, Easterness; roadside verge near Kirkhill, scattered plants over an area of a mile, 1961, Mrs. Cameron, comm. M. McC. Webster.

216/3×1. Geum × intermedium Ehrh. 82, Haddington; verge of road, Baro: 83, Edinb.; verge of road, Fushiebridge: 87, W. Perth; verge of road, Callander: 88, Mid Perth; verge of road, Aberfeldy: 96, Easterness; woodland track, Kirkhill, M. McC. Webster.

§217/1. Dryas octopetala L. ‡102, S. Ebudes; on limestone outcrops on cliffs of Bealachan Tarabairt, Garbh Eileich, 1961 (1962, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 330).

§†219/1. Aremonia agrimonoides (L.) DC. *84, Linlithgow; three patches by a woodland path, Hopetoun Estate, E. P. Beattie.

§220/2. Alchemilla conjuncta Bab. *†82, Haddington; waste ground, Dirleton, a small colony: †83, Edinb.; railway embankment, Ravelrig, near Balerno, a small colony, E. P. Beattie.

220/3(2). Alchemilla filicaulis subsp. vestita (Buser) M. E. Bradshaw. 96, Easterness; verge of road near viaduct, Culloden, M. McC. Webster.

220/3(3). Alchemilla filicaulis Buser. 107, E. Sutherland; grassy slopes of Ben Griam Mhor, M. McC. Webster.

223/1. Poterium sanguisorba L. *†78, Peebles; a few patches on old railway near Innerleithen, T. M. Bell.

†224/1. Acaena anserinifolia (J. R. & G. Forst.) Druce. 107, E. Sutherland; basic rocks near Cambusmore, Golspie, B.S.B.I. Field Meeting.

†224/0. Acaena ovalifolia Ruiz & Pav. H.13, Carlow; Wood, Fenagh House; an escape from a rockery where it was planted—now abundant in policies—known for many years, Miss Barton and Miss Booth, conf. at Kew, comm M. McC. Webster.

†225/5. Rosa rugosa Thunb. 84, Linlithgow; naturalised in Dalmeny Estate, South Queensferry: 85, Fife; large colony on sand dunes between Largo and Elie; West Links, St. Andrews. E. P. Beattie.

§†227/4. Cotoneaster microphyllus Wall. ex Lindl. ‡98, Argyll; An Grianan, Easdale; slate quarries near old cottages, Ardencaple, Isle of Seil, 1961 (1962, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 330).

§232/5(1). Sorbus aria L. †65, N.-W. York; small sandy island in river Swale at Richmond, clearly not planted; perhaps bird-sown or carried down in the river, J. N. Mills. *†107, E. Sutherland; steep rocks near Morvich, Golspie; bird-sown from planted trees by roadside below, *B.S.B.I.* Field Meeting.

§235/2. Sedum telephium L. *78, Peebles; a few plants by roadside near Traquair, Innerleithen, E. P. Beattie.

†235/3. Sedum spurium Bieb. 83, Edinb.; a colony on a rubbish-tip, Straiton, 1961, E. P. Beattie.

†235/4. Sedum dasyphyllum L. 55, (Rutland); walls at Glaston, J. R. Ironside Wood.

§235/8. Sedum acre L. *112, Zetland; limestone outcrops, Brough, South Nesting, c. 1946, Pupils of South Nesting Public School. comm. W. Scott.

235/12. Sedum villosum L. 78, Peebles; Glen Sax, ~~north~~ South of Peebles, T. M. Bell.

§238/1. Umbilicus rupestris (Salisb.) Dandy. 16, W. Kent; wall of entrance lodge, Scotney Castle, Lamberhurst, and on tree-trunks in grounds, 1960, K. E. Bull. *99, Dunbarton; sparingly on sandstone rocks, Kilcreggan, A. A. Slack.

239/2. Saxifraga stellaris L. 75, Ayr; Rowantree Hill, Barr, c. 1,600 ft., A. McG. Stirling.

†239/4. Saxifraga umbrosa L. 14, E. Sussex; widespread as an escape on steep railway-bank, Tunbridge Wells, 1961, K. E. Bull. 21, Middx., well established on Watts Common, Harefield, D. H. Kent.

239/9. Saxifraga granulata L. 78, Peebles; South Park Wood near Peebles, T. M. Bell.

†240/1. Tellima grandiflora (Pursh) Dougl. ex Lindl. H.28, Sligo; roadside east of Streedagh Strand, M. McC. Webster.

§254/4. Epilobium lanceolatum Seb. & Mauri. ‡46, Card.; in some quantity on the railway between Glandyfi and Ynyslas, Mrs. P. Condry, conf. P. M. Benoit (1962, *Nature in Wales*, **8**, 72).

§†254/6. Epilobium adenocaulon Hausskn. ‡46, Card.; woodyard at Llanilar railway station, E. H. and A. O. Chater (1962, *Nature in Wales*, **8**, 72).

§254/11. Epilobium anagallidifolium Lam. *107 E. Sutherland; gorge on Knockfin Heights: alpine flush, Ben Griam Mhor, M. McC. Webster.

§†254/13. Epilobium nerterioides Cunn. *71, Man; near The Bungalow, below Snaefell, 1961, G. S. Marvin: Round Table, South Barrule, L. S. Garrad, both det. and comm. D. E. Allen.

§258/2. Circaea intermedia Ehrh. 71, Man; thicket, Port Cornah, W.F.S. Field Meeting, comm. D. E. Allen. *75, Ayr; Penwhapple Burn, Girvan, A. McG. Stirling. ‡98, Argyll; not uncommon on shaded rocks and under bracken, Gridnan, Easdale; Sloc an t'Siomain, Easdale, 1961 (1962, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 331).

258/3. Circaea alpina L. 69, Westmorland; Knock Ridge, at 2,400 ft., H. G. Proctor.

§259/2. Myriophyllum spicatum L. *112, Zetland; Loch of Hillwell, W. Scott.

261/1. Hippuris vulgaris L. 107, E. Sutherland; peaty pools, Knockfin Heights, B.S.B.I. Field Meeting.

§262/5. Callitriche hermaphroditica L. *107, E. Sutherland; pool of burn, Knockfin, M. McC. Webster.

†265/2. Thelycrania sericea (L.) Dandy. 13, W. Sussex; hedgerow, Warnham, near Horsham, 1959→; possibly bird-sown, J. T. Hamblen-Knight, det. F. H. Perring. H.25, Roscommon; roadside east of Roscommon; E. Booth and M. McCallum Webster, det. P. D. Sell.

270/1. Sanicula europaea L. 107, E. Sutherland; scarce in *Betula* woodland, a mile east of Torrish, M. McC. Webster.

†272/P. Eryngium planum L. 15, E. Kent; dry ground near sea-front, Littlestone-on-Sea, a well-established colony, 1961, K. E. Bull.

275/1. Scandix pecten-veneris L. 95, Moray; railway station, Forres, M. McC. Webster.

§285/1. Apium graveolens L. ‡102, S. Ebudes; near the chapel on Eileach an Naoimh, 1961 (1962, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 331).

300/4. Oenanthe lachenalii var. minima Camus & Rouy. 71, Man; Scarlett Point, D. E. Allen, M. B. Bing and J. E. Lousley.

320/6. Polygonum bistorta L. 82, Haddington; a colony in Biel Estate, near Dunbar, E. P. Beattie.

326/1. Parietaria diffusa Mert. & Koch. 78, Peebles; wall near Neidpath Castle, T. M. Bell. 84, Linlithgow; wall of Midhope Castle, E. P. Beattie.

†331/1. Ficus carica L. 83, Edinb.; by Water of Leith, near Dean Bridge, Edinburgh, a single young tree, 1961, E. P. Beattie.

337/1. Carpinus betulus L. 78, Peebles; Gypsy Glen, near Peebles, T. M. Bell.

†341/2. Quercus ilex L. H.28, Sligo; wood near Carney, in some quantity, M. McC. Webster, det. P. D. Sell.

343/13×14. Salix × coriacea Forbes. 107, E. Sutherland; Ben Griam Bog, B.S.B.I. Field Meeting, det. R. D. Meikle.

343/17. Salix lapponum L. 87, W. Perth; Ben Vane, Strathyre, A. A. Slack and A. McG. Stirling.

343/20. Salix myrsinites L. 107, E. Sutherland; in small quantity on north face of Ben Griam Mhor, 1,400 ft., M. McC. Webster.

343/21. Salix herbacea L. 48, Mer.; near the summit of Cader Idris, D. A. Ratcliffe (1961, *Nature in Wales*, **7**, 169); only previous record from Merioneth is the same locality, 1922, D. A. Jones (see *Welsh Flowering Plants*, ed. 2, 153), P. M. Benoit. 71, Man; still on Snaefell, its only known station, where it was last recorded in 1924, J. E. Lousley (*Hb. Lousley*), comm. D. E. Allen.

†352/1. Pernettya mucronata (L.f.) Gaudich. ex Spreng. 14, E. Sussex; well established on steep railway banks at entrance to Frant-road Tunnel, Tunbridge Wells, 1961, K. E. Bull.

§359/1. Pyrola minor L. 78, Peebles; wood near Haswellsykes Farm, west of Peebles, T. M. Bell. ‡99, Dunbarton; wood behind Rhu, Helensburgh, A. McG. Stirling. But see *Top. Bot. Suppl.* 1—**Ed.**

§360/1. Orthilia secunda (L.) House. ‡48, Mer.; acid cliff near Llanuwchllyn, D. A. Ratcliffe (1961, *Nature in Wales*, **7**, 101). 107, E. Sutherland; Gable Burn, Knockfin: *108, W. Sutherland; Ben Griam Bog, B.S.B.I. Field Meeting.

368/1. Hottonia palustris L. 55 (Rutland); abundant in a pond near Manton, J. F. Bridger, comm. J. R. Ironside Wood.

†369/1. Cyclamen hederifolium Ait. 3, S. Devon; a large colony on the Meadfoot shales of the lower Devonian at Meadfoot, Torquay, first noticed in 1957, since when it has spread considerably, J. T. Hamblen-Knight.

370/2. Lysimachia nummularia L. 78, Peebles; old railway, near Peebles, T. M. Bell.

372/2. Anagallis arvensis var. carnea Schrank. 71, Man; shingle, Point of Ayre, W.F.S. Field Meeting, comm. D. E. Allen.

†392/2. Symphytum asperum Lepech. 11, S. Hants.; roadside bank, Lower Pennington, near Lymington, 1961, K. E. Bull, det. A. E. Wade.

†392/2×1. Symphytum × uplandicum Nyman. 78, Peebles; north bank of Tweed near Peebles, T. M. Bell.

†392/3. Symphytum orientale L. 82, Haddington; verge to road near farmhouse, Saltown, A. Younger, comm. M. McC. Webster.

†392/4. Symphytum caucasicum Bieb. 10, Wight; near derelict hotel, Freshwater Bay, 1961, K. E. Bull.

§406/4. Calystegia soldanella (L.) R. Br. *111, Orkney; Newark Bay, South Ronaldsay, a well-established colony on sandy links just above high-water mark, Mrs. Kellock and E. R. Bullard.

†406/P. Calystegia pulchra Brummitt & Heywood. 78, Peebles; old railway near Eddleston station, T. M. Bell.

413/3. Solanum nigrum L. 83, Edinb.; railway tip, Borthwick, A. Younger and M. McC. Webster.

416/10. Verbascum virgatum Stokes. †13, W. Sussex; persisting on a steep roadside bank, Bury, Mrs. M. Briggs.

420/3. Linaria repens (L.) Mill. †78, Peebles; on wall of old Caledonian railway bridge over Tweed at Peebles, T. M. Bell. †96, Easterness; abundant on railway embankment, Moy and Tomatin, M. McC. Webster.

§424/2. Scrophularia aquatica L. 71, Man; damp roadside south of Baldwin, W.F.S. Field Meeting, comm. D. E. Allen. Remove from brackets in *C.F.*—**Ed.**

426/1. Limosella aquatica L. 55 (Rutland); Eye Brook Reservoir, J. R. Ironside Wood.

430/6. Veronica montana L. 95, Moray; Brodie Castle Woods, M. McC. Webster.

§437/1. Parentucellia viscosa (L.) Caruel. *†71, Man; damp field south of The Rule, Ballaugh Curraghs, apparently introduced with seed, W.F.S. Field Meeting, comm. D. E. Allen.

†439/2. Lathraea clandestina L. 81, Berwick; several small colonies in policies of Duns Castle, E. P. Beattie.

§442/3. Utricularia intermedia Hayne. *75, Ayr; Stinchar Bridge, Straiton, A. McG. Stirling.

†445/1. Mentha requienii Benth. 14, E. Sussex; on asphalt, Richmond Road, Bexhill-on-Sea, 1960: 16, W. Kent; on walls and paths, Scotney Castle, 1960, K. E. Bull.

§†445/6×7. Mentha × niliaca var. alopecuroides (Hull) Briq. ‡48, Mer.; by Harlech Castle, M. D. G. Jones, det. R. M. Harley (1961, *Nature in Wales*, **7**, 169).

447/1. Origanum vulgare L. †83, Edinb.; railway tip, Borthwick, A. Younger and M. McC. Webster.

453/1. Clinopodium vulgare L. 96, Easterness; a small clump by Beauly-Kirkhill road, 1961, Mrs. Cameron, comm. M. McC. Webster.

457/2×1. Prunella × intermedia Link. 30, Bedford; paddock, Great Barford House, A. Berens, det. F. H. Perring.

459/4. Stachys germanica L. 23, Oxon.; roadside verge near Woodstock, on recently disturbed ground, c. 20 plants, rather dwarfed, G. W. Dimbleby, det. and comm. B. T. Styles. An old locality, but thought to be extinct, B. T. Styles.

462/2. Lamium moluccellifolium Fr. 107, E. Sutherland; garden weed, Helmsdale, common, M. McC. Webster.

462/3. Lamium hybridum Vill. H.12, Wexford; arable field, Drumderry, E. Booth and M. McC. Webster.

475/6. Campanula glomerata L. 62, N.-E. York; steep limestone wood on east side of Forge Valley, J. N. Mills.

†480/P. Pratia angulata L. 16, W. Kent; covering a lawn at Hever Castle, 1960, K. E. Bull.

§485/7. Galium sterneri Ehrend. *107, E. Sutherland; on grassy slope, c. 1,200 ft., south side of Ben Griam Mhor in small quantity, M. McC. Webster.

†489/1. Symphoricarpos rivularis Suksd. *112, Zetland; pasture below Hallingarth, Baltasound, R. C. Palmer; outside Baltasound Post Office, W. Scott.

494/1. Valerianella locusta (L.) Betcke. 78, Peebles; plentiful on old railway near Peebles station, T. M. Bell.

494/1. Valerianella locusta var. dunensis D. E. Allen. 48, Mer.; dunes, Morfa Harlech, 1961, P. M. Benoit: 58, Ches.; Wallasey sandhills, 1866, J. B. L. Warren (*Hb. Dublin*), both det. and comm. D. E. Allen.

§494/2. Valerianella carinata Lois. ‡48, Mer.; side of Dolgelly road, just outside Barmouth, P. M. Benoit (1961, *Nature in Wales*, **7**, 68).

494/3. Valerianella rimosa Bast. H.12, Wexford; cornfield, Clohamon, E. Booth and M. McC. Webster.

506/2×1. Senecio × ostenfeldii Druce. H.28, Sligo; meadow near Ballinogleragh, M. McC. Webster, det. F. H. Perring.

†509/2. Petasites albus (L.) Gaertn. 78, Peebles; north bank of Tweed to east of Peebles, T. M. Bell.

§†512/1. Inula helenium L. *84, Linlithgow; roadside, South Queensferry, one plant, E. P. Beattie.

514/5. Filago minima (Sm.) Pers. 78, Peebles; plentiful by Leithen Water, with *Teesdalia nudicaulis*, T. M. Bell.

518/1. Solidago virgaurea var. cambrica (Huds.) Sm. 78, Peebles; two small patches on The Kipps, north of Peebles, at 1,900 ft., T. M. Bell, conf. D. H. Kent

532/1. Matricaria recutita L. 96, Easterness; farm yard, Croy, a single plant, M. McC. Webster.

†534/S. Cotula squalida Hook. f. 81, Berwick; lawn pest, Chapel-on-Leader, Earlston, A. Younger, comm. M. McC. Webster.

§540/7. Cirsium heterophyllum (L.) Hill. *112, Zetland; waste ground near Scalloway Methodist Church, R. C. Palmer. *H.28, Sligo; by roadside at east end of Lough Gill, c. 30 plants, M. McC. Webster.

543/1. Saussurea alpina (L.) DC. 112, Zetland; stony heath on north-east side of Hill of Colvadale, Unst, W. Scott.

§550/2. Leontodon hispidus L. 71, Man; the record in *Proceedings* **2**, 143, has proved to be an error. Delete v.c. 71 from *C.F.*, D. E. Allen.

552/1b. Tragopogon pratensis subsp. minor (Mill.) Wahlenb. 96, Easterness; railway embankment, Culloden, M. McC. Webster.

†557/3. Cicerbita macrophylla (Willd.) Wallr. 16, W. Kent; well established at South Park and Clarendon Road. Sevenoaks, K. E. Bull. 55, (Rutland); roadside between Uppingham and Caldecote, J. R. Ironside Wood.

Hieracium all det. P. D. Sell and C. West.

558/1(18). Hieracium lingulatum Backh. 105, W. Ross; Ben More Coigach, A. G. Kenneth: Kishorn; Ben Bhan, Applecross, A. McG. Stirling.

558/1(24). Hieracium pseudoanglicum Pugsl. 97, (Argyll); Ben na L-Uainha, Morvern, 1959, A. McG. Stirling.

558/1(33). Hieracium anglicum Fr. 107, E. Sutherland; cliffs above Cambusmor: H.28, Sligo; Knockharea Hill: H.29, Leitrim; east of Doon Lough, M. McC. Webster.

558/1(37). Hieracium hebridense Pugsl. 101, Kintyre; Sliabh Gaoil, E. C. Wallace and A. G. Kenneth. 105, W. Ross; An Sgurr, Kishorn; near Courthill House, Kishorn, A. McG. Stirling.

558/1(38). Hieracium ampliatum (W. R. Linton) A. Ley. 98, Argyll; rocks near Oban; Kerrera Ferry, A. G. Kenneth. 105, W. Ross; common on the limestone, Kishorn; An Sgurr, Kishorn; Glen Biannasdail, A. McG. Stirling. H.29, Leitrim; east of Doon Lough, M. McC. Webster.

558/1(42). Hieracium shoolbredii E. S. Marshall. 97, Westerness; cliffs west of Stroncreggan, Ardgour: 104, Mid Ebudes; sandstone bank above Uig, Skye, M. McC. Webster. 105, W. Ross; very common about Kishorn, A. McG. Stirling.

558/1(43). Hieracium iricum Fr. 105, W. Ross; Glen Biannasdail, Kinlochewe, A. McG. Stirling. H.28, Sligo; Knocknarea Hill, M. McC. Webster.

558/1(47). Hieracium schmidtii Tausch. 73, Kirkcudbr.; sea-cliffs near Lot's Wife, Southwick, A. McG. Stirling.

558/1(51). Hieracium sommerfeltii Lindeb. 97, (Argyll); Maol Odhar, Kingairloch, A. G. Kenneth.

558/1(53). Hieracium argenteum Fr. 108, W. Sutherland; Quinag, A. G. Kenneth.

558/1(1(56). Hieracium subrude (Arv.-Touv.) Arv.-Touv. 104, Mid Ebudes; sandstone cliff above Uig, Skye, M. McC. Webster.

558/1(58). Hieracium chloranthum Pugsl. 101, Kintyre; Knapdale Hills, near Loch An Dobhrain, A. G. Kenneth. 105, W. Ross; hills above Glasscknock, Kishorn; Bad d' Chreamha, N. Strome, A. McG. Stirling.

558/1(66). Hieracium saxorum (F. J. Hanb.) Sell & West. 107, E. Sutherland; cliffs above Cambusmor, The Mound, M. McC. Webster.

558/1(69). Hieracium dicella Sell & West. 98, Argyll; rocks near Oban, Kerrera Ferry; Creag A Chapuill, A. G. Kenneth. 107, E. Sutherland; cliffs above Cambusmor, The Mound, M. McC. Webster.

558/1(94). HIERACIUM DURICEPS F. J. Hanb. 101, Kintyre; Inverneill Burn, A. G. KENNETH. 105, W. Ross; limestone near Kishorn; An Sgurr, Kishorn, A. McG. STIRLING.

558/1(99). HIERACIUM GRANDIDENS Dahlst. 95, Moray; policies of Brodie Castle: 97, Westerness; Onich, M. McC. WEBSTER.

558/1(102). HIERACIUM SUBLEPISTOIDES (Zahn) Druce. 97, Westerness; near Onich, M. McC. WEBSTER.

558/1(108). HIERACIUM PICTORUM E. F. Linton. 105, W. Ross; Ben Bhan, Applecross, A. McG. STIRLING.

558/1(120). HIERACIUM SUBHIRTUM (F. J. Hanb.) Pugsl. 98, Argyll; burn between the Cobbler and Beinn Luibhean, Arrochar, A. G. KENNETH.

558/1(121). HIERACIUM RIVALE F. J. Hanb. 107, E. Sutherland; west cliff face of Ben Griam Mhor, c. 1,200 ft., M. McC. WEBSTER.

558/1(127). HIERACIUM EUPREPES F. J. Hanb. 73, Kirkcudbr.; High Bridge of Ken, Dalry, A. McG. STIRLING. 98, Argyll; rocks near Oban, Kerrera Ferry, A. G. KENNETH.

558/1(136). HIERACIUM CAESIOMURORUM Lindeb. 105, W. Ross; rocks near sea, Little Sand, Gairloch, A. McG. STIRLING.

558/1(138). HIERACIUM CRAVONIENSE (F. J. Hanb.) Roffey. 96, Easterness; verge to road, Kirkhill, M. McC. WEBSTER. 101, Kintyre; Knapdale; Artilligan Burn and near Tayvallich, A. G. KENNETH.

558/1(143). HIERACIUM CALEDONICUM F. J. Hanb. 98, Argyll; shore rocks near Oban; Creagan; Fitheach: 101, Kintyre; Largybaan area; shore rocks near Kilberry, A. G. KENNETH 105, W. Ross; limestone near Kishorn; An Sgurr, Kishorn, A. McG. STIRLING.

558/1(149). HIERACIUM VULGATUM Fr. 83, Edinb.; wall near Pathead: 96, Easterness; railway bank, Culloden, M. McC. WEBSTER. 105, W. Ross; Applecross; Kishorn; Lochcarron; Achnashellach; Kinlochewe, A. McG. STIRLING.

558/1(157). HIERACIUM DIAPHANOIDES Lindeb. 73, Kirkcudbr.; bank of river Urr near Corsock, A. McG. STIRLING. 89, E. Perth; wood above Balnakeilly House, Moulin, M. McC. WEBSTER.

558/1(158). HIERACIUM DIAPHANUM Fr. 73, Kirkcudbr.; railway bank near Gatehouse-of-Fleet station, A. McG. STIRLING.

558/1(159). HIERACIUM ANGLORUM (A. Ley) Pugsl. 73, Kirkcudbr.; Gelston Road, Kirkcudbright, A. McG. STIRLING.

558/1(178). HIERACIUM DEWARI Syme. 98, Argyll; Stob An Eas, Arrochar, A. G. KENNETH.

558/1(196). HIERACIUM SPARSIFOLIUM Lindeb. 73, Kirkcudbr.; High Bridge of Ken, Dalry, A. McG. STIRLING. 98, Argyll; road-bridge, south-east off Loch Awe, A. G. KENNETH.

558/1(206). HIERACIUM LATOBRIGORUM (Zahn) Roffey. 98, Argyll; near Kirnan: 101, Kintyre; near Redhouse, A. G. KENNETH.

558/1(208). HIERACIUM DRUMMONDII Pugsl. 98, Argyll; near Ford: 101, Kintyre; near Crinan, A. G. KENNETH.

558/1(209). HIERACIUM SUBCROCATUM (E. F. Linton) Roffey. 98, Argyll; near Minard; moss near Bellanoch, A. G. KENNETH.

558/1 (210). HIERACIUM STRICTIFORME (Zahn) Roffey. 97, (Argyll); Bridge at Resipol, A. G. KENNETH.

558/1(215). HIERACIUM MARITIMUM (F. J. Hanb.) F. J. Hanb. 101, Kintyre; Knapdale; near Carse; Wishing Lodge, A. G. KENNETH.

558/1(219). HIERACIUM PERPROPINQUUM (Zahn) Druce. 98, Argyll; near Blairmore; between Loch Eck and Ardentinny, A. G. KENNETH. H.11, Kilkenny; Kilkenny: H.12, Wexford; river bank, Bunclody: H.12, Carlow; river bank, Bunclody, M. McC. WEBSTER.

†558/2(5). HIERACIUM FLAGELLARE Willd. 82, Haddington; abundant on old railway, Saltown: 83, Edinb.; abundant on railway embankment, Fushiebridge, M. McC. WEBSTER.

§559/1. CREPIS FOETIDA L. ‡66, Durham; ballast hills, Sunderland, Mr. WINCH (*Hb. Kew*). There is a published record in '*Botanists' Guide to Northumberland and Durham*', 1, 74 (1805) that reads "On the ballast hills of Tyne & Wear", N. J. Winch. These records are the earliest for Co. Durham, J. B. MARSHALL.

§†559/2. CREPIS VESICARIA subsp. TARAXACIFOLIA (Thuill.) Thell. 94, Banff, and 96, Easterness; the records given for these two vice-counties (1957, *Proc. B.S.B.I.*, **2**, 374) are very doubtful, and no voucher specimens exist. The recorder, Miss M. McCallum Webster, is now doubtful, and thinks that the specimens may have been the erect glandular variant of *C. capillaris*. My view also, J. B. MARSHALL. Delete from *C.F.*—**Ed.**

†559/3. CREPIS SETOSA Haller f. 30, Bedford; chalk downs, Dunstable, 1961, Miss G. ELWELL, det. J. B. MARSHALL. 34, W. Glos.; edge of lawn, garden at Downend, Bristol, 1961, D. MUNRO-SMITH. 38, Warwick; introduced in garden, Bilton Road, Rugby, Mrs. M. JONES, comm. Prof. J. G. HAWKES. Only previous record for Warwickshire was made in 1866, J. B. MARSHALL.

559/5. CREPIS BIENNIS L. 45, Pemb.; hedgebank, Saundersfoot, T. A. W. DAVIS, det. and comm. J. B. MARSHALL.

§559/8. CREPIS PALUDOSA (L.) Moench. *71, Man; Greeb and Curraghs, W. F. S. FIELD MEETING, comm. D. E. ALLEN.

§576/2. Zostera angustifolia (Hornem.) Reichb *96, Easterness; mud flats near Bunchrew, Inverness, P. F. Hunt, A. McG. Stirling and V S. Summerhayes.

§577/7. Potamogeton alpinus Balb. ‡48, Mer.; Llyn Gwernan, 1957, T. M. Harris, det. J. E. Dandy, ex B.S.B.I. Maps Scheme: a single piece in drift washed up on the shore, 1962, P. M. Benoit and Mrs. M. D. G. Jones (1962, *Nature in Wales*, **8**, 73).

§577/8. Potamogeton praelongus Wulf. *H.30, Cavan; near Middleton, 1961, R. Sandell, det. J. E. Dandy and Sir George Taylor.

§579/2. Ruppia maritima L. *107, E. Sutherland; brackish ditch, Littleferry, M. McC. Webster.

§589/3. Polygonatum multiflorum (L.) All. *†78, Peebles; one plant on Tweedside near Niedpath Castle, T. M. Bell.

§606/4. Luzula luzuloides (Lam.) Dandy & Wilmott. ‡65, N.-W. York; railway embankment, Mossdale Head, G. A. Shaw (1963, *The Nat.*, **1963**, 22).

606/6. Luzula spicata (L.) DC. 107, E. Sutherland; summit of Ben Griam Mhor, M. McC. Webster.

†607/10. Allium triquetrum L. 11, S. Hants; clump by roadside near Lymington Harbour, 1961, K. E. Bull.

624/2. Cephalanthera longifolia (L.) Fritsch. 108, W. Sutherland; roadside near bridge, river Kirkaig, mouth of Lochinver, D. E. Kimmins.

625/2. Epipactis helleborine (L.) Crantz. 5, S. Som.; a colony of 16 plants by road leading to a slate quarry, Treborough, Brendon Hills. All plants were in fruit except one which was in flower on October 24!, J. T. Hamblen Knight.

§625/6. Epipactis phyllanthes G. E. Sm. ‡64, Mid-W. York; on the Magnesian Limestone near Aberford, M. Densley (1963, *The Nat.*, **1963**, 21).

631/1. Hammarbya paludosa (L.) Kuntze. 99, Dunbarton; peaty flushes, Glen Fruin, A. McG. Stirling. 107, E. Sutherland; bog near road, half a mile east of Torrish, M. McC. Webster.

§642/1. Orchis purpurea Huds. *23, Oxon. See p. 172.

§643/1. Dactylorchis fuchsii (Druce) Vermeul. *107, E. Sutherland; Strathcarnaig, Golspie, B.S.B.I. Field Meeting.

§643/5. Dactylorchis purpurella (T. & T. A. Stephenson) Vermeul. *79, Selkirk; beside Yarrow Water, Mrs. Lynn, comm. J. R. Ironside Wood.

§643/6. Dactylorchis majalis subsp. cambrensis R. H. Roberts. ‡49. Caern.; marsh in the Glaslyn valley; a third colony of this subspecies first described in *Watsonia*, **5**, 37 (1961). R. H. Roberts.—For further information see *Nature in Wales*, **8**, 43 (1962).—**Ed.**

644/1. Aceras anthropophorum (L.) Ait. f. 14, E. Sussex; in settled shingle, Pevensey Bay, Miss C. Andrews.

645/1. Anacamptis pyramidalis (L.) Rich. 74, Wigtown; Broadsea Bay, Portpatrick, A. McG. Stirling.

§649/1. Arum maculatum L. 71, Man; lane near Rushen Abbey, all f. *immaculatum*, L. S. Garrad, conf. C. T. Prime. All previous records apparently errors for *A. italicum* subsp. *italicum*, comm. D. E. Allen. Remove from brackets in *C.F.*—**Ed.**

§652/3. Sparganium angustifolium Michx. 71, Man; C. I. Paton's specimen, the basis for the only existing record, is immature, but appears to be *S. minimum*; the locality from which the specimen was collected is also an unlikely one for *S. angustifolium*, D. E. Allen. Delete from *C.F.*—**Ed.**

654/1. Eriophorum angustifolium Honck. 71, Man; a very robust plant, 30 cm. tall, dominant in sedge fen, The Lhaggagh, Andreas, D. E. Allen and M. B. Bing (as var. *elatius* Koch).

§654/3. Eriophorum latifolium Hoppe. *75, Ayr; near Monk Hill, Lendalfoot, A. McG. Stirling. 97, Westerness; bog, west of Stronacreggan: 107, E. Sutherland; bog, 1½ miles south-west of the mound, M. McC. Webster.

§655/9. Scirpus tabernaemontani C. C. Gmel. *71, Man; pool, Ballaugh, Curraghs; ponds by Jurby Church, W.F.S. Field Meeting comm. D. E. Allen.

655/10. Scirpus setaceus L. 57, Derby; steep, wet bank of stream, Alport Dale, J. N. Mills.

659/1. Schoenus nigricans L. 107, E. Sutherland; basic flush near Torrish, Helmsdale, B.S.B.I. Field Meeting.

§663/1. Carex laevigata Sm. *87, W. Perth; north side of Loch Chon, A. McG. Stirling. *107, E. Sutherland; rare, in bog east of Torrish, M. McC. Webster.

§663/7. Carex lepidocarpa Tausch. 74, Wigtown; basic flushes, Broadsea Bay, Portpatrick; 75, Ayr; basic flushes near Moak Hill, Lendalfoot: *99, Dunbarton; basic flushes Glen Fruin, A. McG. Stirling: *107, E. Sutherland; basic flush near Torrish, Helmsdale, B.S.B.I. Field Meeting.

§663/52. Carex bigelowii Torr. ex Schwein. ~~*70, Selkirk;~~ Lochraig Rig, c. 2,100 ft., J. R. Ironside Wood. 107, E. Sutherland; summit of Ben Griam Mhor, M. McC. Webster.

See p.356

§663/78. Carex pauciflora Lightf. *75, Ayr; near Stinchar Bridge, Straiton, A. McG. Stirling.

§669/4. Glyceria maxima (Hartm.) Holmberg. *107, E. Sutherland; Loch Fleet, near Golspie, B.S.B.I. Field Meeting.

§†670/5. Festuca heterophylla Lam. *71, Man; Braddan, old churchyard, with *Poa chaixii*, W.F.S. Field Meeting, comm. D. E. Allen.

§†671/3. Lolium temulentum L. *71, Man; Kewaigue rubbish-dump, W.F.S. Field Meeting, comm. D. E. Allen.

§672/3. Vulpia myuros (L.) C. C. Gmel. *†107, E. Sutherland; railway track near Rogart, B.S.B.I. Field Meeting.

§673/2. Puccinellia distans (L.) Parl. *71, Man; shore by Poolvash Farm, W.F.S. Field Meeting, comm. D. E. Allen.

§†676/15. Poa chaixii Vill. *81, Berwick; woods, Chapel-on-Leader, Earlston, M. McC. Webster.

682/1. Sesleria caerulea (L.) Ard . H.35, W. Donegal; sea cliff, Black Burrow, near Dunfanaghy, E. C. Wallace.

§683/12. Bromus thominii Hardouin. *89, E. Perth; verge to road near Baledmund, Moulin, M. McC. Webster.

§684/2. Brachypodium pinnatum (L.) Beauv. *†98, Argyll; near Kilmuir Pier, on Dunvon road, T. M. Bell, conf. C. E. Hubbard.

693/1. Helictotrichon pratense (L.) Pilg. 93, N. Aberdeen; gully on Olass—Cabrach road: 107, E. Sutherland; Golspie golf course, with *H. pubescens*, M. McC. Webster.

§693/2. Helictotrichon pubescens (Huds.) Pilg. 96b, Nairn; Cantraydowne: 107, E. Sutherland; Golspie golf course; cliffs above Cambusmor: H.25, Roscommon; Knockogeny: *H.27, W. Mayo; Lough Conn: H.29, Leitrim; east of Doon Lough, M. McC. Webster.

697/1. Aira praecox L. 55 (Rutland); railway cutting at north end of Glaston tunnel, J. R. Ironside Wood.

†719/2. Digitaria sanguinalis (L.) Scop. 83, Edinb.; railway tip, Borthwick, A. Younger and M. McC. Webster.

ABSTRACTS FROM LITERATURE

Compiled by D. H. Kent

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SYSTEMATIC

1→ Pteridophyta Chiarugi, A., 1960, Tavole cromosomiche delle Pteridophyta, *Caryologia*, **13**, 27-150. A chromosome index of the pteridophyta; a comprehensive bibliography is appended.—[D.H.K.]

1→ Pteridophyta. McClintock, D., 1962, The ferns of the Channel Islands, *Brit. Fern Gaz.*, **9**, 34-37.

1/2. Lycopodium inundatum L. Gillespie, J. P., 1962, A theory of relationships in the Lycopodium inundatum complex, *Amer. Fern J.*, **52**, 19-26.

2/2. Selaginella kraussiana (Kunze) A. Braun. Jovet, P., and Jallu, J., 1959, Selaginella kraussiana (Kunze) A.Br. en Pays Basque Français, *Bull. Centre d'Etudes Rech. Scient. Biarritz*, **2**, 581-583.

3. Isoetes. Fuchs, H. P., 1962, Nomenklatur, Taxonomie und Systematik der Gattung Isoëtes Linnaeus in geschichtlicher Betrachtung, *Beih. Nova Hedwig.*, **3**, pp. 103.

3/2. Isoetes echinospora Durieu. Löve, A., 1962, Cytotaxonomy of the Isoetes echinospora complex, *Amer. Fern J.*, **52**, 113-123.

4. Equisetum. Hauke, R. L., 1962, A resumé of the taxonomic reorganization of Equisetum subgenus Hippochaete, 2, *Amer. Fern J.*, **52**, 29-35: 3, loc. cit., **52**, 57-63 & 123-130.

7. Hymenophyllum. Evans, G. B. & Jermy, A. C., 1962, Notes on the history of British fern species. 1. Confusion in the filmy ferns, *Brit. Fern Gaz.*, **9**, 81-84.

15. Asplenium. Manton, I. and Reichstein, T., 1962, Diploides Asplenium obovatum Viv., *Bauhinia*, **2**, 79-91. *Asplenium obovatum* sens. lat. consists of two cytotypes; a diploid, *A. obovatum* Viv., $2n=36$, and a tetraploid, **A. billotii** F. Schultz, $2n=72$. The two plants are also morphologically distinct.

The common north European species is *A. billotii*, while *A. obovatum* is manly a southern European species. Although *A. obovatum* has not so far been detected in Britain it should be searched for in south-west England and Ireland.—[A.C.J.]

15/1×7. Asplenium adiantum-nigrum × ruta muraria. Segal, S., 1962, Pteridologische aantekenigen, 1. Asplenium adiantum-nigrum × A. ruta-muraria in Nederland, *Gorteria*, **1**, 56-59. The records of the putative hybrid, *Asplenium adiantum-nigrum* × *A. ruta-muraria* are discussed. These records, from botanical literature, refer to finds of the

supposed hybrid in Spain, France, Italy, Switzerland and Poland. Some recent authors are doubtful of the existence of a hybrid between the two species, but in the opinion of the present author, a specimen growing on an old wall at Enkhuizen, Netherlands, together with a single plant of *A. adiantum-nigrum* and many plants of *A. ruta-muraria*, doubtless represents the hybrid in question.

The two species and their putative hybrid are illustrated by line-drawings.—[D.H.K.]

15/5. ASPLENIUM TRICHOMANES L. Einarsson, E., 1961, Asplenium trichomanes L. svartburkini fundinn á Islandi, *Náttúrufraedingurinn*, **31**, 168-173. *Asplenium trichomanes* was discovered in Iceland in 1961—virtually being a new record for the country, as of the several unconfirmed records for the island, the most recent was made nearly 90 years ago.—[D.H.K.]

15/7×8. ASPLENIUM × MURBECKII Dörfl. Jackson, F., 1961, The rediscovery of Asplenium × murbeckii Dörfl, *Brit. Fern Gaz.*, **9**, 49-50. Records the rediscovery of *Asplenium* × *murbeckii* at Castle Crag, Borrowdale.—[D.H.K.]

16/1. CETERACH OFFICINARUM DC. Lebrun, J. P., 1962, Le Ptéridophytes dans la Région Parisienne, 1. Ceterach officinarum, *Cahiers des Nat.*, **18**, 19-22.

17/1. MATTEUCCIA STRUTHIOPTERIS (L.) Tod. Lawalrée, A., 1962, Matteuccia struthiopteris (L.) Todaro (Athyriaceae) en Belgique, *Bull. Jard. Bot. Brux.*, **32**, 309-323.

17/1. MATTEUCCIA STRUTHIOPTERIS (L.) Tod. Pietrykowska, J., 1962, Investigations on the germination of spores of the fern Matteuccia struthiopteris (L.) Tod., *Acta Soc. Bot. Pol.*, **31**, 437-447.

21/3. DRYOPTERIS ABBREVIATA (DC.) Newman. Reichstein, T., 1962, Dryopteris abbreviata (D.C.) Newman im Appenin, *Bauhinia*, **2**, 95-113.

21/7. DRYOPTERIS DILATATA (Hoffm.) A. Gray. Britton, D. M., 1962, Dryopteris dilatata (Hoffm.) A. Gray in North America, *Rhodora*, **64**, 207-212.

25. POLYPODIUM. Shivas, M. G., 1962, The Polypodium vulgare complex, *Brit. Fern Gaz.*, **9**, 65-70. Describes and figures the three British species of the *Polypodium vulgare* complex. The following key (based on macroscopic characters) is provided.

1. Sori round; fronds lanceolate, pinnae ± equal in length to near the tip of the frond; lowest pair of pinnae not projecting forward; new fronds produced in the summer; indurated cells of the annulus deeper coloured than other cells of the sporangium and very conspicuous ..... *P. vulgare*
   Sori oval; lowest pair of pinnae projecting forward 2
2. Frond ovate, longest pair of pinnae being the 4th, 5th or 6th from the base; new fronds produced in summer and autumn ..... *P. interjectum*
   Frond broadly ovate or triangular, longest pair of pinnae being the 2nd from the base; new fronds produced in the autumn ..... *P. australe*

A key to microscopic characters is also given.

The known British vice-comital distribution of the three species is as follows:—

P. australe Fée. V.c. 2, 3, 5, 6, 9, 35, 41, 45-47, 69, H.3, 4, 7, 9, 12, 28, 29.

P. vulgare L. sens. strict. V.c. 0, 1-6, 8-12, 14-25, 27-29, 31-33, 35, 38, 40, 42, 45, 47-50, 52, 54, 57, 58, 61, 64-67, 69-72, 74, 78, 80, 81, 83, 87-93, 96, 97, 100-102, 104-106, 108, 110, 112, H.1,-4, 16, 29, 33, 35.

P. interjectum Shivas. V.c. 1-6, 9-11, 13-18, 22-25, 27-29, 32, 34, 35, 38, 41-47, 49, 50, 52, 58, 64, 67, 69-71, 83, 92, 98, 99, 101, 102, 104, 108, 110 H.2-6, 8, 12, 23.—[D.H.K.]

29/1. Ophioglossum vulgatum L. Jovet, P., and Lebrun, J. P., 1961, Trois spécimens anormaux d'Ophioglossum vulgatum L., *Bull. Centre d'Etudes Rech. Scient. Biarritz*, **3**, 477-480. Three abnormal specimens of *Ophioglossum vulgatum* were collected at Biarritz in April 1961. One had two fertile spikes, one had three, and the third had six already formed with more developing. These three specimens are described and diagramatically illustrated.—[E.B.B.]

40/1. Aconitum napellus L. Lascombes, S., 1962, L'espèce linnéenne Aconitum napellus. Sous-espèces et variétés, *Bull. Soc. Bot. France*, **108**, 415-419. It is concluded that only the characters presented by the open flower should be used in the systematic treatment of this polymorphic species. A list of the eleven subspecies and varieties found in the Pyrenees is given.—[E.B.B.]

43. Anemone. Leinhart, R., 1962, Présence en Lorraine de l'hybride: Anemone nemorosa L. × Anemone ranunculoides L., *Bull. Soc. Lorraine Sci.*, **2**, 39-40.

46. Ranunculus. Cook, C., 1962, Über das Vorkommen von Ranunculus rionii Lagger und R. baudotii in Österreich, *Österr. Bot. Zeitschr.*, **109**, 372-374.

58. Papaver. Acheson, R. M., Jenkins, C. L., Harper, J. L., & McNaughton, I. H., 1962, Floral pigments in Papaver and their significance in the systematics of the genus, *New Phyt.*, **61**, 256-260.

58. Papaver. Harper, J. L., & McNaughton, I. H., 1962, Interference in mixed poppy populations, *Ann. Appl. Biol.*, **50**, 352. A summary of a paper read at a meeting of the Association of Applied Biologists at Bangor in September 1961.—[D.H.K.]

58/1. Papaver rhoeas L. Allen, H. G., 1958, A freak poppy at Wootton, *J. Northants N.H.S. & F.C.*, **33**, 214.

81/1. Cardaria draba (L.) Desv. Scurfield, G., 1962, Cardaria draba (L.) Desv. (Biological Flora), *J. Ecol.*, **50**, 489-499.

82/1. Isatis tinctoria L. Sipkes, C., 1962, De Wede (Isatis tinctoria), *Natura*, **59**, 3-5.

88. Cochlearia. Maarel, E. van der, 1962, Aantekeningen over Cochlearia officinalis L. s.l., 1. Herbariumonderzoek van Cochlearia officinalis L. en C. anglica L., *Gorteria*, **1**, 75-79: 2. Populatieonderzoek aan Cochlearia officinalis L. en C. anglica L., *loc. cit.*, **1**, 86-90. Population studies and examination of herbarium material of *Cochlearia officinalis* and *C. anglica* in the Netherlands have revealed the existence of introgressive hybridization between the two species.—[D.H.K.]

100/4. Arabis hirsuta (L.) Scop. Klásterský, I., & Novotńa, I., 1962, Komplex Arabis hirsuta, *Preslia*, **34**, 387-393. Studies on the *Arabis hirsuta* complex in Czechoslovakia.—[D.H.K.]

102/5×4. Rorippa × erythrocaulis Borbás. Hylander, N., 1962, Rorippa amphibia × islandica funnen i norra Finland, *Mem. Soc. Fauna Flora Fenn.*, **37**, 253-255. *Rorippa* × *erythrocaulis* was found by the author in northern Finland in 1959. It is new to the Finnish flora.—[D.H.K.]

109/1. ARABIDOPSIS THALIANA (L.) Heynh. Brown, J. A. M., 1962, Effect of Thymidine analogues on reproductive morphogenesis in Arabidopsis thaliana (L.) Heynh., *Nature*, **195**, 51-53.

115. HYPERICUM. Heine, H., 1962, Les Millepertuis américains dans la flore d'Europe, *Bauhinia*, **2**, 71-78. Five American species of *Hypericum*, viz. *H. canadense* L., *H. gentianoides* (L.) B.S.P., *H. gymnanthum* Engelm. & Gray, *H. majus* (A. Gray) Britton and *H. mutilum* L., are recorded from Europe. The history of these is given, in particular of *H. canadense* found by D. A. Webb in Ireland in 1954, and previously in the Netherlands by Lake, 1909, and Jonker, 1934. It is considered that *H. canadense* is an adventive in Europe as are the other four species. —[E.B.B.]

120. TAMARIX. Baum, B., & Jovet, P., 1961, Etude sur les Tamaris spontanés en France, *Bull. C.E.R.S. Biarritz*, **3**, 457-475. Three species of *Tamarix*, *T. africana*. *T. anglica* and *T. gallica* grow spontaneously in France. Detailed descriptions of these are given, together with diagrams, a comparative table of morphological characters and a review of the most important literature. The following keys are provided:

A. Based on vegetative characters.

1. Leaves with scarious/cartilaginous margins visible to the naked eye on dried plants ..... *T. africana* Desf. non Poir.
   Leaves with scarious margins scarcely visible to the naked eye 2
2. Base of old leaves often markedly gibbous (or simply raised on the surface of the branch) ..... *T. anglica* Webb
   Base of old leaves clearly decurrent on the surface of the branch ..... *T. gallica* L.

B. Based on floral characters.

1. Disk with 5 lobes, each lobe terminating in a staminal filament 2
   Disk with 5 bilobed lobes (often appearing as 10 lobes); staminal filaments inserted a little under the disk and between the lobes. Stamens clearly projecting, blunt or slightly apiculate. Ovary trigonous ..... *T. gallica*
2. Stamens scarcely projecting, blunt or slightly apiculate. Ovary trigonous ..... *T. africana*
   Stamens clearly projecting, very slightly apiculate. Ovary lageniform (flask-shaped) ..... *T. anglica*

—[E.B.B.]

123/7. SILENE ACAULIS (L.) Jacq. Jones, V. & Richards, P. W., 1962, Silene acaulis (L.) Jacq. (Biological Flora), *J. Ecol.*, **50**, 475-487.

134/1, HOLOSTEUM UMBELLATUM L. Piehl, M. A., 1962, Holosteum umbellatum L., an angiosperm new to Michigan, *Rhodora*, **64**, 222-225.

141/1. ARENARIA SERPYLLIFOLIA L. Mizushima, M., 1962, On the Japanese representative of Arenaria serpyllifolia, *Acta Phyt. Geobot.* (Japan), **20**, 191-194.

154/4. CHENOPODIUM ALBUM L. Williams, J. T., 1962, Dormancy in Chenopodium album, *Ann. Appl. Biol.*, **50**, 352.

157/1. HALIMIONE PORTULACOIDES (L.) Aellen. Chater, E. H., 1962, The rôle of Halimione portulacoides (Sea Purslane) in the development of salt marsh near Rye Harbour, *Hastings & E. Sussex Nat.*, **9**, 147-157.

160. SALICORNIA. Binet, P. & Langlois, J., 1962, Précisions sur quelques caractères de Salicornia strcta Dumort., Salicornia patula Moss et Salicornia appressa Dumort., *Bull. Soc. Bot. France*, **108**, 387-393. Biometrical and physiological studies of these three species show how much

they differ from each other and which characters can be used to differentiate them. The seeds of *S. patula* alone of the three germinate in fresh water more rapidly in light than in darkness; in nature (on the Normandy coast) this species appears later (during April) than the others (February); preserved dry in laboratory temperature the seeds of only *S. appressa* continue viable longer than one year; branching of *S. appressa* begins at an early stage (after three internodes), it is later in the other two (after the ninth internode); the relative growth and orientation of branches is different in the three species, in particular *S. appressa* has a preponderance of branches arising from the axil of the cotyledons.—[E.B.B.]

162. TILIA. Turner, J., 1962, The Tilia decline: an anthropogenic interpretation, *New Phyt.*, **61**, 328-341.

162/2×1. TILIA × EUROPAEA L. Sen, D., 1962, Root ecology of Tilia europaea, 3. On the growth periodicity in roots of seedlings, *Acta Hort. Bot. Prag.*, **1**, 69-74.

169/4. ERODIUM GLUTINOSUM Dumort. Benoit, P., 1962, Erodium glutinosum in Wales, *Nature in Wales*, **8**, 3-6. The differences between *Erodium glutinosum* and *E. cicutarium* are described, and the distribution of the former in Wales is given and illustrated by a map.—[D.H.K.]

171/4. IMPATIENS GLANDULIFERA Royle. Jasowski, M., 1961, Impatiens roylei Walpers—nowy sladnik lasow legowych w Polsce, *Fragm. Fl. Geobot.*, **7**, 77-80. *Impatiens glandulifera* has been found as an established garden escape in Poland. It is new to the Polish flora.—[D.H.K.]

179/1. RHAMNUS CATHARTICUS L. Prilop, H., 1962, Vorkommen und Verbrietung des Echten oder Purgier-Kreuzdorn, Rhamnus cathartica L., in Nordwest Deutschland, *Abhand. Naturwiss. ver. Bremen*, **36**, 169-180.

187. ULEX. Lucas, A. T., 1960, *Furze, a survey of its uses in Ireland.* Pp. 204. National Museum of Ireland. Stationery Office. Dublin. Price 7/6.

192/18. TRIFOLIUM REPENS L. Brougham, W. R., 1962, The leaf growth of Trifolium repens as influenced by seasonal in the light environment, *J. Ecol.*, **50**, 449-459.

192/18. TRIFOLIUM REPENS L. Snaydon, R. W., 1962, The growth and competitive ability of contrasting natural populations of Trifolium repens L. on calcareous and acid soils, *J. Ecol.*, **50**, 439-447.

192/24. TRIFOLIUM MICRANTHUM Viv.—See 674/2. CATAPODIUM MARINUM (L.) C. E. Hubbard.

206. VICIA. Zertová, A., 1962, Ein Schlüssel zur Bestimmung der tschechoslowakischen Arten der Gattung Vicia L. nach den morphologischen Merkmalen der Samen, *Acta Hort. Bot. Prag.*, **1**, 113-118.

211. RUBUS. Haskell, G., 1962, The genetics of Rubus breeding, *Phyton* (Argentina), **17**, 173-187.

211. RUBUS. Ruyver, L. de, 1962, Notes sur les ronces des districts Campinien et Flandrien, *Bull. Soc. Roy. Bot. Belg.*, **94**, 19-22. Considerable additions to the records for *Rubus* species in these areas are made. *R. sulcatus, R. fissus, R. plicatus, R. foliosus* and *R. suberectus* are the most widespread.—[E.B.B.]

215. FRAGARIA. Staudt, G., 1962, Taxonomic studies in the genus Fragaria: Typification of Fragaria species known at the time of Linnaeus,

Canad. J. Bot. **40**, 869-886. Six species of *Fragaria* together with their subspecific entities are described and typified and their chromosome number is given. A total of 392 collections have been investigated cytologically. So far as it seemed necessary for interpretation, historical notes are added.

The following taxa are discussed—*Fragaria vesca* (four subspecies, five forms and three cultivars), *F. viridis*, *F. moschata*, *F. virginiana* (four subspecies), *F. chiloensis* (four subspecies and two forms), *F.* × *ananassa* (two nothomorphs). New status is given to numerous taxa and two new taxa are described.—[Author's summary].

215/1. FRAGARIA VESCA L. Dahlgren, K. V. O., 1962, Die Lösung des micrantha-Problems bei Fragaria vesca, *Bot. Not.*, **115**, 288-292

218. AGRIMONIA. Skalický, V., 1962, Ein Beitrag zur Erkenntnis der europäischen Arten der Gattung Agrimonia L., *Acta Hort. Bot. Prag.*, **1**, 87-108. A revision of *Agrimonia* in Europe, with descriptions of species, a key to their identification, geographical distribution, illustrated by maps, and cytological data.—[D.H.K.]

225. ROSA. Chrvzanovsky, V. G., *Rosa*. Pp. 497. Moscow (In Russian). A monograph of the roses of the U.S.S.R., including most of the species found in Britain.—[D.H.K.]

243/1. PARNASSIA PALUSTRIS L. Gilleghan, J. A., 1958, The occurrence of Parnassia palustris on the Magnesian Limestone of County Durham and West Yorkshire, *J. Durham Coll. N.H.S.*, **5**, 17-19.

243/1. PARNASSIA PALUSTRIS L. Gilleghan, J. A., 1960, Investigations into the ecology of Parnassia palustris L., *J. Durham Coll. N.H.S.*, **7**, 10-12.

252/1. HIPPOPHAE RHAMNOIDES L. Pearson, M. C. & Rogers, J.A., 1962, Hippophaë rhamnoides L. (Biological Flora), *J. Ecol.*, **50**, 501-513.

252/1. HIPPOPHAE RHAMNOIDES L. Topa, E., 1960, Hippophae rhamnoides L. in R.P.R., *Contrib. Bot. Univ. "Babes Bolyai"*, **1960**, 239-245. An account of *Hippophae rhamnoides* in Rumania.—[D.H.K.]

254. EPILOBIUM. Raven, P. H., 1962, The genus Epilobium in Turkey, *Notes Roy. Bot. Gard. Edinb.*, **24**, 183-198; keys and gives notes on the Turkish species of *Epilobium*, many of which also occur in Britain.—[D.H.K.]

254/6. EPILOBIUM ADENOCAULON Hausskn. Lawalrée, A. & Reichling, L., 1961, Epilobium adenocaulon Hausskn. au Grande-Duché de Luxembourg, en Belgique et en Allemagne occidentale, *Arch. Inst. Grand-Duc. Luxembourg, Sect. Sci.*, nouv. sér., **27**, 89-105. An account of the introduction, history and spread of the North American *Epilobium adenocaulon* in Luxemburg, Belgium and western France. Notes are provided also on the hybrids *E. adenocaulon* × *parviflorum* and *E. adenocaulon* × *montanum*.—[D.H.K.]

255. CHAMAENERION. Böcher, T. W., 1962, A cytological and morphological study of the species hybrid Chamaenerion angustifolium × latifolium, *Bot. Tidsskr.*, **58**, 1-34.

256. OENOTHERA. Kurabayashi, M., Lewis, H. & Raven, P. H., 1962, A study of mitosis in the Onagraceae, *Amer. J. Bot.*, **49**, 1003-1026.

262. CALLITRICHE. Schotsman, H. D., 1961, Contribution à l'études des Callitriche du canton de Neuchâtel, *Bull. Soc. Neuchat. Sci. Nat.*, **84**, 89-101. *Callitriche hamulata* Kütz. is reported for the first time from canton

Neuchâtel. The author recognises the presence of *C. cophocarpa* Sendtn. (*C. polymorpha* Lönnr.) previously mistaken for another species. A hybrid new for Switzerland was found at Biaufond, its caryotype appears to indicate that the parents are *C. platycarpa* and *C. cophocarpa*. The present paper shows how far cytology helps resolve difficult taxonomical problems and helps to enrich the field of floristics.—[Author's Summary]

263/1. Viscum album L. Péter-Contesse, J., 1961, Quelques remarques sur le Gui, *Bull. Soc. Neuchat. Sci. Nat.*, **84**, 103-111. *Viscum album* is a plant requiring light. Both the race on pine and that on deciduous trees occur on trees requiring light. A third race, on spruce, has become adapted to a shade-loving tree. Such differences raise numerous problems that cannot be solved in the present state of our knowledge.—[Author's summary].

268/1. Hedera helix L. Knight, G. H., 1962, Ivy in woods, *Ann. Rep. Warwick N.H.S.*, **8**, 6-9. Studies on the growth, habit, flowers and fruits of *Hedera helix* in a number of woods in Warwickshire.—[D.H.K.]

269→ Umbelliferae. Delvosalle, L., 1957, Clé pour la détermination pratique des Ombellifères sans fruits, *Nat. Belg.*, **38**, 145-154.

311. Heracleum. Gawlowska, M., 1961, Systematyka Wewnatizgatunkowa Heracleum sphondylium L. i Heracleum sibiricum L., wystepujucych w Polsce i krajach sasiednich, *Fragm. Fl. Geobot.*, **7**, 3-39. A taxonomic account of *Heracleum sphondylium* and *H. sibiricum* in Poland and adjacent countries. Both species are very variable and numerous forms are described.—[D.H.K.]

311. Heracleum. Mandenova, P., 1962, Taxonomic review of Turkish species of Heracleum, *Notes Roy. Bot. Gard. Edinb.*, **24**, 173-181. Keys and describes the species of *Heracleum* known from Turkey. Several species found as adventives in Britain are included.—[D.H.K.]

325/1(3). Rumex tenuifolius (Wallr.) Löve. Scannell, M.P., 1962, Rumex tenuifolius (Wallr.) Löve in Ireland, *Irish Nat. J.*, **14**, 80. *Rumex tenuifolius* was found on sand-dunes on the north side of the Rosslar peninsula, Co. Wexford, in 1961. The species is new to Ireland. Differences between *R. tenuifolius* and *R. acetosella* are given.—[D.H.K.]

342/3. Populus tremula L. Bouvarel, P., 1962, Le tremble dans les Alpes et en particulier en Savoie, *Bull. Soc. Bot. France*, **108**, Sess. extra, 66-69. The alpine form of *Populus tremula* differs in many respects—in soil preference, habit, morphology, etc.—from that of the plains. The former has a greenish-grey bark and almost glabrous leaves on shining branches; the latter has a reddish-grey bark and very pubescent leaves on mat branches.—[E.B.B.]

343. Salix. Skvortsov, A. K., 1962, Conspectus Salicum Asiae mediae, *Not. Syst. Herb. Inst. Bot. Acad. Sci. Uzbekistan*, **17**, 43-74 (in Russian). Describes and keys the species of *Salix* found in the Asiatic provinces of the U.S.S.R. Many British species are included in the account.—[D.H.K.]

357. Erica. Verdus, M. C., 1961, Comparason d'Erica carnea et d'Erica mediterranea, *Bull. Soc. Hist. Nat. Toulouse*, **96**, 181-187. Although *Erica carnea* and *E. mediterranea* have many resemblences their distribution and ecology are notably different. In general appearance *E. mediterranea* is a tall bush with an upright stem and branches, whereas *E. carnea* is a scrambling dwarf bush with decumbent stems giving off adventitious roots.

There are many more anatomical and morphological differences, which are listed and illustrated.—[E.B.B.]

367→ PRIMULACEAE. Valentine, D.H., 1962, Sections and genera in the Primulaceae, *Taxon*, **11**, 71-74.

392. SYMPHYTUM. Pawlowski, B., 1962, Uwagi o zywokostach, *Fragm. Fl. Geobot.*, **7**, 327-356. Notes on *Symphytum* species in Poland and adjacent territories.—[D.H.K.]

405/1. CONVOLVULUS ARVENSIS L. Van Ooststroom, S. J., 1962, Een merkwaardige vorm van Convolvulus arvensis L., *Gorteria*, **1**, 79.

412. PHYSALIS. Van Ooststroom, S. J. & Reichgelt, T. J., 1962, De in Nederland adventieve en gekweekte Physalis-soorten, *Gorteria*, **1**, 65-71. The genus *Physalis* L. is represented in the Netherlands by five adventitious species, viz. *P. viscosa* L., *P. peruviana* L., *P. virginiana* Mill., *P. ixocarpa* Brot. ex Hornem., and *P. angulata* L. A sixth species, *P. alkekengii* L., is found in cultivation and occasionally escapes. The species may be distinguished with the aid of the following key:

1. Corolla white, rotate, distinctly 5-lobed. Fruiting calyx orange or red ..... 1. *P. alkekengii*
1. Corolla yellow, mostly with brown or violet-blue spots, widely funnel-shaped; limb nearly entire Fruiting calyx yellowish or yellowish-green.
   2. Plant rather densely covered with stellate hairs. Stems prostrate to ascending ..... 2. *P. viscosa*
   2. Plant without stellate hairs, but with short simple or long jointed hairs. Stems erect.
      3. Plant densely covered with long jointed hairs. Anther c. 4 mm. long ..... 3. *P. peruviana*
      3. Plant almost glabrous, with few short hairs, which may be mixed with some long jointed ones in the younger parts Anthers c. 1½-3 mm. long.
         4. Annuals: the young parts with few jointed hairs. Flowering calyx c. 4-6 mm. long, divided halfway or less.
            5. Corolla c. 8-15 mm. long. Anthers c. 3 mm. long, curved after dehiscence. Berry purple ..... 5. *P. ixocarpa*
            5. Corolla c. 6-8 mm. long. Anthers c. 1½-2 mm. long, not curved after dehiscence. Berry yellowish-green ..... 6. *P. angulata*
         4. Perennial; jointed hairs absent. Flowering calyx c. 8-10 mm. long, divided halfway or more ..... 4. *P. virginiana*

[Authors' summary].

415/1. DATURA STRAMONIUM L. Allen, H. G., 1960, Thorn Apple (Datura stramonium L.), *J. Northants. N.H.S. & F.C.*, **34**, 39.

446. LYCOPUS. Henderson, N. C., 1962, A taxonomic revision of the genus Lycopus, *Amer. Midl. Nat.*, **68**, 95-138.

455. SALVIA. Hrubý, K., 1962, Key to the supraspecific taxa of the genus Salvia L., *Preslia*, **34**, 368-373.

472/3. PLANTAGO LANCEOLATA L. Clifford, H. T., 1962, Insect pollination of Plantago lanceolata, *Nature*, **193**, 196. In Britain *Plantago lanceolata* is regarded as a wind-pollinated species. In Brisbane, Australia, it is regularly worked for pollen by the honey bee; where colonies occur it is also wind-pollinated.

In the cooler climate of Britain anthesis still occurs in the early morning, and here the species may be predominately pollinated by wind as most of the pollen is shaken from the anthers and dispersed before it is warm enough for bees to be foraging.—[D.H.K.]

472/5. Plantago coronopus L. Gorenflot, R., 1961, Etude morphologique et cytologique de quelques allotriploides de Plantago coronopus L., *Bull. Soc. Bot. France*, **108**, 200-212. Experimental work on artificial crosses between tetraploid material of *Plantago coronopus* from Algeria and diploid Algerian and European material is described, illustrated and discussed. It is possible that such hybridisation in nature is one cause of the polymorphic nature of the species.—[E.B.B.]

472/5. Plantago coronopus L. Gorenflot, R., 1962, Introgression naturelle intraspécifique chez Plantago coronopus L., *Bull. Soc. Bot. France*, **108**, 294-306. On the Atlantic coast near Talmont, in the bay of Cayola, a polymorphic population of *Plantago coronopus* was investigated. A natural introgression between cliff and inland forms is stated to be the cause of the considerable variation in leaf, inflorescence and flower.—[E.B.B.]

485. Galium. Lewis, W. H., 1962, Chromosome numbers in North American Rubiaceae, *Brittonia*, **14**, 285-290.

497. Dipsacus. Hansen, A., 1962, Noter om Danske planter, 4. Bidrag til Danmarks adventivflora, *Bot. Tidsskr.*, **58**, 72-81. Five species of *Dipsacus* are known in Denmark—*D. sylvestris* Huds., *D. pilosus* L., *D. laciniatus* L., *D. sativus* (L.) Scholler and *D. strigosus* Willd. *D. pilosus* is native, the other species being introduced. *D. sylvestris*, however, was probably introduced in the Middle Ages in connexion with the textile industry. It is now thoroughly established in the country.

D. strigosus, from western Asia, was first recorded in Denmark as an adventive in 1880 and is now naturalised. It is easily confused with *D. pilosus*.

A key is provided to the identification of the various species.—[D.H.K.]

503. Galinsoga. Jallu, J. & Jovet, P., 1959, Les Galinsoga aristulatas Bickn. et G. parviflora Cavan. à Bayonne, *Bull. Centre d'Etudes Rech. Scient. Biarritz*, **2**, 347-349.

508/1. Tussilago farfara L. Fritsché, E., 1959, Ethologie du Tussilago farfara L., *Nat. Belg.*, **40**, 67-70.

508/1. Tussilago farfara L. Waltz, D., 1962, Phytogeographia laurentiana, 3. Les conditions de distribution Gaspésienne du Tussilago farfara L., *Le Nat. Canad.*, **89**, 38-65. The conditions governing the distribution of *Tussilago farfara* in a part of its area as an adventive in the New World are discussed and analysed in detail. The conclusion is drawn that it seems to be a recent "accident" in the North American plant population.—[E.B.B.]

554/4. Lactuca tatarica (L.) C. A. Mey. Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Lactuca tatarica (L.) C. A. Mey. in Nederland, *Gorteria*, **1**, 53-56. *Lactuca tatarica*, a native of the Asiatic and south-east European steppes, was found in 1961 growing as an established adventive between the basalt-blocks of the embankment of a harbour at Rotterdam. Since the early part of the present century it has established itself in several places on the Baltic coast and is becoming naturalised. It has been found also in a few localities on the coasts of the British Isles.—[D.H.K.]

558/2(2). Hieracium peleterianum Mérat. Duvigneaud, J. & Lawalrée, A., 1962, Hieracium peleterianum en Belgique, *Bull. Soc. Roy. Bot. Belg.*,

94, 85-90. A detailed account of the history and distribution of *Hieracium peleterianum*, newly recorded from Belgium, is given, together with a diagnostic description and notes on its ecology.—[E.B.B.]

563/2. ALISMA LANCEOLATUM With. Muirhead, C. W., 1962, Alisma lanceolatum in Scotland, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 344-345. *Alisma lanceolatum*, a very rare plant in Scotland, and not recently seen in the country, has been rediscovered in north Skye.

A table gives the differences between *A. lanceolatum* and *A. plantago-aquatica*.—[D.H.K.]

569/1. EGERIA DENSA Planch. Edwards, W. F., 1961, More interesting plants of our local canals, *Athene*, **1**, 44-46 *Egeria densa* was first recorded in 1953, growing in a canal near Droylesden, in warm waste water pumped from cotton-mills. Recently one mill has turned over to electricity as a source of power and the canal water is no longer used. It will be interesting to see whether this species will be able to survive in cold water or whether it will be ousted by reed-grass. The first result of the lowering of the water temperature is that the plants have ceased to flower.—[D.H.K.]

569/1. EGERIA DENSA Planch. Feuillade, J., 1962, Une plante aquatique nouvelle pour la France, Elodea densa (Planch.) Casp., *Bull. Soc. Linn. Norm.*, Sér. **10**, 2, 47-51. *Egeria densa* was discovered growing in the river Selune, Normandy, in 1960, over an area of c. 800 yards. An illustration of the plant, which is new to the adventive flora of France, is provided. Some ecological data are also given.—[D.H.K.]

569/1. EGERIA DENSA Planch. Feuillade, J., 1962, Note complémentaire sur Elodea densa (Planch.) Casp., *Bull. Soc. Linn. Norm.*, Sér., **10**, 2, 185-188. Further notes on *Egeria densa* in Normandy.—[D.H.K.]

572/1. VALLISNERIA SPIRALIS L. Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Een Nederlandse vondst van Vallisneria spiralis L., *Gorteria*, **1**, 61-62. *Vallisneria spiralis* was found at Maastricht in 1960 in the canal from that town to Liège. It has possibly been introduced from one of the localities in the river Meuse near Liège, where it has been established since about 1955.—[Authors' summary].

576/1. ZOSTERA MARINA L. Niemi, A., 1962, En förekomst av växande Zostera marina L. öster om Helsingfors, *Mem. Soc. Fauna et Flora Fenn.*, **37**, 8-11.

605/2. JUNCUS TENUIS Willd. Montelucci, G., 1962, Juncus tenuis Willd. nuovo nell'Italia centrale, *Nuov. Giorn. Bot. Ital.*, **68**, 383. The presence of *Juncus tenuis* in Tuscany since c. 1941 is confirmed. This adventive from N. America was hitherto known in Italy only from Piedmont.—[D.H.K.]

605/14. JUNCUS MARITIMUS Lam. Binet, P., 1962, Les dormances induites. Précisions nouvelles sur l'induction d'une dormance chez les graines de Juncus maritimus Lamk., *Bull. Soc. Linn. Norm. Ser.*, **10**, 2, 213-222.

605/14. JUNCUS MARITIMUS Lam. Binet, P., 1962, Induction d'une dormance chez les graines de Juncus maritimus Lamk. Role protecteur de l'eau de mer, *Rev. Gen. Bot.*, **69**, 5-13. Experiments show that seeds of *Juncus maritimus* will not germinate in light after immersion in rain-water in darkness but will do so after immersion in sea-water.—[E.B.B.]

606/6. Luzula spicata (L.) DC. Chrtek, J. & Krisa, B., 1962, A taxonomical study of the species Luzula spicata (L.) DC. sensu lato in Europe, *Bot. Not.*, **115**, 293-310. A study of *Luzula spicata* over its European range. Two new subspecies are described—subsp. *mutabilis* from the Carpathians, Pyrenees, Poland and Roumania, and subsp. *pindica* from Jugoslavia. A third member of the complex from Bulgaria, Jugoslavia and Asia Minor is described as *L. bulgarica* sp. nov.

A key is provided to the identification of the various taxa in the complex.—[D.H.K.]

607/5. Allium vineale L. Lazenby, A., 1962, Studies on Allium vineale. 4. Effects of cultivation, *J. Ecol.*, **50**, 411-428. 5. Effects of plant disturbance, *loc. cit.*, **50**, 429-438.

607/12. Allium ursinum L. Berghen, C. Vanden, 1958, Le bulbe de l'Ail des Ours, *Nat. Belg.*, **39**, 141-150.

624→ Orchidaceae. Doignon, P., 1962, Orchidées hybrides du Massif de Fontainebleau, *Bull. Ass. Nat. Loing*, **38**, 51. Twenty six orchid hybrids have been noted in and around Fontainebleau, the richest areas being the calcareous marshes of the lower valley of the Loing. A list of the hybrids is given.—[E.B.B.]

633/1. Corallorhiza trifida Chatel. Biejleveld, H. A. S., 1962, De geschiedenis van Corallorhiza trifida in Nederland, *Gorteria*, **1**, 46-47. *Corallorhiza trifida* was found in the Netherlands for the first time on dunes near Bergen in 1902. The author gives details of the number of specimens noted in various years between 1902 and 1942 when the plant was last seen. On the latter occasion a single plant only was noted and the species is now considered to be extinct in the country.—[D.H.K.]

640. Ophrys. Nelson, E., 1962, *Gestaltwandel und Artbildung erörtert am Beispiel der Orchidaceen Europas und der Mittelmeerländer, insbesondere der Gattung Ophrys, mit einer Monographie und Ikonographie der Gattung Ophrys.* Pp. 250 + 50 plates in full colour + 8 plates in black and white + 8 distribution maps. Privately printed. Chernex-Montreux, Switzerland. Price s. Fr. 168—.

642/1×644/1. Orchis purpurea Huds. × Aceras anthropophorum (L.) Ait. f. Delamain, J. 1961, Sur un hybride Aceras anthropophora × Orchis purpurea trouvé en Charente le 8 Avril 1961, *Bull. Soc. Bot. France*, **108**, 240. A description of this hybrid, found in a locality where *Orchis purpurea* is abundant, and where *Aceras anthropophorum* was beginning to flower, is given in some detail.—[E.B.B.]

650/3. Lemna minor L. Lawalrée, A., 1961, La pollinisation de Lemna minor L., *Nat. Belg.*, **42**, 164-165.

653/2×1. Typha × glauca Godr. Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Typha angustifolia L. × T. latifolia L. (T. × glauca Godr.) in Nederland, *Gorteria*, **1**, 90-92. *Typha × glauca* was found in the Netherlands for the first time in 1847, and was apparently not collected again until 1946. Figures illustrate the differences found in the female flowers, the pollen, and the branchlets of the female part of the spike of *T. angustifolia*, the hybrid, and *T. latifolia*.—[D.H.K.]

655. Scirpus. Koyama, T., 1962, The genus Scirpus Linn. Some North American aphylloid species, *Canad. J. Bot.*, **40**, 913-937.

657/1. BLYSMUS COMPRESSUS (L.) Panz. ex Link. See 674/2. CATAPODIUM MARINUM (L.) C. E. Hubbard.

659/1. SCHOENUS NIGRICANS L. Sparling, J., 1962, Occurrence of Schoenus nigricans L. in the blanket bogs of western Ireland and north-east Scotland, *Nature*, **195**, 723-724. Growth chamber experiments have shown that concentration of aluminium ions will severely inhibit root growth in *Schoenus nigricans*. It is suggested that the restricted distribution of the species in apparently suitable habitats away from western Ireland and north-west Scotland is due to high concentration of aluminium ions.—[D.H.K.]

664→ GRAMINEAE. Bowden, W. M. & Senn, H. A., 1962, Chromosome numbers in 28 grass genera from South America, *Canad. J. Bot.*, **40**, 1115-1124. Counts made on material of 28 genera from Bolivia, Argentina, Chile and Uruguay include many species also found in Britain.—[D.H.K.]

664→ GRAMINEAE. Guignard, J.-L., 1961, Recherches sur l'embryogénie des graminée; rapports des graminées avec les autres monocotlyédones, *Ann. Sci. Nat.*, **2**, 491-610. A detailed study of the development of the embryo in grasses. Many British species provide the examples used to analyse this development in the various tribes and sub-tribes of the family. —[E.B.B.]

670/6. FESTUCA RUBRA L. Csüros, S. & Resmerită, I., 1960, Studii asupia pajistilor de Festuca rubra L. din Transilvania, *Contrib. Bot. Univ. "Babes Bolyai"*, **1960**, 149-173. Studies in the Transylvanian races of *Festuca rubra*.—[D.H.K.]

674/2. CATAPODIUM MARINUM (L.) C.E. Hubbard, Visser, A. de, 1962, Catapodium marinum (L.) Hubbard ook op Walcheren, *Gorteria*, **1**, 60-61. *Catapodium marinum* (L.) C. E. Hubbard has its northern limit on the continent in the Netherlands. Up to now it was known here from four localities only. In 1960 the author discovered two new and very rich localities in Isle of Walcheren between Domburg and Westkapelle. It is supposed that the plants have reached one of these localities as a result of the inundation after the great flood of 1953, and the other with rubble from Westkapelle, which village was destroyed during World War 2, and inundated afterwards.—[Author's summary].

674/2. CATAPODIUM MARINUM (L.) C. E. Hubbard. Westhoff, V. & Leeuwen, C. G. Van, 1962, Catapodium marinum (L.) Hubbard, Scirpus planifolius Grimm en Trifolium micranthum Viv. op Goeree, *Gorteria*, **1**, 33-38. The mediterranean-atlantic species *Catapodium marinum* reaches its northern limit on the Continent in the Netherlands. Up to 1959 only two localities on the Dutch coast were known. In 1961 the species was discovered in large quantity on the brackish estuary shore of the island of Goeree, by far the richest occurrence in the country. The habitat in the three Dutch localities is similar: low, sandy, dry, irregularly submersed dunes in the ecozone between xerosere and halosere, with fluctuating, but mostly low, salt content and rather high lime content; i.e. in the dry desalinated *"Koelerion"*—variant of the *Saginetum maritimae*.

Blysmus compressus (*Scirpus planifolius*), another ecotone species, is rather common in Britain*, but much rarer on the Continent, although it

Blysmus compressus*, though often locally abundant in parts of Britain, cannot be regarded as 'rather common in Britain'.—Ed.**

is not an atlantic or subatlantic plant. Here it is probably diminishing by reclamation of the suitable habitats. It is a characteristic species of the "disturbed ecotone", the transition zone between some contracting habitats, salt-fresh, dry-wet, rich in nutrients—poor in nutrients. In the island of Goeree it was observed in large quantities in most dune valleys, as well in the salt-fresh transition zone as in the wet-dry one. Its ecology as a species of the alliance *Agropyro-Rumicion crispi* is discussed.

Finally, a new locality of the mediterranean-atlantic *Trifolium micranthum* Viv. is described. In the Netherlands this species was hitherto known only from a few localities. In the island of Goeree it was found in two spots in damp grazed valleys in the inner dunes poor in lime. —[Authors' summary].

676. Poa. Pazij, V. K., 1962, De speciebus nonnullis generis Poa Asiae mediae notulae, *Not. Syst. Herb. Inst. Bot. Acad. Sci. Uzbekistan*, **17**, 18-42. Describes and keys the species of *Poa* found in the Asiatic part of the U.S.S.R. Most species found in Britain are included.—[D.H.K.]

676. Poa. Watson, P. J. & Clausen, J., 1962, Phenotypic responses to contrasting environments in the genus Poa, *Scot. Plant Breeding Station Rep.*, **1961**, 64-78.

676/3. Poa bulbosa L. Heyn, C. C., 1962, Studies of bulbous Poa in Palestine, 1. The agamic complex of Poa bulbosa, *Bull. Research Council Israel*, **11**D, 117-126.

678. Dactylis. Jones, K., Carroll, C. P. & Borrill, M., 1961, A Chromosome Atlas of the genus Dactylis L., *Cytologia*, **26**, 333-343.

685. Agropyron. Schaeffer, J. Schultz- & Jurasits, P., 1962, Biosystematic investigation in the genus Agropyron. 1. Cytological studies of species karyotypes, *Amer. J. Bot.*, **49**, 940-953.

689. Koeleria. Ujhelyi, J., 1961, Data to the systematics of the subsection Glaucae of section Bulbosae of the genus Koeleria, *Ann. Hist. Nat. Mus. Nat. Hung.*, **53**, 207-224.

693/2. Helictotrichon pubescens (Huds.) Pilg. Sadanaga, K., 1962, Cytology of three species of Helictotrichon, *Canad. J. Gen. & Cyt.*, **4**, 302-306.

698. Corynephorus. Jirásek, V. & Chrtek, J., 1962, Systematische Studie über die Arten der Gattung Corynephorus Pal.-Beauv. (Poaceae), *Preslia*, **34**, 374-386.

700. Calamagrostis. Nygren, A., 1962, Artificial and natural hybridization in European Calamagrostis, *Symb. Bot. Upsal.*, **17** (3), 1-105.

713/2. Phalaris canariensis L. Andreu, A. Lorenzo- & Sanz, M. P. Garcia-, 1960, Estudio comparativo de Phalaris canariensis L. diploide y tetraploide, 1, *An. Est. Exper. Aula Dei*, **6**, 125-135.

715/1. Nardus stricta L. James, D. B., 1962, Growth of Nardus stricta on a calcareous soil, *Nature*, **196**, 390-391. *Nardus stricta* is essentially a calcifuge species, but experiments have shown that it will tolerate and make excellent growth on calcareous soils where phosphates have been added. It is suggested that lack of phosphates may be the barrier which prevents many calcifuge species from growing upon chalk soils.—[D.H.K.]

715/1. Nardus stricta L. Rychlewski, J., 1961, Cyto-embryological studies in the apomictic species Nardus stricta L., *Acta Biol. Cracov*, **4**, 1-23. Studies on reproduction in *Nardus stricta* in Poland, where two

forms of the species occur—the first has aborted anthers and is widely distributed. The second is able to develop pollen and is notably rarer than the former.—[D.H.K.]

717/C. Chloris. Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Het geslacht Chloris in Nederland, *Gorteria*, **1**, 41-46. The genus *Chloris* is represented in the Netherlands by four adventive species—*C. virgata* Sw., *C. truncata* R. Br., *C. divaricata* R.Br. and *C. pycnothrix* Trin. Descriptions of the species, and illustrations of the florets are given, together with a key to the identification of the species.—[D.H.K.]

719. Digitaria. Ebinger, J. E., 1962, Validity of the grass species Digitaria adscendens, *Brittonia*, **14**, 248-253. The writer shows that while many recent authors have tended to treat *Digitaria adscendens* as a synonym of *D. sanguinalis* they are both well-defined species with separate geographic ranges. *D. sanguinalis* occurs in temperate regions while *D. adscendens* is usually confined to the tropics and subtropics where the ranges of the two species overlap and hybridisation appears to be taking place.—[D.H.K.]

Tolypella prolifera Leonh. Corillion, R., 1962, Tolypella prolifera Von Leonhardi, Charophycée nouvelle pour la péninsula ibérique, *Rev. Alg.*, **6**, 129-133. *Tolypella prolifera* is recorded from near Valladolid, a first record for the Iberian peninsula. A description of the material is given and illustrated by photographs and diagrams. It is said to be smaller than the type in all its parts.—[S.P.P.]

Tolypella prolifera Leonh. Guerlesquin, M., 1962, Observations sur le Tolypella prolifera von Leonh. (Charophycées) de la vallée de la Loire, *Bull. Soc. Bot. France*, **108**, 274-280. The morphology, cytology, ecology and distribution of *Tolypella prolifera* are discussed. A haploid number of $n=10$ is found, suggesting a basic number of $x=5$ for the genus *Tolypella*. A list of associated species in the locality is also given; the habitat is in fresh, still water.—[S.P.P.]

Nitellopsis. Kasaki, H., 1962, On the distribution of Nitellopsis (Charophyta), *Acta Phyt. Geobot.* (Japan), **20**, 285-289.

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O, Channel Islands. McClintock, D., 1962, The ferns of the Channel Islands, *Brit. Fern Gaz.*, **9**, 34-37.

6, N. Som. & 34, W. Glos. Sandwith, N.Y., 1962, Bristol Botany in 1961, *Proc. Bristol Nat. Soc.*, **30**, 239-244.

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9, Dorset. Good, R. d'O., 1962, Botany, *Proc. Dorset. N.H. & Arch. Soc.*, **83**, 35-36.

9, Dorset. Moore, N. W., 1962, The heaths of Dorset and their conservation, *J. Ecol.*, **50**, 369-391.

10, Isle of Wight. White, T., 1961, Flower records, *Proc. Isle of Wight N.H. & Arch. Soc.*, **5**, 218.

11, S. Hants. Westrup, A. W., 1962, Flora of the Portsmouth area, *The Journal*, **1** (2), 5-18. The commencement of a flora of the Portsmouth area, covering genera from *Equisetum* to *Reseda*.—[D.H.K.]

12, N. Hants., 22, Berks., 23, Oxon. & 24, Bucks. Butler, K. I., 1962, The recorder's report for botany, 1960-61, *Reading Nat.*, **14**, 21-31. Many interesting records from the Reading area are included in this report.—[D.H.K.]

14, E. Sussex. Chater, E. H., 1962, The rôle of Halimione portulacoides (Sea Purslane) in the development of salt marsh near Rye Harbour, *Hastings & E. Sussex Nat.*, **9**, 147-157.

14, E. Sussex. Ticehurst, N. F. (Recorder), 1962, Notes on the local fauna and flora for 1961: Plants, *Hastings & E. Sussex Nat.*, **9**, 184.

15, E. Kent. Godwin, H., 1962, Vegetational history of the Kentish chalk downs as seen at Wingham and Frogholt, *Ver. Geobot. Inst. Eidg. Techn. Hochschule, Stift. Rübel in Zurich (Festschrift Franz Firbas)*, **37**, 83-99.

16, W. Kent. Williams, G. S., 1961, List of pteridophyta recorded in the survey area, *Ann. Rep. Sidcup N.H.S.*, **11**, 8. Records are given for a number of ferns found in the Sidcup area. Of particular interest are records of *Pteris cretica* L., a south European species said to be established on sheltered old walls at Eltham, Elmstead and Keston. *P. cretica* is frequently grown as a pot fern.—[D.H.K.]

17, Surrey. H.M.S.O., 1961, *Trees in Richmond Park.* Fifth Report of the Ministry of Works Advisory Committee on Forestry. Pp. 19. London.

21, Middlesex. Anonymous, 1962, Wild flowers in Knightsbridge, *The Times*, 19 Sept. 1962, 6.

25, E. Suffolk. Anon., 1961-62, Botanical report, *Rep. Lowestoft. F.C.*, **118-119** & 139.

26, W. Suffolk. Trist, P. J. O., 1962, The flora of an old pasture, *Trans. Suffolk N.S.*, **12**, 100.

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32, Northants. Allen, H. G., 1960, Thorn Apple (Datura stramonium L.). *J. Northants. N.H.S. & F.C.*, **34**, 39. A short account of *Datura stramonium*, in particular its occurrence in Northants.—[D.H.K.]

32, Northants. Anon., 1960, Botanical records, 1959, *J. Northants. N.H.S. & F.C.*, **34**, 37-38.

32, Northants. Allen, H. G., 1958, A freak poppy at Wootton, *J. Northants. N.H.S. & F.C.*, **33**, 214.

32, Northants. Dickson, M. G. M., Beall, S. M. A., & Wright, M. M., 1961, Flora of Sywell Wood, Pytchley Forest, *J. Northants. N.H.S. & F.C.*, **34**, 70-73.

32, Northants. Gilbert, J. L., 1958-59, Botanical records, 1957, *J. Northants. N.H.S. & F.C.*, **33**, 214-215: 1958, *loc. cit.*, **33**, 271-272.

32, Northants. Gilbert, J. L., 1961, Botanical records, 1960, *J. Northants. N.H.S. & F.C.*, **34**, 76-77.

32, Northants. Payne, F. D., 1961 Botanical notes, *J. Northants. N.H.S. & F.C.*, **34**, 74-76.

33-34, Glos. Fleming, G. W. T. H., 1960, Phanerogams and Cryptograms, *Proc. Cotteswold N.F.C.*, **33**, 71-75.

33-34, Glos. De Vesian, D. E., 1961, Phanerogams and Cryptograms, *Proc. Cotteswold N.F.C.*, **33**, 135-136.

38, WARWICK. Cooper, G., 1962, Concluding notes on flora of Percy Estate, Warwick, *Ann. Rep. Warwick N.H.S.*, **8**, 31-32.

38, WARWICK. Knight, G. H., 1962, Ivy in woods, *Ann. Rep. Warwick N.H.S.*, **8**, 6-9.

41, GLAM. Wade, A. E., 1962, Glamorgan botanical notes, 1960, *Trans. Cardiff Nat. Soc.*, **89**, 31.

42, BRECON. Hyde, H. A. & Guile, D. P. M., 1962, *Plant life in Brecknock*. Pp. 10. Brecknock Museum, Brecon. Price 1/-. A sketch of the plant life of Brecknock, compiled for the use of tourists and visitors.—[D.H.K.]

43, RADNOR, 45, PEMBROKE, 47, MONTGOMERY, 48, MERIONETH, 49, CAERNARVON & 52, ANGLESEY. Benoit, P. M., 1962, Field notes: botanical, *Nature in Wales*, **8**, 28-31.

46, CARDIGAN. Condry, W., 1962, A peat bog worth preserving, *Country Life*, **132**, 472-473. An account of the plant life of Borth Bog which is in danger of being reclaimed for potato growing.—[D.H.K.]

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52, ANGLESEY. Smith. V. C., Spence, T. F. & Woodward, F., 1962, Puffin Island, 1960, *Proc. Birm. N.H. & Phil. Soc.* **20**, 23-36. A further account of the natural history of Puffin Island, including plant records.—[D.H.K.]

54, N. LINCS. Holmes, M. G., 1960, Salt-marsh ecology, *J. Durham Coll. N.H.S.*, **7**, 31-37. An account of the flora of a salt-marsh at Humberstone, and its ecology, investigated in 1959.—[D.H.K.]

58, CHESTER, 59, S. LANCS. & 63, S.-W. YORK. Anon., 1961, Notes and records: plants, *Athene*, **1**, 53-55.

58, CHESTER, 59, S. LANCS. & 63, S.-W. YORK. Edwards, W. F., 1961, More interesting plants of our local canals, *Athene*, **1**, 44-46. Notes on *Callitriche stagnalis, Apium nodiflorum, Luronium natans, Stratiotes aloides, Vallisneria spiralis, Elodea canadensis, Lagarosiphon major, Egeria densa, Ludwigia palustris, Hydrocharis morsus-ranae* and *Lemna* species.—[D.H.K.]

63, S.-W. YORK. Harvey, M. J., 1960, 1086 and all that—a plant survey, *J. Durham Coll. N.H.S.*, **7**, 17-21. An account of the effect of human habitation through the ages on the flora of the valley of the river Went, 10 miles north of Doncaster.—[D.H.K.]

64, MID-W. YORK. & 66, DURHAM. Gilleghan, J. A., 1958, The occurrence of Parnassia palustris on the Magnesian Limestone of County Durham and west Yorkshire, *J. Durham Coll. N.H.S.*, **5**, 17-19.

66, DURHAM, 67-68, NORTHUMBERLAND & 70, CUMBERLAND. Harrison, J. W. Heslop-, 1961-62, Notes and records: ferns and flowering plants, *Vasc.*, **46**, 30-32; **47**, 8, 16-24.

SCOTLAND. King, J., 1962, The Festuca-Agrostis grassland complex in south-east Scotland, *J. Ecol.*, **50**, 321-355.

96, EASTERNESS. Burgess, P. G., 1958, The lochs of Glen Affric, *J. Durham Coll. N.H.S.*, **5**, 8-11. Includes notes on the flora of the lochs.—[D.H.K.]

96, EASTERNESS. Elkington, T. T., 1958, Vegetational types in Glen Affric, *J. Durham Coll. N.H.S.*, **5**, 4-8.

98. Argyll & 102, S. Ebudes. Muirhead, C. W., 1962, The flora of Easdale and the Garvellachs. *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 316-342. An account of the plants seen on a number of the small islands between Jura and Mull, in the Firth of Lorne, during a visit in 1961. A number of new vice-county records are included.—[D.H.K.]

102, S. Ebudes. McClintock, D., 1962. Additions to the flora of Jura, *Trans. & Proc. Bot. Soc. Edinb.*, **39**, 343-344.

112, Zetland. Scott, W., 1959. Notes on the flora of Shetland: Unst, *New Shetlander*, **49**, 27-29.

112, Zetland. Scott, W., 1959. Notes on the flora of Shetland, *New Shetlander*, **51**, 23-24; 1960, *loc. cit.*, **54**, 20-21; 1961, *loc. cit.*, **57**, 25-27; 1962, *loc. cit.*, **60**, 14-15.

H. 9, Clare & H. 15, S.-E. Galway. Webb, D. A., 1962, Noteworthy plants of the Burren: a Catalogue Raisonnée, *Proc. Roy. Irish Acad.* **62**B, 117-134. An annotated list is provided of those elements in the flora of the Burren region of north-west Co. Clare (and a small region of Co. Galway adjoining) which are noteworthy for their abundance, their rarity elsewhere in Ireland, or in north-west Europe generally, or for their unusual habitat in this region. The list comprises 140 species of flowering plants, 2 gymnosperms and 11 pteridophyta.—[Author's summary],

H. 12, Wexford. Scannell, M. J. P., 1962, Rumex tenuifolius (Wallr.) Löve in Ireland, *Irish Nat. J.*, **14**, 80.

ECOLOGICAL (See also TOPOGRAPHICAL)

Anderson, J. W. & McCormack, J., 1962, An evaluation of devices for estimation of tree cover, *Broteria*, **31**, 15-32.

Bidault, M., 1961, Sur l'existence du corynephoretum canescentis en Bourgogne, *Bull. Sci. Bourgogne*, **1961**, 49-56. The *Corynephorus canescens* association, here described and analysed, occurs in only two localities in Bourgogne on sand-dunes.—[E.B.B.]

Duvigneaud, J. & Mullenders, W., 1962, La végétation forestière des Côtes Lorraines: la Forêt du mont-Dieu (Département des Ardennes, France,), *Bull. Soc. Roy. Bot. Belg.*, **94**, 91-130. The main associations studied are: *Carpineto-Fraxinetum caricetosum-pendulae*, *Querceto-Carpinetum caricetosum glaucae* and *Cariceto-remotae-Fraxinetum*. Diagrams and floristic tables illustrate the study.—[E.B.B.]

Gehu, J.-M. & Gehu-Franck, J., 1961, L'évolution du sol et de la végétation, après incendie, dans une lande bretonne (suite—deuxième partie), *Bull. Lab. Marit. Dinard*, **47**, 8-18. The effect of fire on vegetation and soil of different types of heathland is discussed. Recolonisation confirms the individuality of these types; dry heathland is most affected and takes the longest to recuperate.—[E.B.B.]

Gehu, J.-M. & Gehu-Franck, J., 1961, Recherches sur la végétation et le sol de la réserve de l'îee des Landes (I. et V), et de quelques îeots de la côte Nord-Bretagne. Incidences de l'avifauna marine sur la flore, *Bull. Lab. Marit. Dinard*, **47**, 19-57. The vegetation and soil of several islets on the north Breton coast are studied with particular reference to the effect on them by marine birds. Increase in the bird population may have serious effects on the vegetation and the balance between plant and bird life must be carefully considered in the setting up of bird reserves.—[E.B.B.]

Lapraz, G., 1962, Sur la présence d'Erica scoparia et de Pinus pinaster dans les associations calciphiles de l'alliance du Bromion, *Rev. Gen. Bot.*, **69**, 399-406. Around Bordeaux the alliance *Bromion* is represented on calciphile grasslands by *Mesobrometum occidentale;* the soil contains a high percentage of carbonates and species usually considered as calcifuge, e.g. *Erica scoparia* and *Pinus pinaster*, are often found in abundance.—[E.B.B.]

HISTORICAL

Dawson, R. W. B., 1962, History of the Warwick County Museum herbarium, *Ann. Rep. Warwick N.H.S.*, **8**, 21-24.

Emerson, A. E., 1962, The impact of Darwin on biology, *Acta Bioth.*, **15**, 175-216.

Fuchs, H. P., 1962, Das genaue Publikationsdatum von Band 5, Teil 1 der von Willdenow besorgten Auflage der "Species Plantarum" von Carl von Linné nebst einiger weiterer, anno 1810 erscheiner Werke, *Taxon*, **11**, 126-132.

Gough, J. W., 1962, John Locke's herbarium, *Bodleian Lib. Record*, **7**, 42-46. An account of the plants in the Hortus Siccus of John Locke (1632-1704), contained in two volumes in the Bodleian Library, Oxford. Most of the specimens originated from the Oxford Botanic Garden.—[D.H.K.]

Lawalree, A. & Tournay, R., 1962, Le centenaire de la Societé Royale de Botanique de Belgique, *Bull. Soc. Roy. Bot. Belg.*, **95**, 5-24.

Long, W. D., 1962, The Listers, father and daughter, *Proc. Dorset. N.H. & Arch. Soc.*, **83**, 79-81. A short account of the lives of Arthur Lister (1830-1908) and Gulielma Lister (1860-1949).—[D.H.K.]

Lucas, A. T., 1960 *Furze, a survey of its uses in Ireland.* Pp. 204. National Museum of Ireland. Stationery Office, Dublin. Price 7/6.

Massingham, B., 1962, A Scottish plant pioneer, *Country Life*, **132**, 358-359. An account of Robert Fortune (1812-80) and his plant discoveries and introductions into Britain.—[D.H.K.]

Phillips, F. C., 1962, The first hundred years. A centenary history of the Bristol Naturalists' Society, 1862-1962, *Proc. Bristol Nat. Soc.*, **30**, 181-214.

Scott, W., 1962, Profile from the past, No. 16—Thomas Edmondston, *New Shetlander*, **62**, 7-9. A short account of the Shetland botanist who was first to add *Arenaria norvegica* to the British list.—[W.S.]

Stearn, W. T., 1962, The origin of the male and female symbols of biology, *Taxon*, **11**, 109-113.

Stearn, W. T., 1962, Feè's "Mémoires sur la Famille des Fougères", *Webbia*, **17**, 207-222.

PALAEOBOTANY

Erdtman, G., Praglowski, J. & Takeoka, M., 1962, Zur Bedeutung der Pollenmorphologie für die pollenanalitische Vegetations Forschung, *Ver. Geobot. Inst. Eidg. Techn. Hochschule Stift. Rübel in Zurich (Festschrift Franz Firbas)*, **37**, 57-59.

Harris, T. M., 1961, Modern botanical thought on palaeobotany, *Trans. & Proc. Bot. Soc. Edinburgh*, **39**, 171-180.

Mullenders, W. & Coremans, M., 1961, Recherches palynologiques dans la vallée de la Grande Néthe à Geel (Campine Belge), *Bull. Soc. Roy. Bot. Belg.*, **93**, 131-136. An analysis of the pollen found in peat deposit in the river valley is given and discussed with particular reference to the occurrence of hazel.—[E.B.B.]

Mullenders, W. & Knop, C., 1962, Recherches palynologiques dans les Ardennes belges. 1. La tourbière du Grand Passage, *Bull. Soc. Roy. Bot. Belg.*, **94**, 163-175. The great thickness of the peat has enabled the pollen analysis in this area to reveal the evolution of the vegetation of the beech, hazel and spruce forests through a very long period.—[E.B.B.]

NOMENCLATURE

Ehrendorfer, F., 1962, Notizen zur Systematik und Phylogenie von Cruciata Mill. and verwandten Gattungen der Rubiaceae, *Ann. Nat. Mus. Wien*, **65**, 11-20. The name *Cruciata chersonensis* (Willd.) Ehrend. (1958), based on *Valantia chersonensis* Willd. (1808), is shown to be invalid. The earliest valid name for the species is **Cruciata laevipes** Opiz. *Sezn.* 34 (1852).—[D.H.K.]

Holub, J. & Chrtek, J., 1962, Zur nomenklatur des Gattungsnamens Filago L., 1753, *Taxon*, **11**, 195-201.

Kirpicznikov, M. E., 1961, Some problems of regulating botanical terminology, *Taxon*, **10**, 233-236.

Kotlaba, F. & Pouzar, Z., 1962, A proposal on the transliteration of Slavonic authors' names, *Taxon*, **11**, 113-115.

Lawrence, G. H. M., 1961, The name of the Basil-thyme, Acinos arvensis, *Baileya*, **9**, 125.

Shinners, L. H., 1962, New names in Arenaria (Caryophyllaceae), *Sida*, **1**, 49-52. *Cerastium cerastoides* (L.) Britton, which has three styles, is transferred to the genus *Arenaria* and given the name A. trigyna (Villars) Shinners, comb. nov., based on *Cerastium trigynum* Vill., *Prosp.*, p. 48. 1779.—[D.H.K.]

Tryon, R., 1962, A commentary on superflous names, *Taxon*, **11**, 116-120.

MISCELLANEOUS

Anonymous, 1962, Documented chromosome numbers of plants, *Madrono*, **16**, 266-268. New counts on American species include *Montia perfoliata*, $n=6$, 12 and 18, and *M. sibirica*, $n=12$.—[D.H.K.]

Aymonin, G., 1962, Où en sont les flores Européennes? Quelques problèmes historiques, géographiques et taxinomiques, *Adansonia*, **2**, 159-171. A short review of recently published Floras of various European countries, and a survey of the difficulties likely to be encountered in the preparation of a Flora of Europe.

A section is devoted to an account of the difficulties of building up a bibliography of European botany as well as the problems involved in typification and nomenclature. The question of a new French Flora is also approached within the compass of the European Flora.—[D.H.K.]

Berg, R. Y., 1962, Nye utbredelsesdata for norske karplanter, *Blyttia*, **1962**, 49-82. New Norwegian records of 221 vascular plants are given. The records represent extensions of range, which for some species are considerable (e.g. *Monotropa hypopitys*, *Ranunculus cymbalaria* and

Schoenus ferrugineus), and reductions or eliminations of discontinuities in distribution (e.g. *Cephalanthera longifolia* and *Lychnis flos-cuculi*). There are a few new garden escapes (*Cotoneaster acutifolia, C. lucida, C. rotundifolia, Euphorbia dulcis* and *Lychnis chalcedonica*), and one adventitious weed (*Lagoecia cuminoides*) new to Norway.—[Author's summary].

Bidault, M., 1961, Répartition et comportement sociologique en Bourgogne de trois espèces à affinités méditerránéenes: Acer monspessulanum, Plantago cynops et Convolvus cantabrica, *Bull. Soc. Sci. Bourgogne*, **20**, 7-48. A detailed study, illustrated by tables and maps, of the distribution and phytosociology of these three species, which reach their northern limit in the area.—[E.B.B.]

Bouby, H., 1962, Notes détachées sur la flore parisienne (6-8), *Cahier des Nat.*, **18**, 27-30. Note 6 concerns the occurrence of *Tulipa sylvestris* in vineyards, where it is said to be spontaneous. Note 7 gives new localities for several interesting species and note 8 discusses the vegetation of an old railway.—[E.B.B.]

Bouby, H., 1962, Transformation radicale près de Paris d'une localité botanique par intervention humaine, *Rev. Fed. Franc. Soc. Sci. Nat.*, **1**, 65-68. An account of the changes in vegetation at Trivaux, near Paris, of a classical botanical locality owing to road-building and other activities of man. In a series of visits over three years it was observed that common weeds had replaced many interesting species which are listed.—[E.B.B.]

Bournerais, M. & Mathez, J., 1962, Additions à la Flore de l'Aisne, *Rev. Fed. Franc. Soc. Sci. Nat.*, **1**, 357-363. A list of species, including nine pteridophytes, since the publication of the Flora de l'Aisne, either as new records or as extensions of range. *Geranium sylvaticum* is recorded as new and *Chaenorrhinum minus* is said to have been omitted from the Flora by error.—[E.B.B.]

Cannon, J. F. M., 1962, The new botanical exhibition gallery at the British Museum (Natural History), *Taxon*, **11**, 248-252.

Cannon, J. F. M., 1962, The British Museum (Natural History), new botanical exhibition gallery, *Nature*, **196**, 411-412.

Dawson, G. W. P., 1962, *An introduction to the cytogenetics of polyploids*. Pp. v+96. Blackwell's Scientific Publications. Oxford. Price 10/6.

Deleuil, G., 1962, Contribution à l'étude de la flore provençale (Fasc. 9), *Bull. Soc. Bot. France*, **109**, 95-100. An alphabetical list of species with new localities and with more precise details of known localities in the Provencal flora.—[E.B.B.]

Doing, H., 1962, Systematische Ordnung und floristiche Zusammensetzung niederländischer Wald-und Gebüschgellschaften, *Wentia*, **8**, 1-15. A classification, under the Braun-Blanquet system, of floristical composition of woodland and shrub communities in the Netherlands.—[D.H.K.]

Fryxell, P. A., 1962, The "relict species" concept, *Acta Bioth.*, **15**, 105-118.

Gaussen, H. & Le Brun, P., 1962, Espèces douteuses ou citées par erreur pour la flore des Pyrénées, *Bull. Soc. Bot. France*, **108**, 420-430. Notes on over 100 species that have been erroneously or doubtfully recorded for the Pyrenees.—[E.B.B.]

Gilmour, J. S. L., 1962, Classification: an indisciplinary problem: Introduction, *Aslib Proc.*, **14**, 223-225. The introductory paper which opened a conference on the subject of classification, organised by Aslib, and held in London on 6 April 1962.—[D.H.K.]

Goga, I. D., 1960, Euphorbia maculata L. si, Lepidium virginicum L. si, răspindirea lor in Banat, *Comm. de Bot.*, **1957-1959**, 337-339. *Euphorbia maculata*, a North American species, was found as an adventive in Roumania in 1946. *Lepidium virginicum*, also of North American origin, was found in the Banat area of Roumania in 1955. Both species have become established and are spreading.—[D.H.K.]

Hagberg, A. & Åkerberg, E., 1962, *Mutations and Polyploidy in Plant Breeding*. Pp. 150. London. Price 30/-.

Hansen, A., 1962, Noter om Danske planter, 4. Bidrag til Danmarks adventivflora, *Bot. Tidsskr.*, **58**, 72-81. Notes on various adventive species in Denmark, including *Verbesina encelioides*, *Salvia reflexa*, *Centaurea diluta* and *Dipsacus* species.—[D.H.K.]

Heberer, G. & Schwanitz, F. (Editors), 1960, *Hundert Jahre Evolutionsforschung*. Pp. viii + 458. Stuttgart. Price DM72-. A volume to celebrate the centenary of Darwin's *Origin of Species*. Botanical items are contributed by F. Brabec, F. Schwanitz and E. Hanstein.—[D.H.K.]

Heywood, V. H. & Valentine, D. H., 1962, Experimental taxonomy, *Nature*, **195**, 26-27. An account of the annual symposium for the group for experimental taxonomy of the Linnean Society, held in London on 2 March 1962.—[D.H.K.]

Hiitonen, I., 1962, Über die natürliche Südostgrenze des ostlichen Fennoskandien unter besonderer Berücksichtigung der Karelischen Landenge, *Mem. Soc. Fauna et Flora Fenn.*, **37**, 13-69.

Holttum, R. E., 1961, Plant taxonomy as a scientific discipline, *Adv. Sci.*, **18**, 234-242.

Jongh, S. E. De, 1962, Over het inburgen van adventieven, *Gorteria*, **1**, 38-41. A number of adventive and ornamental plants have become naturalised in the Netherlands, but little is known of the history of some of them in the country. In order to get data on species that are at present spreading and becoming naturalised the author asks Dutch botanists to communicate to him any information that they have on the plants. The species concerned are *Sisymbrium wolgense* Bieb., *Ambrosia psilostachya* DC., *Lepidium heterophyllum* Benth., *Amsinckia lycopsoides* Benth., *A. menziesii* (Lehm.) Nels. & MacBr., *Amaranthus deflexus* L., *Parentucellia viscosa* (L.) Caruel, *Bromus carinatus* Hook. & Arn., *Allium carinatum* L. and *Lactuca serriola* L.—[D.H.K.]

Jovet, P., 1961, Notes sur quelques plantes de la Côte Basque: transpiration et sécheresse, *Bull. Centre d'Etudes Rech. Scient. Biarritz*, 3, 481-487. Several halophytic and xerophytic species are discussed; a marked dryness, although of short duration, is indicated by the morphological characters of these species in spite of high rainfall and high condensation in the area.—[E.B.B.]

Leppik, E. E., 1961, Phyllotaxis, anthotaxis and sematoxis, *Acta Bioth.*, **14**, 1-28.

Lousley, J. E., 1962, Floras for holidays abroad, *Wild Flower Mag.*, **234**, 2-4. An annotated list, arranged under countries, of floras useful to amateur botanists taking holidays abroad.—[D.H.K.]

Lovkist, B., 1962, Chromosome and differentiation studies in flowering plants of Skane, South Sweden. 1. General aspects. Type species with coastal differentiation, *Bot. Not.*, **115**, 261-287.

Melville, R., 1962, A new theory of the angiosperm flower: 1. The gynoecium, *Kew Bull.*, **16**, 1-50.

Paris, C. D., Haney, W. J. & Wilson, G. B., 1960, A survey of the interactions of genes for flower color, *Michigan State Univ. Agric. Exper. Station Tech. Bull.*, **281**. Pp. 132.

Platt, R., 1962, Radiation and plant life, *Discovery*, **23**, 42-47.

Salisbury, Sir E. J., 1962, The biology of garden weeds, *J. Roy. Hort. Soc.*, **87**, 338-350, 390-404, 458-470 and 497-508.

Segal, S., 1962, De floristiek van oude muren, *Gorteria*, **1**, 71-74 + duplicated appendix 1-20. A concise survey of the vegetation found on old walls in the Netherlands. Many of the species listed are commonly found on walls in Britain. Two interesting adventive ferns are included, *Cyrtomium falcatum* (L.f.) Presl, found in eight localities since 1945, and *Pteris cretica* L., recorded recently from two localities.—[D.H.K.]

Sojak, J., 1962, Novinky československé květeny, *Preslia*, **34**, 403-414. Additions to the Czech flora include the adventives *Camelina pilosa* (DC.) Zing. and *Oenothera erythrosepala* Borbás.—[D.H.K.]

Stebbins, G. L., 1962, International horizons in the life sciences, *Nature*, **196**, 611-617.

Systematics Association, 1962, Systematics Association for descriptive biological terminology 2. Terminology of simple symmetrical plane shapes (Chart 1), *Taxon*, **11**, 145-156. 2A. Terminology of simple symmetrical plane shapes (Chart Ia), Addendum, *loc. cit.*, **11**, 245-247.

Thonet, V., 1961, La végétation à Saint-Denis (Seine), *Cahier des Nat.*, **17**, 107-122. The flora of Saint-Denis is presented under urban habitat headings, e.g. streams, canals, roads, fortifications, cemeteries, parks, railway-banks. A list is given also of previous collections now in the National Museum of Natural History, Paris.—[E.B.B.]

Turmel, J. -M., 1962, Bilan d'eau des halophytes. 1. Teneurs en eau, *Bull. Mus. Nat. Hist. Nat. Paris*, **33**, 620-630. Two important factors influencing the water-content of halophytes are evaporation and period of immersion. These and other factors are discussed and analysed.—[E.B.B.]

Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Aanwinsten voor de Nederlandse adventief-flora, 3, *Gorteria*, **1**, 49-53. Adventives new to the Netherlands's flora in 1961 included *Amaranthus palmeri* S. Wats., *Polygonum capitatum* Hamilt. ex Don, *Bidens polylepis* Blake, *Limnophila sessiliflora* (Vahl.) Bl. and *Allium zebdanense* Boiss. & Noë. Descriptions are given of these species and the first three are illustrated by line drawings.—[D.H.K.]

Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Nieuwe plantesoorten in Nederland gevonden in 1961, *De Levende Natuur*, **65**, 107-108.

Van Ooststroom, S. J. & Reichgelt, T. J., 1962, Nieuwe vondsten van zeldzame planten in Nederland in 1961, *De Levende Natuur*, **65**, 108-114.

Virot, R., 1961, Contribution à la connaissance floristique de l'Aubrac et de la Margeride, *Cahier des Nat.*, **17**, 49-64. A list of species from this rather underworked area is given, together with distributed notes and remarks on the phytogeography. Particular attention is given to *Hammarbya paludosa*.—[E.B.B.]

Walters, S. M., 1962, Botanical classification, *Aslib Proc.*, **14**, 231-233. An outline of botanical classification, being a paper read at the Aslib Conference held in London on 6 April 1962.—[D.H.K.]

Wood, R. F. & Nimmo, M., 1962, Chalk downland afforestation. *Forestry Comm. Bull.* No. **34**. Pp. 45. H.M.S.O. London. Price 10/-.

EXHIBITION MEETING, 1962

An Exhibition Meeting was held at the Imperial College of Science and Technology, South, Kensington, on Saturday, November 24, 1962, from 2.00 p.m. to 5.30 p.m.

About 300 members and guests attended, and exhibits were arranged by 28 individuals and institutions. An account of these exhibits, based on notes supplied by exhibitors, is given below.

ERODIUM CICUTARIUM AGG.—P. M. Benoit

LIMONIUM HUMILE × *VULGARE*.—P. M. Benoit

STACHYS GERMANICA IN OXON.

Colour slides and a specimen of *Stachys germanica*, which reappeared in two nearby localities in v.c. 23 (Oxon.) in 1962, were shown. It had not been reported from the vice-county for nine years.—H. J. M. Bowen and J. Cadbury.

ALCHEMILLA MINIMA S. M. Walters

The difficulty of separating *Alchemilla minima* from dwarf forms of *A. filicaulis* sensu lato in the field was shown by leaf silhouettes. The differences between the two were tabulated; the best diagnostic characters of *A. minima* are the absence of the wine-red coloration on the base of the plant and the longer leaf-lobes ($\frac{1}{2}$ radius of the lamina) separated by a deep V. *A. minima* is a British endemic, now known from several localities on Ingleborough and Whernside. It occurs in short wet *Festuca-Agrostis* grassland between 700 ft. and 2,000 ft. Similar habitats further north have yielded only a dwarf ecogenodeme of *A. filicaulis* sensu lato. Cultivation is needed to confirm identifications and I shall be pleased to cultivate plants thought to be *A. minima*.—M. E. Bradshaw.

HYBRIDISATION IN *BETULA*.

Both *Betula pendula* and *B. pubescens* occur on Tuddenham Heath, W. Suffolk, and in a community close to Tuddenham village, Dr. S. M. Walters reported trees showing hybrid characters. Specimens have been collected from a broad transect where a considerable overlap of the two species occurs. *B. pendula* is common on dry areas, while *B. pubescens* forms dense thickets in wetter places. An Andersonian analysis of herbarium and preserved material has been carried out, and there is clear evidence that F_2 hybrids occur, while some specimens show characters which indicate the possibility of backcrosses. Further investigation of the presumed hybrid is in progress. It is hoped to establish the chromosome number of material from the area as F_1 hybrids should be intermediate in number, $2n=42$ (*B. pendula*, $2n=28$ and *B. pubescens*, $2n=56$). Back-crossing would seem highly unlikely on cytological grounds so that the

range of specimens found at Tuddenham presents a most interesting problem.—D. Briggs.

FLORA OF HANDA

Some of the work done by an expedition of VIth form boys from Forest Hill School to Handa Island, Sutherland, was exhibited. The main botanical task was to map the distribution of vascular plants. The technique employed was similar to that used by the B.S.B.I. Distribution Maps Scheme, though on a much smaller scale. A grid-system was set up with grid lines 0·2 km. apart. This involved the accurate siting and marking of 70 points on the island, and listing the plants in each of the resulting 98 squares.

Only one comprehensive plant list for Handa has been published (Harrison, J. W. Heslop- and Harrison, H. Heslop-, *Proc. Univ. Durham Phil. Soc.*, **10**, 1-9 (1938)). Of the species recorded in this list all but 19 were found by the expedition; in addition 57 species new to the island were noted.

During the afternoon a film of the expedition was shown, together with a series of colour slides.—B. S. Brookes.

CALYSTEGIA SPECIES, SUBSPECIES AND HYBRIDS IN BRITAIN

In a revision of the genus *Calystegia* to be published in the near future the author recognises eight subspecies of *C. sepium* (excluding *C. silvatica* and *C. pulchra*). Of these, two are native in this country, one of them widespread and the other restricted mainly to the west coast, while a third is known at present from only a single locality in the British Isles. Intermediates between the two native subspecies occur. Specimens and distribution maps were shown. Two subspecies of *C. silvatica* are recognised, both of which are widely naturalised in the British Isles. Pictorial scatter diagrams showed how these subspecies may be separated from each other and from *C. sepium* and hybrids in this country and in Italy. Specimens and a distribution map of *C. pulchra* and possible hybrids with *C. silvatica* were also shown.

The identity of hybrids between the species has sometimes been disputed. Artificial hybrids from controlled pollinations by the author involving *C. sepium*, *C. silvatica* and *C. pulchra* were also exhibited.—R. K. Brummitt.

PHOTOGRAPHS OF THE ATLAS DINNER

A series of photographs taken at the dinner to celebrate the publication of the *Atlas of the British Flora* were displayed.—T. G. Collett.

CYTOTAXONOMIC STUDIES ON *FUMARIA OFFICINALIS*

Recent work on *Fumaria officinalis* has revealed that certain differences in morphology are correlated with differences in cytology. It was shown that *F. officinalis* subsp. *officinalis* is a tetraploid with $2n=32$, while *F. officinalis* subsp. *wirtgenii* is a hexaploid with $2n=48$. Sepal length, fruit shape, and the ratio of raceme: peduncle length, were characters used to separate the subspecies on morphological grounds.

The occurrence was recorded of a pentaploid plant, apparently *F. officinalis*, and it was suggested that possibly it may have resulted from a cross between *F. officinalis* subsp. *officinalis* and subsp. *wirtgenii*.

Extra univalents have been observed at meiosis in the hexaploid and it is probable that these are the cause of sporads with more than the normal four microspores. In the pentaploid, where about eight univalents regularly occur, polyspory is very high.—M. G. Daker.

EUROPEAN ALIENS IN TRISTAN DA CUNHA

The first botanist ever to land on Tristan da Cunha was Du Petit Thouars. He visited the island in 1792 and made the first collection of the native plants. In addition, he recorded the two alien plants, *Lactuca sativa* L., and *Raphanus sativus* L. Since the colonisation of the island in 1816, the vegetation has been altered considerably by human activity, and more and more alien plants have become established, some of which are very abundant and compete successfully with the native plants.

In all, about 80 alien plants have been recorded. (The native vascular plant flora is only about 70 species!) The great majority of the aliens are weeds which have been spread throughout the world by the activity of man. Many of them are plants familiar to British botanists.

Every botanist who visits Tristan adds more aliens to the list. I found ten; *Conyza bonariensis*, *Coronopus didymus*, *Digitaria sanguinalis*, *Eleusine indica*, *Euphorbia peplus*, *Festuca rubra*, *Paspalum dilatatum*, *Rorippa nasturtium-aquaticum* (or *R. microphylla* × *nasturtium equaticum*), *Sonchus asper* and *Veronica agrestis*.

Many of the alien plants are confined to the gardens and fields of the Village and to the plain on which the Village lies. However, a few, notably *Rumex acetosella* and *Holcus lanatus*, occur abundantly all over the island. These two, in very luxuriant conditions, having ousted the native plants, dominate a zone of vegetation at 3,000 feet.—J. H. Dickson.

BOTANICAL PAINTINGS.—Mrs. B. Everard

STUDIES ON *MENTHA*

The exhibit, after stressing the nomenclatural problems in the genus, demonstrated how the specific limits had been wrongly drawn among the spicate mints. While *Mentha spicata* is tetraploid or triploid, *M. longifolia* is tetraploid, triploid and diploid. Breeding experiments indicate that the tetraploid forms of both are conspecific, and differ from diploid *M. longifolia* in several characters. It is proposed to recognise this plant as a separate species, which does not occur as a native of Britain. The tetraploids form a distinct species which probably arose in cultivation, by hybridisation between the diploids *M. longifolia* and *M. rotundifolia*.

The hybrids found in the group are many and diverse, and the suggested origins of some of them were illustrated diagrammatically.—R. M. Harley.

FLORA OF WARWICKSHIRE: NEW RECORDS AND OLD RARITIES

An exhibit of herbarium specimens of recently discovered and/or rare species of Warwickshire plants. New records from the county include:

Bromus squarrosus var. *villosus*, *Bromus carinatus*, *Chenopodium vulvaria*, *Cicerbita macrophylla*, *Corispermum leptopterum* (*C. hyssopifolium* auct. europ. (?L.)), *Fumaria micrantha*, *Lepidium virginicum*, *Medicago laciniata*, *Medicago minima*, *Scorzonera humilis*, *Solanum sarrachoides*, *Taraxacum faeröense* (Sect. *Spectabilia*), *Taraxacum oxoniense* (Sect. Erythrosperma Dahlst., em. Lindb. f.), *Taraxacum nordstedtii* (Sect. *Spectabilia*), *Thelypteris robertiana* and *Bromus inermis*.—J. G. HAWKES and R. C. READETT.

THE *OXYTROPIS* IN KINTYRE

An *Oxytropis* was found by A. A. Slack in some plenty in March 1961, (then, naturally, out of flower,) on the cliffs north of the Mull of Kintyre. Later on the area was visited by A. Kenneth who discovered a second fine colony half a mile to the north. In September Mr. Kenneth kindly took me to see the northern colony, when it was in fruit; and I saw both of them in June this year (1962) in flower . They were also shown to a B.S.B.I. and C.S.S.F. excursion.

The colour of the majority of the flowers was a dingy yellow, but some of them had quite purple flowers (up to Lobelia Blue 41/2 on the R.H.S. colour chart). The concensus of opinion now is that these plants come better under *O. halleri* Bunge. These Kintyre colonies, however, have shown that few of the characters in books for separating the two species are valid: which may indeed be given contradictorily in different works.

Some of those found unreliable are the silkiness of the foliage, whether it is erect or spreading, size generally and of the leaflets and flowers and flower-heads, the length of the flowering pedicel, the colour of the tip of the keel, as well as the flower colour. The variation in this last character suggests that it may be necessary to reconsider whether possibly some of the plants of *O. halleri* recorded in the past with pale or white flowers, do not in fact belong under *O. campestris*.

Characters which may be good include chromosome numbers (these are being investigated. Clapham, Tutin & Warburg, *Flora of the British Isles*, ed. 2 (1962) quote only continental counts of $2n=16$ for *O. halleri* and $2n=36$ for *O. campestris*, a surprising pair for two apparently closely allied species), and the suture of the pod.

Here is an example of two species not hitherto considered difficult in this country, but which clearly need redefining as a result of this important discovery by Mr. Slack and Mr. Kenneth.

The exhibit included sheets of the Kintyre plant and of *Oxytropis* species from nine other localities in Scotland. One of these, from North Queensferry, 1830, was labelled "*O. uralensis* fl. albo.".—D. MCCLINTOCK.

TRICHOMANES IN WELLS

Papers in four Bulletins of the Botanical Society of France* in rapid succession, early in 1953, told the remarkable story of the discovery, in forty-six wells in Brittany in a restricted area between Plöermel and Josselin, of the Killarney Fern, *Trichomanes speciosum*, often in abundance. In 1954 it was found in one seventy miles to the west, near St.

*1953. *Bull. Soc. Bot. France*, **100**. No. 1-3 p. 6. 4-6 p. 137; pp. 187-8. No. 7-9.

Herbot, and in 1962 in another twenty miles to the south, north-west of Rochefort en Terre. No natural localities for this fern are known between Ireland and the Pyrenees. Its original discoverer was Brother Auguste Moisan. Brother Louis Arsène Bizeul (who died in 1959) subsequently joined in the search and in fact was the author of the papers.

Its taste in wells seems to be for an old one, preferably facing north and covered, where it may grow anything from 1 ft. to 15 ft. down, fertile or sterile, alone or mixed with other ferns.

Apparently no one from Britain had seen any of these wells until 1962. There seems little reason why a similar discovery might not be made in our own islands—but such wells are now much rarer over here than in Brittany.

A fuller account will appear in the autumn (1963) number of *The Countryman*.

The exhibit included fertile and sterile fronds from Brittanic wells, a map showing the present known locations of the fern in Brittany, and photographs of it growing in a well at Bodiel, and of another well at Buho.—D. McClintock.

BRITISH PUCCINELLIAS

Herbarium specimens and living material of the five British species of *Puccinellia* were exhibited, and several problems which still need to be investigated were pointed out.

P. pseudodistans is intermediate between *P. distans* and *P. fasciculata* in morphology. It grows on open mud after disturbance of the original vegetation and apparently disappears in a few years under pressure of competition from other plants. The distribution map showed that it often occurs where *P. distans* and *P. fasciculata* grow together, and it has been suggested that it is a hybrid.

The deflexed panicle branches of *P. distans* are characteristic, but the young panicles look very much like those of *P. maritima*. The difference in spikelet size offers a ready character for quick identification in the field. *P. distans*: 3-5 mm. long. *P. maritima*: 6-10 mm. long.

With its stiff, spreading panicle branches, *P. rupestris* is distinct in appearance from the other species of *Puccinellia*. In cultivation the compact collected material made strikingly luxuriant growth, as was shown on the plant displayed.

Tall and dwarf races of *P. maritima* often occur at different levels on the same salt-marsh, and examples were shown. Several polyploid counts have been reported and it has been suggested that this species is apomictic.—L. E. Newton.

EXPERIMENT WITH *CHAMAENERION ANGUSTIFOLIUM*

Two varieties of *Chamaenerion angustifolium*—var. *brachycarpum* and var. *macrocarpum*, may be distinguished on the basis of their pod-length, petal shape and anther colour. The anthers of var. *brachycarpum* contain very little pollen and this variety appears to be male sterile. If flowers of var. *brachycarpum* are fertilised with pollen from var. *macrocarpum*, long pods are produced instead of the short pods which are typical of the variety. Most of the seeds in the short pods were small and failed to

germinate, whereas those in the long pods were large and germinated quite readily.

C. angustifolium var. *brachycarpum* is known to us only from gardens, and all the wild populations investigated proved to be var. *macrocarpum*.

Herbarium specimens of the two varieties and the experimentally produced progeny were exhibited.—D. Ockendon and M. van den Driessche.

ORCHIS PURPUREA IN OXON.

The occurrence of a single plant of *Orchis purpurea* in an Oxfordshire beechwood, far from its Kentish localities, was made the subject of a small exhibit.—Mrs. V. N. Paul and E. F. Warburg.

SOME CRITICAL PAIRS

Interim maps showing the distribution of a number of critical species were displayed which indicated, on the one hand, how interesting the final maps were likely to be and, on the other, how much still remained to be done. The three species of *Polypodium* already have clearly distinguishable patterns which may perhaps be related to their growing period. *P. australe*, which produces new fronds in the autumn and ripe spores in late autumn or early spring, is confined to the south and west of the British Isles: *P. interjectum*, which starts growing in the summer and has ripe spores by the autumn, is widespread but absent from most of Scotland, where perhaps the winters are too long and cold: *P. vulgare*, which commences growing earlier in the year than *P. interjectum* and has ripe spores by late summer, is found throughout the British Isles except in eastern England where the aggregate as a whole is rare or local.

Maps exhibited of other species included *Ranunculus ficaria*, *Erodium glutinosum*, *E. cicutarium* subsp. *dunense*, *Aphanes arvensis* and *A. microcarpa*.

An appeal for further records of all kinds was also made as there is a possibility that some sort of organisation may be set up to deal with the distribution of the British flora for an indefinite period in the future.—F. H. Perring.

LAUNCHING THE *ATLAS*.—F. H. Perring.

GYMNADENIA CONOPSEA FORMS IN BRITAIN

In 1930, in the *South-Eastern Naturalist*, P. M. Hall expressed his view that there were three, not two, well-marked taxa included under *Gymnadenia conopsea* in Britain. The object of this exhibit was not to define these forms precisely: far more work is needed on their biometrics, cytology, and ecology: but to draw attention to my view that Hall may well have been right, and to encourage someone to undertake a proper study of this rather neglected problem.

The three taxa that appear to exist are as follows:—

(1) The plant of chalk and limestone grassland at low altitudes. This is widespread in southern Britain. It is moderately robust and has moderately dense spikes of flowers normally of a rose-pink colour, with a 3-lobed lip with acute lobes normally divergent at about 45° from one

another, and narrow (c. 1 mm. × 8 mm.) sepals which are acute at the tip. The perfume has what I should describe as "rancid" overtones.

(2) The plant of lowland calcareous fens, which also occurs rarely, especially in northern France, in chalk grassland. This is normally very robust, up to 50 cm. high, and has very dense spikes of flowers of a deep carmine- or purple-pink colour, with a three-lobed lip with obtuse or even truncate lobes, the outer ones diverging at about 90° from the "chalk" form, and longer, and wider (c. 2-3 × 10 mm.) sepals which are obtuse or truncate at the tip. The perfume is strong, sweet, and clove-like, and the plants bloom regularly four weeks later than the "chalk" form, even when growing together. It appears to be the *G. densiflora* of Wahlenberg.

(3) The plant of upland pastures or sub-alpine meadows on soils which are of low base status and often waterlogged in winter; I found this also this year in lowland *Molinia-Erica tetralix* heath in Ashdown Forest, Sussex. It rarely exceeds 20 cm. and has lax spikes of rather deep pink flowers, with a shield-shaped lip scarcely three lobed. The sepals are short and narrow (c. 1 × 6 cm.) and blunt. The perfume is sweet like that of *G. densiflora*. It appears to be common in upland Britain.—F. Rose.

ELYMUS ARENARIUS IN KENT

Specimens were exhibited of *Elymus arenarius* from a recently discovered locality near Sandwich, E. Kent. The only previous reliable record for Kent was from Deal where the plant was found by Lady Davy in 1922.—F. Rose.

FLORA OF SOUTH LANCASHIRE.—J. P. Savidge.

A LAKE FLORA SURVEY OF WALES

This scheme was initiated in May, 1962, by the National Museum of Wales and the exhibit illustrated some of the results obtained in the first season's work. A selection of species of submerged aquatics included representative examples of this flora in Wales, e.g. *Myriophyllum spicatum, Potamogeton obtusifolius, Zannichellia palustris, Ranunculus circinatus* and *Ceratophyllum demersum* from lowland eutrophic lakes; and *Sparganium angustifolium, Subularia aquatica* and *Myriophyllum alterniflorum* from base-poor waters.

More local in their occurrence were *Elatine hexandra, Potamogeton coloratus, Callitriche hermaphroditica,* while new vice-county records displayed were *Luronium natans* (Carmarthenshire) and *Littorella uniflora* (Monmouth). Maps displayed the distribution of lakes in Wales and those sites which had been visited during the year.—B. Seddon.

MAPS OF *HIERACIA*

Maps were exhibited showing the different types of distribution of the following species of *Hieracium* in Britain.

(1) *HIERACIUM PERPROPINQUUM* (Zahn) Druce (includ. *H. bladonii* Pugsl., *H. bladonii* var. *brunkeri* Pugsl., *H. argutifolium* Pugsl., *H. eminentiforme* Pugsl., *H. lugdunense* auct., *H. obliquum* auct.). A wide-

spread and often abundant species in woods and on grassy banks and sandy heaths in England and Wales. Local in south and east Scotland; only in E. Ireland. Widespread in continental Europe. Very variable in indumentum.

(2) *HIERACIUM VULGATUM* Fries (includ. var. *sejunctum* W. R. Linton, var. *subfasciculare* W. R. Linton, var. *subravusculum* W. R. Linton, var. *pseudosubramosum* Pugsl., *H. acroleucum* sensu Pugsl.). An abundant species in Scotland and north England. local elsewhere and probably not native south of a line from the Severn to the Wash. Only about half the available records are at present shown on the map but the remainder do not fundamentally alter the distribution pattern, except perhaps in Ireland. Variable in size and colour. Abundant in Scandinavia; also in central Europe.

(3) *HIERACIUM PRENANTHOIDES* Vill. Nowhere abundant and curiously scattered in its distribution, being most widespread in central Scotland. Slightly variable in colour and in texture of leaves in central Scotland. Alps and Scandinavia.

(4) *HIERACIUM DEWARI* Syme and *HIERACIUM CARPATHICUM* Besser (*H. perthense* Williams). Two allied species with no variation and confined to central Scotland. *H. dewari* Syme is endemic. *H. perthense* Williams is identical with *H. carpathicum* Besser which is otherwise confined to the Tatra Mountains of east-central Europe.

(5) *HIERACIUM HOLOSERICEUM* Backh. A characteristic alpine distribution, the majority of the records being from over 2,000 ft. Scandinavia and central Europe.

(6) Two maps showing eight closely allied species which vary little and have local distributions. All occur only on basic rocky cliffs. *HIERACIUM DICELLA* Sell and West (*H. furcilliferum* Dahlst., non Omang; *H. britannicum* var. *glaucinum* Pugsl., *H. britannicum* var. *ovale* Ley), is the most widely distributed, occurring throughout the range of the other species in Great Britain to which it is endemic. It is perhaps the parent species from which the others were derived. *HIERACIUM BASALTICOLA* Pugsl. is endemic to northern Ireland and is the only area occupied by a member of the group where *H. dicella* does not occur. *HIERACIUM BRITANNICUM* Hanb. is abundant in the Derbyshire dales while *HIERACIUM BRITANNICIFORME* Pugsl., *H. FRATRUM* Pugsl., *H. SARCOPHYLLOIDES* Dahlst., *H. STENOLEPIFORME* (Pugsl.) Sell and West and *H. SUBBRITANNICUM* (Ley) Sell and West are very local.—P. D. Sell and C. West.

WILD FLOWERS OF WESTERN NORWAY

A small illuminated screen showed colour transparencies of the flora of the Hardanger and Songefjiord areas of western Norway taken during a visit in August 1962.

Species illustrated included *Ranunculus glacialis, Aconitum septentrionale, Lychnis alpina, Saxifraga cotyledon, Phyllodoce caerulea, Cassiope hypnoides, Gentiana purpurea, Orthilia secunda, Linnaea borealis, Leucorchis albida* and *Eriophorum scheuchzeri.* Photographs of habitats were also shown.—F. W. Simpson.

WHAT IS *POLYGONUM LAPATHIFOLIUM*?

Considerable confusion about this species is caused by two factors (a) the tendency to identify it and the related *P. persicaria* solely by flower colour and (b) the existence in the literature of *P. nodosum* Pers. and *P. tomentosum* Schrank, which it is suggested are merely parts of the range of variation shown by *P. lapathifolium*. The exhibit showed that using four characters (thus giving 16 possible combinations) the range of variation covered all three taxa with intermediates and it is, therefore, suggested that *P. nodosum* and *P. tomentosum* should no longer be regarded as separate species. Specimens of some of the phenotypes and of a white-flowered form of *P. persicaria* were shown as well as a table showing the 16 combinations and the results of scoring these for other characters. It is intended to publish these results more fully elsewhere.—J. Timson.

NEW RECORDS FOR *ELEOCHARIS AUSTRIACA* IN BRITAIN

During 1962 our knowledge of the distribution of *Eleocharis austriaca* Hayek in Britain has been greatly increased. The species was exhibited last year as a newly-discovered British plant—see *Proc. B.S.B.I.*, **4**, 475 (1962). On July 22, Dr. and Mrs. G. A. Swan discovered the plant on the west side of the river Rede near Byrness, S. Northumberland (v.c. 67, 36/769023), and soon added two more localities for the same vice-county, by the N. Tyne near Otterstone Lee (35/671879), and by the Kielder Burn (35/649995). Then in September they made two further discoveries, a population on the river Irthing near Gowk Banks, Cumberland (v.c. 70, 35/682737), and a final one for the season on the N. Tyne near Plashetts (v.c. 67, 35/664897).

There is a general similarity between all the British habitats of *E. austriaca*, some features of which were shown in a photograph taken by Dr. Swan of the Otterstone Lee locality, which I was able to visit with Dr. Swan and Dr. M. E. Bradshaw on August 23. All the habitats are relatively impermanent ones liable to periodic flooding and general alteration by the river; and the plant seems to form vigorous stands where there is more or less open alluvial sand or gravel with a reasonable humus content.

When well-grown and flowering, the plant is very easily recognised, even at a distance, from the common *E. palustris* by the short dark conical spikes. It is of course necessary to confirm the identification by the fruit (which need not be ripe to show the bristles and the stylopodium); but once the plant is seen in the field, it should be easy to spot it again. There seems no doubt that it will be found elsewhere in northern England and also probably southern Scotland. Its European distribution is as yet very imperfectly known, but extends in the main mountain ranges from the Pyrenees to the Urals; the pattern of the British and Continental range is very reminiscent of *Primula farinosa*.

I should of course be pleased to see material which seems to possess the characters of *E. austriaca;* this can be pressed, and should be at least in young fruiting stage. Experience suggests that collections made from mid-July onwards are satisfactory.—S. M. Walters.

WELSH REGIONAL MEETING, 1962

A B.S.B.I. Regional Meeting was held in the Department of Botany, University College, Bangor, on September 22, 1962. Dr. W. S. Lacey was responsible for the administrative arrangements: about forty members attended.

Professor P. W. Richards welcomed the B.S.B.I. to Bangor, and recalled two former occasions on which he and his department had acted as hosts to the society. The President, Mr. J. E. Lousley, then took the chair.

Professor J. L. Harper then read a paper on "The Biology of weeds". He had been studying the factors determining the numbers of weeds in a given area, and he emphasised the importance of external factors before or immediately after germination on the ultimate size of the population. As an example of the complexity of factors affecting germination, he described Trevor Williams' work on *Chenopodium album*. This species produces four morphological types of seeds, smooth brown, reticulate brown, smooth black and reticulate black: all four types are normally found on one plant. These types can be further subdivided by their germination response to stimuli such as chilling or external nitrate. The percentage germination in *C. album* and other weeds such as *Bromus rigidus* and *B. madritensis* is markedly affected by roughness of the soil surface. Seeds fail to germinate in both very smooth and very rough soils. Finally Professor Harper demonstrated his technique for measuring the effect of living rye-grass roots on the growth of *C. album* and *Agrostemma githago*. The growth of *C. album* was virtually inhibited, and that of *A. githago* was markedly reduced.

After a discussion of this paper, Dr. A. D. Bradshaw spoke on "Local variation in plant species". Variation is recognised in many species, and may be phenotypic or genotypic. As an example, he showed pictures of morphological and climatological ecotypes of *Agrostis tenuis*. As a result of his own researches, Dr. Bradshaw put forward the concept of soil ecotypes. Many common grasses and legumes, for example *Festuca ovina* and *Trifolium repens*, have different ecotypes on acid and basic soils. These may often be distinguished by their response to nutrients such as calcium, magnesium or phosphate in sand culture. Acid soil ecotypes may become chlorotic when supplied with abundant calcium. Dr. Bradshaw also described his discovery of ecotypes of *A. tenuis* adapted to live on mine debris, where most species are unable to tolerate the high concentrations of heavy metals. He had succeeded in finding populations specifically adapted to each of the four heavy metals copper, nickel, lead and zinc. Finally he showed how ecotypes of *Agrostis stolonifera*, an outbreeding and wind-fertilized species, could exist side by side wherever there are sharply defined habitats.

Mr. R. H. Roberts then summarised the researches of many years on "Some problems in *Dactylorchis* and *Mimulus*". He mentioned the great diversity of taxonomic opinion in *Dactylorchis*, and indicated that much remained to be done. Because of the difficulty of conventional genetic

studies in this genus, he carried out biometrical work on field populations of *D. praetermissa*, *D. purpurella*, *D. majalis* and *D. traunsteineri*. Some of the results were summarised by polygonal graphs representing means of values for leaf number, number of non-sheathing leaves, labellum area, leaf length-leaf width and flower number. The four species appeared quite distinct, and so far he could find no evidence of hybridity or introgression in North Welsh populations.

In *Mimulus*, Mr. Roberts showed that the majority of plants referred to *M. luteus* are in fact the hybrid *M. guttatus* × *luteus*. This is distinguished from the true plant by its erect habit, sparse short pubescence, partially spotted corolla, and complete sterility. So far he had seen true *M. luteus* only from Caithness. Some plants referred to "*M. cupreus*" are also sterile and may well be of hybrid origin.

This was followed by Dr. G. R. Sagar's contribution, entitled "Chemical weed control—an appraisal". Until recently the main use of chemicals has been for weed control in cereal crops. Herbicides specific for broad-leaved species, mostly derivatives of phenoxy-acetic acid, have been widely used, and can be supplemented by auxiliary chemicals which kill *Galium aparine*, *Avena fatua*, *Agropyron repens* and other resistant plants. Such herbicides, if properly applied, constitute no danger to native plants, except where they are sprayed onto hedge-banks in an attempt to prevent reinfestation. Since they are applied to seedlings, it would be useful to discover methods of identifying seedling weeds especially in genera such as *Matricaria*.

The spraying of roadside verges reveals the conflict between utilitarian and botanical interests. Growth retardants such as maleic hydrazide or 2, 4D (2, 4 dichlorophenoxy-acetic acid) are commonly used, as when repeatedly applied they eliminate tufted species (e.g. *Dactylis*, *Arrhenatherum*) and permit the invasion of rhizomatous species (e.g. *Poa*, *Festuca*). Spraying of waterways, strongly resisted by anglers, constitutes a serious threat to submerged aquatic plants, which are easily killed by amino-triazoles or Dalapon (2, 2′ dichloro-propionic acid).

Recently there have been rapid developments in the production of total herbicides with an effect similar to that of sodium chlorate. A new substance, Paraquat, kills all vegetation in 4 days but is rapidly inactivated in contact with the soil and allows reseeding without ploughing the mat of decaying vegetation. This may constitute a threat to species of hill pastures.

Despite all these potential threats to the British flora, Dr. Sagar concluded on an optimistic note. It is possible that herbicides could be used to delay succession in fen or chalk grassland, and so preserve habitats for colonisation by rare species.

After the lectures Mr. and Mrs. Parish showed some excellent colour slides of plants from Newborough Warren and Yyns Llanddwyn in Anglesey, and members were able to view the following exhibits in the Department.

Exhibits

P. M. Benoit: Common and rare hybrids in Wales.

H. J. M. Bowen: Some shoddy aliens from Worcestershire.

A. Brereton: Pattern in salt-marsh vegetation.

R. Bunce: *Lycopodium* species in N. Wales.

J. N. Davies and J. O. Williams: Root hair organs on *Carex flacca* and *C. panicea*.

J. L. Harper: Radioautographs of wheat.

G. A. D. Jackson, J. B. Blundell and R. B. Wood: Do all birds assist in dispersal of rose seeds?

W. S. Lacey and R. H. Roberts: Interesting plants from Anglesey and Caernarvonshire.

R. H. Roberts: Natural and artificial hybrids of *Mimulus*.

D. B. Woods: Behaviour of sand-dune annuals.

Regional Meeting

A regional meeting was held at 12 noon on September 22nd, 1962, with the President in the chair, Mrs. H. R. H. Vaughan was elected to be the Welsh Regional Representative on Council, there being no other nominations. A Regional committee for Wales was set up, with the following terms of reference: "to further the aims and objects of the society in Wales". The following were elected to the Committee; P. M. Benoit, T. A. W. Davies, Dr. W. S. Lacey, Mr. Newman, R. H. Roberts, C. A. Sinker, Dr. B. Seddon and Mrs. H. R. H. Vaughan. Dr. Lacey agreed to convene a meeting of the committee as soon as possible, when other members could be co-opted. It was agreed that there were many potential new members in Wales, among Grammar Schools and Local Natural History societies. Wales also had special conservation problems in view of the widespread activities of the Forestry Commission.

Dinner

A dinner of 24 members present at the meeting was held during the evening.

Excursion

Dr. W. S. Lacey led a Field Meeting to Anglesey on September 23rd. A wet heath near Penrhos Lligwy was first visited, where there was a fine display of *Gentiana pneumonanthe*. *Lycopodium selago*, *Radiola linoides*, *Parnassia palustris*, *Baldellia ranunculoides* and *Myrica gale* were also seen here. A little further east another heath on which the gentian occurs had been made into a caravan site, which had apparently destroyed *Lycopodium selago*, formerly growing there. *Viola lactea* and *Calamagrostis epigejos* were found during the search. The party then visited a tarn on Bodafon mountain, which contained *Pilularia globulifera* and *Apium inundatum*. This was a charming setting, for the hillsides were bright with the blooms of *Ulex gallii* and *Erica cinerea*.

Lunch was eaten further up the Afon Lligwy, but *Potamogeton* × *lanceolatus* could not be found in the overgrown stream. Mr. Benoit and Professor Richards showed the party the hybrids *Juncus acutiflorus* × *articulatus* and *J. inflexus* × *effusus* from a marshy field. *Geranium sanguineum* was seen by the roadside.

A fen near Llanddyfnan proved a great attraction. *Cladium mariscus* was the dominant species, with patches of *Ranunculus lingua*, *Epipactis palustris* and several interesting carices in fruit. In the pools were

several charophytes, including *Chara aculeolata* and *C. hispida*, *Potamogeton coloratus* and *P. natans*, and *Utricularia minor* with *U. neglecta*. A small outcrop of carboniferous limestone near the fen yielded some interesting bryophytes and a dwarf *Alchemilla*, apparently *A. filicaulis* subsp. *vestita*.

The excursion ended with a visit to another fen near Llangoed, where R. H. Roberts showed the party *Eriophorum latifolium*, a species of restricted occurrence in Anglesey. This small fen is also noted for its abundant *Parnassia palustris*, which was at its best at the time of the visit.—W. S. Lacey.

REPORT OF THE COUNCIL FOR 1962

The report and audited accounts cover the period from 1st January to 31st December, 1962. Comparative figures for 1961 are given in brackets unless otherwise indicated.

During the year 146 (91) new members joined the Society and we lost 45 (55) by reason of death, resignation and the operation of Rule 29. The total membership at the end of the year was 1417 (1316) with a net gain of 101 (36). We record, with great regret, the death of Mr. F. M. Day, an old and valued member.

In the accounts, which are appended to this report, it will be seen that there has been an excess of expenditure over income of £327, this being largely a reflection of the steadily rising cost of all our activities, as forecast in previous years. Our principal sources of income, subscriptions and proceeds from sales of journals, each show a satisfactory increase compared with 1961, but our total expenditure has risen very much more than the increase in income.

Part of the higher expenditure arises from non-recurring items. Thus, in 1962, we have borne the cost of the *West Norfolk Plants To-day* supplement to *Proceedings* (£202) and printing charges include about £150 in respect of the new Prospectus of which a large number has been printed in order to meet our needs for several years. Similarly, expenditure was incurred in connection with the activities held to celebrate the publication of the *Atlas of the British Flora*, whilst these matters and the arrangements for regional meetings have caused the cost of printing notices of meetings to be higher than usual. Nevertheless, these exceptional items explain only a part of the higher expenditure and much of it is due to rising costs and the increasing activities of the Society. The deficiency can only be met by a higher subscription income and it is sincerely to be hoped that this will accrue from a steady increase in our membership list. Members are strongly urged to encourage their friends who have sympathies with the activities of the Society to become members. Copies of the new Prospectus are available on application to the Honorary General Secretary for any member who wishes to pass them on to his or her friends.

Application has been made for the registration of the Society under the Charities Act 1960, but no reply has yet been received from the Charity Commissioners. It is hoped that our application will be accepted (even if this involves some further amendments to the Rules) because, inter alia, it will confirm our status as a non tax-paying body and, in particular, will remove any risk that we shall be faced with a claim for income-tax on royalties and other untaxed income received.

A landmark in the history of the Society was reached in the publication, jointly with Thomas Nelson and Sons, of the *Atlas of the British Flora*. A celebration dinner, which was attended by 75 members and guests, was held at Crosby Hall on the day of the Annual General Meet-

ing. On the same day, lectures were given by Professor A. R. Clapham, secretary of the Maps Committee from its inception in 1950, Dr. S. M. Walters, Director of the Distribution Maps Scheme from 1954 to 1959, and Dr. F. H. Perring, the Director since 1959. The **Maps Committee** has been mainly concerned with the details of the second phase of the Distribution Maps Scheme which will be largely devoted to collecting material for a supplementary volume of the Atlas dealing with critical species. Progress with this and other developments of the scheme is the subject of a separate report by the Director. We record once more our gratitude to the Nature Conservancy for meeting the main burden of the cost of the Scheme, and to Cambridge University for continuing to provide accommodation for the staff and equipment.

The **Development and Rules Committee** has been responsible for the production of the new Prospectus which we trust will prove to be more attractive and effective than the old one which has served for a number of years. Following a successful Regional Meeting at Bangor, a Welsh Regional Committee has been formed. As it is hoped that this will be the first of a number of similar committees for other regions, the Development and Rules Committee has considered the terms of reference of Regional Committees and the further development of the regional organisation of the Society. Attention has also been given to widening the educational aspects of the Society's work.

In addition to arranging the meetings held in connection with the Annual General Meeting, the **Meetings Committee** planned a full programme. The Regional Meeting at Bangor, organised by Dr. W. S. Lacey, included lectures, exhibits and a dinner, and was followed by a field meeting in Anglesey.

The Annual Exhibition Meeting was held at the Botany Department, Imperial College of Science, South Kensington, with 28 (41) exhibits. We hope soon to find a permanent venue for this very important annual event. Following the meeting, a President's Reception was held at Crosby Hall, Chelsea, and was attended by 67 members.

Field meetings, which were arranged by the Field Secretary (P. C. Hall), were held at Cirencester (25); Shaftesbury (12); Harewoods, for the study of grasses (30); Sligo (9); Chislehurst, for the study of brambles (24); Basingstoke (9); Weardale (7); Buckingham (22). The attendances at each meeting are shown. On the day following the Annual General Meeting, 29 members joined a meeting at the Royal Horticultural Society's Gardens at Wisley. The total attendance at all of these meetings was 167 (196).

The meetings arranged by the **Junior Activities Committee** have had smaller attendances than in previous years which was probably a result of the poor summer weather. An enjoyable visit was made to the South London Botanical Institute where the President showed those who attended the herbarium and library. This year's residential meeting was held in conjunction with the Committee for the Study of the Scottish Flora at Garth Field Centre. One-day meetings were held at Richmond, Yorkshire; Harefield, Middlesex; Reading; Kenfig Burrows, jointly with Cardiff

Naturalists' Society; Freshfield Dunes; Holme Fen; Rugby; and Amberley, Sussex.

During the year, two parts of *Watsonia*, and one part of *Proceedings* were published and, as a supplement to the latter, *West Norfolk Plants To-day*, by C. P. Petch and E. L. Swann. The **Publications Committee** has assisted the editors of our periodicals and considered generally the future publications of the Society. A report of the 1961 Conference on Local Floras is being edited for us by the secretary of the committee. The sales of our publications continue to be good, and a new *List of Publications* has been printed and circulated to all members. Once more we express our thanks to E. B. Bangerter for his valued services in handling the sales of our publications, and to the Trustees of the British Museum (Natural History) for continuing to allow the storage of these publications at the Museum.

The **Conservation Committee** has, in addition to its own meetings, had two liaison meetings with representatives of the Nature Conservancy. We were able to draw attention to a number of questions of general and special importance and to discuss difficult problems with the Conservancy representatives. These matters included the need for some permanent machinery to protect Upper Teesdale, the increase in roadside spraying, the gathering of moss for commercial purposes, scrub clearance on chalk downland and the use of toxic chemicals in agriculture. Specific conservation problems raised concerned Rannoch Moor (Perthshire), Balblair Wood (Sutherland), Borth Bog, the *Spartina* salt-marsh at Hythe (Southampton Water), the quarrying of limestone at Ingleborough, Norton Heath (Essex) and the conservation of *Stachys alpina* in Gloucestershire.

During the year, the Council appointed two special *ad hoc* Committees. The **Local Floras Committee** was set up to consider the implementation of a resolution passed at the Conference on Local Floras held in 1961. The **Exhibits Committee** has been formed to explore the best means of displaying information regarding the activities of the Society during National Nature Week, and at the Tenth International Botanical Congress at Edinburgh in 1964.

The **Committee for the Study of the Scottish Flora,** a joint committee of the Society and the Botanical Society of Edinburgh, arranged a full programme which included an Exhibition Meeting at Glasgow, jointly with the Andersonian Naturalists' Society of Glasgow, members of which also joined some of the Field Meetings. These were held at Lanark, two meetings, (8 and 11); Kintyre (15); Moffat Hills (14); Conon Bridge (10); Helmsdale (14). A Junior Meeting was also organised at Garth (14). The attendances at these various meetings are shown and further details of them and other work of the committee will appear in future *Proceedings*.

The Council thanks the many friends of the Society who have helped it to continue its work. These include our auditors, Messrs. Price Waterhouse & Co., the Nature Conservancy, which has allowed the Council to meet in its Conference Room, the Botany Department, Imperial College,

which has allowed the Conservation Committee to meet in its premises, and the Department of Botany, University College, which has continued to allow the Publications Committee to meet in its premises. It thanks, also, the members who have in many ways contributed to the activities of the Society.

J. E. LOUSLEY, President.
J. G. DONY, Secretary.

February 20th, 1963.

GENERAL INCOME AND EXPENDITURE ACCOUNT

for the year ended 31st December 1962

1961				1961			
	Cost of Printing and Distributing:			£1,843	Subscriptions received		£1,912 17 6
	Proceedings, Vol. IV, Part 4 (balance) and provision for Vol. V, Part 1	£794 16 9		199	Interest received		191 17 0
	Supplement, West Norfolk Plants (Net)	202 4 7			Proceeds from Sales:		
	Watsonia, Vol. V, part 3 (balance), Part 4 and provision for Part 5	1,212 8 7			*Proceedings*	£92 3 7	
£1,559			£2,209 9 11		*Watsonia*	280 16 9	
50	Grant to Maps Scheme		50 0 0		Old *B.E.C. Reports*	71 19 6	
121	Printing Notices of Meetings		194 13 7	202			444 19 10
62	Expenses of Council and Committee Meetings		75 7 9		Excess of Expenditure over income debited to General Fund		327 10 2
177	General printing, stationery, postages, telephone and petty expenses		305 6 4				
19	Field and Exhibition Meetings expenses, less receipts		42 6 11				
256	Excess of income over expenditure credited to General Fund						
£2,244			£2,877 4 6	£2,244			£2,877 4 6

PUBLICATIONS FUND

Transactions in 1962

1961				1961				
£383	Cost of printing and binding *A Darwin Centenary*			£1,887	Balance from 1961		£1,650	18 8
8	Prospectuses and publicity	17 10 6			Sales :			
1,651	Balance to 1963	2,477 15 6		6	*Flora of Jersey*	£3 12 9		
				5	*British Herbaria*	7 0 2		
				22	*List of British Vascular Plants* (half share) ...	22 18 7		
				80	*A Darwin Centenary* ...	56 6 0		
				31	Other Conference Reports	39 8 0		
				11	Other Publications	22 19 4		
							152	4 10
					Royalties received on *Atlas of the British Flora*		692	2 6
£2,042		£2,495 6 0		£2,042			£2,495	6 0

BALANCE SHEET as at 31st December 1962

1961				1961				
	General Fund :				Investments :			
	Balance 1st January 1962...£1,736 19 9				4½% Defence Bonds	£500 0 0		
	Donation from Life Member ... 25 0 0				5% Defence Bonds	4,000 0 0		
		1,761 19 9		£2,500			£4,500	0 0
	Less : Excess of expenditure over income for year ... 327 10 2				Cash at Bank :			
					Deposit Account	£500 0 0		
					Current Account	63 19 0		
				2,358			563	19 0
£1,737		£1,434 9 7						
1,651	Publications Fund	2,477 15 6						
40	Benevolent Fund	39 11 0						
1,328	Creditors for Printing and General Expenses	975 0 0						
102	Subscriptions received in Advance	137 2 11						
£4,858		£5,063 19 0		£4,858			£5,063	19 0

J. C. GARDINER,
Hon. Treasurer

Audited and found correct.
February 28th, 1963.

PRICE WATERHOUSE & CO.,
Hon. Auditors.

DISTRIBUTION MAPS SCHEME

NINTH ANNUAL REPORT TO 31st DECEMBER 1962

For us, the outstanding event of 1962 was naturally the publication of the *Atlas of the British Flora*. An account of the meeting and the dinner which followed it to mark the event has been published elsewhere, but I would like to take this opportunity of thanking, in particular, Mr. M. Oliver and Mr. J. Redgrave of Jarrolds, who printed the work, and Mr. L. Murby, Mr. W. McLeod and Sir Gavin de Beer, of Nelsons, the publishers, for their wonderful help in ensuring that six bound copies were delivered on 26th April, just two days before the day appointed for the celebrations.

On the day itself, and earlier in Cambridge, members recorded their reflections for the B.B.C. and these were skilfully woven by Mr. J. E. Lousley into a half-hour programme in which Dr. S. M. Walters and I took part, which was broadcast on Sunday, 20th May. No-one who listened could have failed to appreciate how much all those who took part had enjoyed making their contribution to the Maps Scheme.

Sales of the Atlas exceeded expectations. Many members and contributors took advantage of the offer of one copy at a reduced price, and by September, the publishers were asking for a second impression to be prepared, as it then seemed likely that the first impression of 3,000 copies would soon be sold out.

Immediately work on the Atlas ceased, work on the supplement started. Early in the spring, a paper giving hints on the determination of the critical species, subspecies, varieties and hybrids in which we are interested was prepared and issued to about 500 of the most active workers for the scheme. In association with this, a course was held at Preston Montford Field Centre at which, using the paper as a basis, a dozen members studied specimens within the groups which they were able to collect in the area. We were greatly helped by having the expert knowledge of the Warden, Mr. C. A. Sinker, and that of Mr. E. M. Rutter always available. At other field meetings too, invaluable records were made, notably at Sligo, Lanark, Cirencester and Buckingham.

By the end of the year, provisional maps had already been prepared of species of *Sorbus*, *Rhinanthus*, *Polypodium*, *Nasturtium* and *Aphanes*, and a start had been made on *Hieracium*, *Alchemilla* and *Euphrasia*.

During the year, the methods we have been using have aroused considerable interest abroad, and I have lectured about the scheme in Germany and the United States. We have also answered enquiries from Sweden and Canada. Nearer home, the increasing interest in distribution studies shown by naturalists from other disciplines in this country, suggested the possible value of holding a conference on the subject. This

was approved and took place in Cambridge on 10th November. Members of about 20 National Societies took part as well as representatives of the Forestry Commission, the Ministry of Agriculture, and the Nature Conservancy. The Director-General of the Conservancy, Mr. E. M. Nicholson, was in the Chair. As a result of the conference, a small committee was set up to prepare a technical report for the Nature Conservancy on the methods and organisation which would be required to meet the needs of all the societies which had been represented.

It was a sad day when Mrs. Fincham announced her resignation, though we are now happy to congratulate her on the birth of a fine daughter. She was with us from the punching of the first card until the appearance of the first copy of the Atlas, and we shall always remember her loyalty and devotion to the scheme. We were glad to welcome, in her place, Mrs. B. Pascoe, who has rapidly accustomed herself to the intricacies of the punched-card machinery. We were sorry, too, to lose the services of Miss A. Hughes after she had helped us very happily for over a year. Miss M. Frodsham took her place until the end of the year when she was forced to resign from ill-health. On the last day of the year, the secretarial work was taken over by Miss M. Brown.

F. H. PERRING, Director.

DISTRIBUTION ATLAS ACCOUNT

for the year ended 31st December 1962

1961			1961		
	To Balance from 1961:			By Furniture and Office Equipment	
	Current Account £109 0 2			,, Mechanisation Equipment:	
	Deposit Account 500 0 0			Rental Charges and Maintenance £532 1 0	
£789		£609 0 2		,, Stationery ... 10 14 7	
3,196	,, Grant from Nature Conservancy	3,685 0 0	600		£542 15 7
50	,, Grant from B.S.B.I. ...	50 0 0	62	,, Postages and Telephones	81 13 4
42	,, Interest Received	30 4 4	90	,, Printing and Stationery	138 19 9
54	,, Sales of Record Cards, Maps etc.	34 15 11	2,658	,, Salaries, Wages and Clerical Assistance	2,844 1 2
			45	,, Travelling Expenses ...	133 6 6
			16	,, Insurance	15 10 9
			4	,, Repairs	9 4 3
			5	,, Other Expenses	37 3 6
			609	,, Balance to 1963 (being total funds in hand):	
				Current A/c. 356 5 7	
				Deposit A/c. 250 0 0	
					606 5 7
£4,131		£4,409 0 5	£4,131		£4,409 0 5

J. C. GARDINER,
Hon. Treasurer.

Audited and found correct.
February 28th, 1963.

PRICE WATERHOUSE & CO.,
Hon. Auditors.

COMMITTEE FOR THE STUDY OF THE SCOTTISH FLORA

Eighth Annual Report to December 31, 1962

The Committee has met three times (at Perth in March and September and at Glasgow in November) and has held an Exhibition meeting in conjunction with the Andersonian Naturalists of Glasgow (on Saturday, November 12) at the Botany Department, University of Glasgow, by kind permission of Dr. G. Bond. Seven field meetings were arranged: Lanark, May 12th and 13th, led by Mr. R. Mackechnie and Mr. Scott (8); Kintyre May 18-21st, led by Mr. A. A. Slack (15); Moffat hills, June 2nd ,led by Mr. A. McG. Stirling (14); Lanark, June 24th, led by Mr. Mackechnie and Mr. Scott (11); Easter Ross, June 30th to July 7th, led by Miss U. K. Duncan (10); East Sutherland, July 7th-14th, led by Mr. Anthony (14); and a Cryptogamic foray at Aberdeen, August 24th to 27th, led by Mr. D. M. Henderson (9). In addition Mrs. Elder led a Junior meeting at Garth Field Studies Centre, August 18th to 25th (14). The figures in brackets refer to the number of members and friends present at each meeting. Reports of the field meetings will appear in a future part of the *Proceedings of the B.S.B.I.*

The Exhibition meeting in Glasgow was attended by about 75 people. Dr. Mary S. Percival of the University College of South Wales and Monmouthshire gave a lecture entitled "Bees, Birds, Bats and Flowers". The following exhibits were shown. The Genus *Juncus* (Miss U. K. Duncan); Plants from summer outing (Mrs Cross); Flowers of some Lanarkshire valleys (Mr. E. Todd); Plants from Malham district and from Garth and Glen Shee (Dr. D. G. Scott); Yeast in bread-making (Miss A. McCallum); Root nodules in non-leguminous plants (Dr. Bond); Mountain plants common at or near sea-level in North Sutherland (Mr. J. Anthony); Children's flower collections (Mrs. Wilson); *Seligeria* (A. C. Crundwell); Plants of E. Ross and E. Sutherland and New County and other records (A. A. Slack and A. McG. Stirling); *Oxytropis* spp. in Scotland (A. A. Slack); *Seligeria oelandica*, new to the British Isles and *Cryptothallus mirabilis* from Loch Tulla pinewood (A. C. Crundwell); Recent Scottish records, and recent records of *Hieracium* in the West of Scotland (C. W. Muirhead).

During the evening, following a buffet supper, colour slides of some of the 1962 meetings were shown.

During the year Dr. D. H. N. Spence resigned from the Committee and in his place Dr. P. Harper was nominated by the Botanical Society of Edinburgh. Dr. Pritchard retired owing to the fact that he was no longer on the Council of the B.S.B.I. and the latter nominated Dr. Denis Ratcliffe and Mrs. A. H. Sommerville. Dr. Pritchard was co-opted to the Committee as Meetings Secretary. Mr. Ribbons resigned from the post of Secretary and Dr. Denis Ratcliffe agreed to succeed him. Mr. Mackechnie and Mrs. Elder were re-elected and re-appointed Chairman and Field Secretary respectively. Mr. Grant Roger was thanked for his service to the Committee on which he had represented the B.S.B.I. for seven years.

During the year the Chairman collected information which led to the organisation and announcement of a field meeting in Norway in 1963. The decision to hold the Autumn Exhibition meeting in conjunction with either the Andersonian Naturalists Society of Glasgow or the Botanical Society of Edinburgh, proved to be a wise one and the meeting in Glasgow in November was very successful. The Committee reviewed its activities in the past and concluded that it was continuing to fulfil the aims outlined in its constitution. This was confirmed by both parent bodies.

The B.S.B.I. agreed that any member of the C.S.S.F. could attend Council Meetings and that the Regional Representative could send a substitute if necessary. This was welcomed as a means by which efficient contact of the C.S.S.F. with one of its parent bodies could be assured.

Six field meetings were arranged for 1963 and the Autumn Exhibition meeting is to be held in conjunction with the Botanical Society of Edinburgh.

The accounts showed a deficit of £12 9s. 8d. for the year 1962, and this amount has been refunded by the two Societies.

It is a pleasure to thank the officers of both parent Societies and all those who have generously helped with the activities of the Committee.—D. Ratcliffe.

ANNUAL GENERAL MEETING, 20th April 1963.

The Annual General Meeting of members of the Society was held in the University Science Laboratories, South Road, Durham, on Saturday, 20th April 1963, at 12.15 p.m.

The President (Mr. J. E. Lousley) was in the Chair, and 45 members were present. There were apologies for absence from the Treasurer (Mr. J. C. Gardiner), Field Secretary (Mr. P. C. Hall), and Junior Activities Secretary (Mr. P. F. Hunt).

The Minutes of the last Annual General Meeting, as printed in *Proceedings*, Vol. 4, Part 4, pages 487-488, were adopted.

REPORT OF THE COUNCIL. The Report of the Council for the year 1962 had been printed and circulated to all members. The President, in reply to a question from Mrs. Duncan, said that the Society was now registered under the Charities Act 1960, and that the covenanting of subscriptions would now be considered again. The adoption of the Report and Accounts was carried unanimously.

ELECTION OF OFFICERS. The Council had nominated Mr. J. E. Lousley as President (for re-election), Dr. C. E. Hubbard as Vice-President, Dr. J. G. Dony as General Secretary, Mr. J. C. Gardiner as Treasurer, Mr. D. H. Kent and Dr. M. C. F. Proctor as Editors, Dr. H. J. M. Bowen as Meetings Secretary, Mr. P. C. Hall as Field Secretary, and Mr. P. F. Hunt as Junior Activities Secretary, and they were elected unanimously, and on the proposition of Mr. A. W. Westrup thanked for their past services.

ELECTION OF MEMBERS OF COUNCIL. Dr. D. P. Young, Dr. F. H. Perring, Mr. C. C. Townsend and Dr. F. Rose retire in accordance with the old Rules, and in accordance with the Rules adopted in 1960, three members were to be elected. Five members had been nominated and as a result of a ballot Mr. J. Ounsted, Mr. A. C. Jermy, and Mr. E. B. Bangerter were elected, their seniority having been decided, in the order shown, by lots drawn by the Chairman.

ELECTION OF HONARARY MEMBERS. The Council had nominated Mr. G. O. Allen and Mrs. B. Welch. The President said that for many years Mr. Allen had kept alive in Britain the study of Charophyta and Mrs. Welch had given valuable service to the Society including work as Assistant Secretary for a number of years. Mr. Allen and Mrs. Welch were both elected unanimously as Honorary Members.

ELECTION OF AUDITORS. The Council recommended the election of Messrs. Price Waterhouse and Co. who had expressed their willingness to act for a further year on an honorary basis.

OTHER BUSINESS. Dr. Margaret Bradshaw suggested that the Council might consider amendment of the arrangements for election of members to serve on the Council. The President assured her that this suggestion would be brought to its notice. The President declared the meeting closed at 12.45 p.m.

J. G. D.

NORTHERN REGIONAL MEETING, 1963

A meeting of members, normally resident in the North Region, was held in the University Science Laboratories, South Road, Durham, on Saturday, 20th April 1963, at 12.45 p.m., and eleven members were present.

Professor D. H. Valentine was elected to the Chair and Dr. Margaret E. Bradshaw, having been the only member nominated to represent the members of the Region on the Council, was unanimously elected to do so.

On the proposition of Professor Valentine the meeting resolved to urge the Council of the Society to:—

1. Reconsider the representations of the Regions on the Council, especially the need for there to be more Regions as in northern England.

2. To allow the elected representative to have a deputy.

3. To consider the allowance of some travelling expenses to representatives attending meetings.

There being no further business the meeting was declared closed at 1 p.m.

J. G. D.

ASSISTANT SECRETARY'S REPORT FOR 1962

During 1962, 146 new members joined the Society, this being 55 more than in 1961, and 53 more than in 1960. Of the new members 105 were Ordinary members, 10 Subscriber members, 28 Junior members and 3 Family members.

Losses were 45, this being 10 less than in 1961, and 20 less than in 1960. Of these 22 members resigned, 19 ceased to be members under the operation of Rule 29, and we deeply regret having to record the deaths of the following 4 members:—F. M. Day, Dr. G. W. T. H. Fleming, W. H. Somers and I. A. Williams.

New Ordinary members are:—T. G. Aliband, L. R. Allsop, A. D. Barber, C. Kempster-Barnes, W. F. Bennett, Sir Paul Benthall, Dr. C. P. Blacker, R. M. Blackmore, J. P. Blond, D. W. Bloodworth, L. A. Boorman, P. J. Bourne, Mrs. F. Balfour-Browne, P. D. Hutley-Bull, Miss A. Burns, Miss G. Burton, K. A. Butler, R. F. C. Cartwright, D. R. Causton, R. G. Chawner, E. Chicken, I. D. Clear, R. J. Cleevely, A. N. Codling, M. G. Daker, G. J. Davidge, Miss V. F. P. Day, K. Devlin, Miss R. Dixon, J. W. Donovan, C. J. Dowdall, Miss H. M. Downton, D. Eastham, Dr. J. Ebinger, P. J. Ellison, G. F. Elstub, J. R. Faulkner, H. B. Figg, Miss P. Firrell, D. J. Glanville, Mrs. T. E. Gorman, T. J. W. Gray, Miss M. A. Grierson, R. C. Hardwick, Rev. B. G. Harris, J. J. Hayward, J. R. Hickson, I. S. Hodson, Miss M. E. Hooton, Miss J. M. Hussey, Dr. G. A. D. Jackson, Miss N. H. Johnson, Mrs. M. A. Johnstone, I. L. Jones, A. E. Keeler, H. S. King, C. R. Lancaster, Miss V. van der Lande, Prof. G. H. M. Lawrence (rejoined), Mrs. M. L. Long, B. E. Lucas, Miss K. E. Ludbrook, R. E. Lycette, Miss D. Lynes, Dr. J. Maclagan, Mrs. B. M. Marcan, D. J. Martin, Miss L. Martin, Prof. E. Mayer, R. J. Mitchell, J. A. Moore, Mrs. S. J. Nash, A. Newton, Mrs. A. M. Newton, P. Newton, P. F. Parker, P. L. Pearson, Dr. L. E. Perrins, Rev. H. G. Proctor, Dr. P. H. Raven, Miss H. Rendall, F. I. Sant, G. E. Saunders, Dr. G. D. Scott, Dr. J. Scott, C. D. Sculthorpe, Prof. A. J. Sharp, Miss R. Sharpe, H. H. Shephard, H. A. Shrimpton, P. Smith, Dr. S. G. Soal, B. M. Stephens, Mrs. H. M. Talbot, M. A. Thompson, Miss C. M. Thomson, R. Tinklin, E. C. D. Todd, D. A. Wells, T. C. E. Wells, Dr. R. G. West, J. L. White, P. W. Wilberforce, D. B. Woods and Dr. O. Woropay.

New Junior members are:—C. J. Adams, S. R. Band, A. R. A. Bowman, Miss M. Burnett, G. C. S. Clarke, Miss N. J. Crozier-Cole, P. F. Cooper, M. N. Dadd, J. Dransfield, Miss V. J. Evans, G. Farrell, H. F. Flint, R. A. Frost, A. J. Harrington, Miss I. Haydock, T. Inskipp, Miss B. A. Lewis, I. Marks, B. D. Morley, A. T. Nurden, J. Roston, N. C. Russell, F. M. Slater, T. R. Tarn, H. Thomas, M. J. Wall, Miss P. Weedon and Miss R. White.

New Subscriber members are:—Bibliotheek van de Vrije Universiteit, Amsterdam; Bexley Reference Library; Huddersfield Naturalist, Photographic and Antiquarian Society; Philippa Fawcett College, London; Reading University Library; Middle Thames Natural History Society, Slough; Southampton Natural History Society; Torquay Natural History Society; Smithsonian Institution, Washington (rejoined) and Winchester College Natural History Society.

New Family members are:—Mrs. I. M. Dowdall, Miss M. May and Mrs. E. M. Shephard.

January 1963. D. H. KENT.

BOOK REVIEWS

Welsh Ferns. By H. A. Hyde and A. E. Wade. Fourth edition. Pp. ix + 122, 70 figures and 12 plates. Cardiff: National Museum of Wales, 1962. Price 15/-.

During the last decade there has been a great revival in the study of the cyto-taxonomy and distribution of British ferns and much useful work has been carried out, particularly in the genera *Dryopteris* and *Polypodium.*

The latest edition of *Welsh Ferns* incorporates the results of some of this work, and as in previous editions covers not only the Pteropsida of the Principality but also most of the species found elsewhere in the British Isles, including the Channel Islands. The descriptions of the various species have also been completely rewritten by the authors. Excluded from the book are the recently described *Dryopteris assimilis* Walker, from Ben Lawers, the established aliens *Onoclea sensibilis* L., *Matteucia struthiopteris* (L.) Tod. and *Cyrtomium falcatum* (L.f.) C. Presl, and the dubious British species of *Botrychium.*

Useful features of the work, which is now rearranged in the sequence of Dandy's *List of British Vascular Plants* (1958), are the concise but careful descriptions of the fern hybrids reported from various parts of the British Isles, and the inclusion of the chromosome numbers of the different species.

The nomenclature, based on Dandy's "List", is up-to-date and accurate, though "*Dryopteris villarsii*" should be spelled *D. villarii,* and the correct name for *D. spinulosa* (Muell.) Ktze. is *D. carthusiana* (Villar) H. P. Fuchs. *Thelypteris dryopteris* and *T. robertiana* are placed under the genus *Gymnocarpium* Newm. as in the earlier editions of the book, this, however, is largely a matter of personal choice.

An examination of the distribution given for the species found in Wales reveals a number of interesting new vice-county records, unfortunately the recent discoveries of *Hymenophyllum tunbrigense* in Pembroke and Montgomery were probably made too late for inclusion in the work. Recently published data on the *Polypodium vulgare* complex shows also that *P. vulgare* sensu stricto is known from Pembroke and Denbigh, *P. australe* from Montgomery, and *P. interjectum* from Radnor, Montgomery and Anglesey. The reported occurrence of *Adiantum capillus-veneris* as a naturalised species on old walls raises the question as to whether these plants may not have originated from spores from some cultivated foreign species of Maidenhair Fern, e.g. *A. cuneatum* L.

The figures and plates are of a very high quality, and it is pleasing to see drawings of *Polypodium vulgare* and *P. australe,* and an excellent photograph of *P. interjectum.*

A bibliography and a useful index and glossary complete a book which will prove indispensable to those interested in the ferns of our islands.—D. H. Kent.

A Bibliographical Index of the British Flora. By N. Douglas Simpson. Pp. xix + 429. Privately printed. Bournemouth. 1960. Price: £3 15/-.

In the 17th century, John Ray and his 'curious' friends began to collect, study and record the plants to be found in the British Isles. Since that time, professional and amateur botanists have contributed towards a vast literature describing the changing flora of these islands. N. Douglas Simpson, who perhaps has the most extensive library relating to the British flora, was encouraged by his many botanical friends to undertake the task of indexing this wealth of information, a labour which, even with the assistance of his friends, took him twenty years to complete. The aim of *A Bibliographical Index of the British Flora* was to include all information relating to the history, geographical range and of the systematic studies of taxa which occur, or have occurred, in Great Britain, with the exception of the lower cryptogams. Part I (pp. 1-70) includes plant catalogues, Floras, herbals, periodicals, plant lore, economic plants and general references to families, genera and species. Part II (pp. 71-429) covers local distribution and plant records arranged chronologically under county and vice-county. This arrangement was adopted to obviate the need of an index. It has nevertheless often necessitated the inclusion of the same entry under several headings, and those wishing to obtain all references to a particular genus or species need to scan most of the pages of this part. To further reduce the cost of printing, Mr. Simpson found it necessary to minimise the amount of bibliographic detail given. This has several grave disadvantages. By omitting the extent of the pagination it is impossible to evaluate a particular reference. Although this is perhaps not a serious defect for the student of a particular area who wishes to read all the literature, it is, on the other hand, most frustrating for those who want to pick out the more comprehensive articles. The abbreviation used for periodicals, for example, Leicestershire "L.P.S. Rept. Trans.", are not explained in either the list of works abstracted or the list of abbreviations, another economy. This bibliography also is not suitable for quick checking of references and making full citations. An alphabetical and numbered sequence of the full bibliographical references, supplemented by a subject index giving the numbers only, arranged chronologically and with the more important items picked out in bold type, would have been a more generally satisfactory arrangement. Mr. Simpson must nevertheless be sincerely thanked for having undertaken this exhaustive compilation. It is, and may well remain, the standard reference work to British botany and to the British flora. That it should have been necessary for him to bear the cost of printing, reflects the lack of appreciation, in this country at least, of the real value of publications of this kind. Perhaps with the more recent governmental exhortations to make our information services more efficient, there will be, in the future, adequate financial support for time-saving devices of every kind. Both Government Departments and Academic Institutions have an important role in this respect. Such excellent bibliographies as *Guide to the Floras of the World* published by the U.S. Department of Agriculture, and the *Bradley Bibliography* and *Bibliography of Eastern Asiatic Botany*, published by Harvard University, indicate the value our American colleagues attach to this kind of 'aide memoire'.—P. I. Edwards.

OBITUARIES

Francis Morland Day, M.A. (1890-1962).—Francis Day, who died on 16th September 1962, had been a member of the Society for forty years and will be remembered by us chiefly for his intimate knowledge of the botany of the Malvern Hills.

He was born at Burton-on-Trent and educated at Repton and Caius College, Cambridge, which he entered with an Exhibition. After taking a degree in classics he spent a short time in commerce with a firm in Penang but returned to England for health reasons to become a schoolmaster. Within a short time he joined a colleague, who had become headmaster of the Downs School at Colwall, near Malvern, and remained there as a master for the rest of his working life.

In 1925 he joined the Worcestershire Naturalists Club, becoming an active member and President for the year 1958-59. His presidential address on "Recording" was published in the *Transactions* of the Club, Vol. **11**, 131 (1959). Further contributions from his pen in the *Transactions* include "*Violets*", **9**, 132 (1935); "Notes on some Violets of the Malvern district", **9**, 229 (1938); "Plant records from Worcestershire", **10**, 193 (1950) and **11**, 150 (1959); "R. F. Towndrow's Herbarium", **11**, 146 (1959); "Plant Records from the Towndrow Herbarium", **11**, 147 (1959). In the last few years of his life Day did valuable work in reconditioning and overhauling the Towndrow Herbarium at Malvern Free Library.

He contributed a number of plant records to our periodicals but only one paper, "Plants of the Silurian Limestone of the western Malvern Hills", *Watsonia*, **2**, 289 (1953).

Day was a kindly man and a good companion in the field. He was an observant field botanist and kept a card index of notes and records not only of the plants of the Malvern Hills he loved so much, but of those seen on his excursions elsewhere.—J. G. Dony.

William Bertram Turrill, O.B.E., D.Sc., F.R.S., F.L.S., V.M.H. (1890-1961).—By the death of W. B. Turrill on 15th December 1961, British botany lost one of those most devoted to the study of the members of our flora as living entities.

Born in Oxfordshire at Woodstock on 14th June 1890, he became a pupil at Oxford High School and at the age of nineteen was appointed as a Technical Assistant in the Herbarium at the Royal Botanic Gardens, Kew. Turrill has paid tribute to the debt he owed to his mother in awakening in him the love of plants, and the transfer to London in 1909 enabled him to attend the evening degree courses in Botany at Chelsea Polytechnic, where he received both help and encouragement from Mr. Lacey, himself keenly interested in the British flora.

Towards the close of 1916 Turrill was detailed to the British Salonika Forces and spent the larger part of the following year in Greek Macedonia. This initiated his interest in the Balkan Peninsula and the problems of geographical distribution there presented. He subsequently paid three

visits to this area with his wife, Florence H. Homan, to whose help and encouragement he has acknowleged his indebtedness. The sequel to these studies was the book on *The Plant Life of the Balkan Peninsula* which was accepted as a thesis for the London Doctorate of Science and published by the Oxford University Press in 1929.

Though he retained a continuing interest in the wider problems of geographical distribution, it was the living plant and the issues which it presented that particularly stimulated his curiosity. In his semi-popular book on *British Plant Life* (1948) the emphasis on the value of field observations that are accurately made and recorded is an underlying theme.

The association with E. M. Marsden-Jones, a very competent plant breeder, who had cultural facilities at Potterne, served to strengthen and provide an outlet for Turrill's predelictions when they undertook the transplant experiments initiated by the British Ecological Society. These involved the culture of uniform genetic material of several species on five different types of soil and exhibited diversities in plasticity, in persistence and mortality and in their phenology. This led to a fertile collaboration in the genetical study of the British species of *Centaurea* and also of *Silene vulgaris* and *S. maritima.* The results were published by the Ray Society under the titles *British Knapweeds* (1954) and *Bladder Campions* (1957). Both report a mass of breeding records and observational detail. The former publication is of special interest to British botanists. By carefully designed genetical experiments with the Knapweeds, collectively known as *Centaurea nigra*, Turrill and Marsden-Jones were able to establish that there are two species in England, viz. *C. nigra* sensu stricto and *C. nemoralis*, both alike characterised by having a well developed pappus, whilst they established that the types with fruits having no pappus are in fact the outcome of hybridisation with *Centaurea jacea.* Perhaps the most far-reaching aspect of these studies was the demonstration that *C. jacea*, which is but a casual in Britain, leaves behind, in its hybrid descendants, the evidence of its former presence long after *C. jacea* has itself disappeared from an area, thus furnishing evidence of the possible importance that may attach to the temporary presence of the many species that become introduced into Britain, if they find here some established congener with which to interbreed even though they may flower but once. The alien colour variant of *Anthyllis vulneraria* which Turrill called "Amaranth Purple" and which had produced a hybrid swarm in Cornwall furnished another example of similar alien influence. From the intensive studies of the Bladder Campions it was concluded that *Silene maritima* probably survived the Ice Age and that *S. vulgaris* was a post-glacial immigrant, but an important feature that emerged from these genetical experiments was that although no difficulty was experienced in distinguishing, by an aggregate of characters, to which taxon any one plant belonged, individually any one of these normally distinctive features might be found exceptionally in the taxon usually distinguished by their absence.

Turrill's studies of the sex inheritance in *Ranunculus acris* enabled him to suggest a probable genetic constitution consistent with the frequent occurrence of individuals with female flowers, the rare occurrence of

individuals with small neuter flowers and the extremely uncommon occurrence of male plants. Turrill also studied the British Dandelions from which he concluded that all our "species" of *Taraxacum* were apomictic and those investigated were triploids, the most variable populations being associated with artificial habitats. These few examples must suffice to indicate the debt which British Botany owes to his studies.

Turrill was appointed Keeper of the Herbarium at Kew in 1946, a position which he filled till his retirement in 1957. He was a capable administrator and a loyal colleague with a quiet sense of humour which helped him to surmount the irritations that are the inevitable accompaniment of office.

His services to botanical science were recognised by his election to the Royal Society in 1958 and the award of the Linnean Gold Medal in the same year. He edited the *Botanical Magazine* for the Royal Horticultural Society till his death and was awarded the Victoria Medal of Honour by the Council of that Society.—E. J. Salisbury.

PERSONALIA AND NOTICES TO MEMBERS

VICIA

The State Nikitskiy Botanical Garden, Yalta, Krym Province, Ukranian SSR, are anxious to obtain seed samples of British *Vicia* species, with notes on habitats and localities. Material is particularly requested from East Anglia, the Midlands, northern England and Scotland.

VICIA SATIVA L. agg.

Mr. C. A. Stace, Dept. of Botany, The University, Manchester, 13, is working on *Vicia sativa* and *V. angustifolia* and would be grateful for seed, preferably with data as to habitat and locality, from anywhere in Europe. If the plants had any interesting characteristics it would be very useful to know this, and a pressed specimen (at the least a single node with leaf and flowers or fruits) would be additionally helpful.

LATHYRUS

Dr. Karin Olsson, Institute of Systematic Botany of the University of Lund, Botanical Garden and Botanical Museum, Lund, Sweden, is working on the taxonomy and cytology of *Lathyrus palustris, L. pratensis* and *L. sylvestris* and would be grateful for living plants, seed and herbarium material.

EPILOBIUM NERTERIOIDES Cunn.

Miss M. B. Gerrans, Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, is studying the distribution of *Epilobium nerterioides* in the British Isles and would be grateful for records, herbarium specimens and fresh material.

POLYGONUM CONVOLVULUS AND P. DUMETORUM

Dr. J. Timson, Hatfield College of Technology, Hatfield, Herts., is studying *Polygonum convolvulus* and *P. dumetorum* and would be grateful for fresh specimens and herbarium material, also ripe fruits of either species.

ANAGALLIS ARVENSIS L. agg.

Arthur S. Weston, Dept. of Botany, University of California, Berkeley 4, California, U.S.A., is working on *Anagallis arvensis* and would be grateful for seed of the colour varieties of subsp. *arvensis*, and seed of subsp. *foemina*.

BUDDLEJA DAVIDII Franch.

D. H. Kent, 75 Adelaide Road, London, W.13, is studying the historical spread of *Buddleja davidii* in the British Isles, and would be grateful for

records, especially of the occurrence of the plant in wild habitats before 1939.

SIBTHORPIA EUROPAEA L.

Miss M. B. Gerrans, Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, is studying the distribution of *Sibthorpia europaea* in Britain and would be grateful for records, herbarium specimens and fresh material.

GALIUM PALUSTRE

A. N. Codling, Dept. of Botany, Royal Holloway College, Englefield Green, Surrey, is studying the geographical distribution of the cytological races of *Galium palustre* and would be grateful for herbarium specimens and fresh material, particularly with fruits.

KOELERIA

Dr. J. Ujhelyi, Département Botanique, Musée d'Histoire Naturelle, Budapest XIV, Vajdahunyadvár, Hungary, is engaged on a revision of *Koeleria*. He would be grateful for seeds or living plants (in polythene bags) of British species.

BAMBOO

D. McClintock, Bracken Hill, Platt, Sevenoaks, Kent, is interested in species of bamboo which have become naturalised or established in Britain. He would be grateful for specimens with details of habitats and localities.

REVISION OF THE FLORA OF BERKSHIRE

It is hoped to collect records for a new Flora of Berkshire during the ten years 1962-1972. The following suggestions are made in case you would like to help.

1. Records will be collected from each 5 km. × 5 km. Grid Square in the county. Lists from any square or squares will be welcomed, but if you wish to concentrate on any particular square it would be helpful to inform a representative of the local Natural History Society of your intention, in order to avoid overlapping.

The Representatives are:

All squares E. of 800: F. Ambrose, Glendora, Cookham Rise.
All squares E. of 550 and W. of 800: Miss K. I. Butler, 18 Morgan Road, Reading (Lists); Mrs. N. Simmonds, Reading Museum, Blagrave Street, Reading (Specimens).
All squares S. of 750 and W. of 550: Miss L. M. Watts, Crumplehorn Cottage, Inkpen Common.
All squares between 750 and 900, and W. of 550: Dr. H. J. M. Bowen, Pomander House, Harwell.
All squares N. of 900 and W. of 550: Mr. Perry, Botany School, South Parks Road, Oxford.

2. B.S.B.I. Maps Scheme cards should be used for collecting records wherever possible. They may be obtained from the representatives mentioned above. It would be useful to mark each name with an abundance symbol; i.e., *a* for abundant, *f* for frequent, *o* for occasional or *r* for rare. Individual cards may be used for rare species.

3. Doubtful records should on'y be sent in if accompanied by a specimen. It is suggested that records and dried specimens should be sent once a year to one of the representatives listed above. Non-critical plants will be named by them if identifiable, and critical plants will be sent on to the appropriate expert. Postage must be paid by the contributors.

Dated lists of old records would be welcomed by Dr. Bowen, as would locations of herbarium material. Records of rare species will be treated as confidential, and grid-references to them will not be published in the flora.

FLORA OF NORFOLK

Dr. C. P. Petch and E. L. Swann (282 Wootton Road, King's Lynn, Norfolk), are collecting data relating to the flora of Norfolk. The latter would be glad to receive any information on the subject, particularly with reference to collections (other than those in the National Herbaria) and personal records and notes.

B.S.B.I. DISTRIBUTION MAPS SCHEME

If any members have copies of "Hints on the Determination of some Critical Species, Microspecies, Subspecies, Varieties and Hybrids of the British Flora", compiled by F. H. Perring, to spare, would they be kind enough to send them to The Director, B.S.B.I. Distribution Maps Scheme, University Botanic Garden, 1 Brookside, Cambridge. Postage will be refunded.

The following items are available, post free, from The Director, B.S.B.I. Distribution Maps Scheme, University Botanic Garden, 1 Brookside, Cambridge

(1) 35 mm. film strips of 100 selected pairs of maps from the *Atlas of the British Flora*, price £2 per set.

(2) Regional Record Cards, price 15/- per hundred.

ATLAS OF THE BRITISH FLORA

Copies of corrections to the first issue of the *Atlas of the British Flora* are now available from the Director, B.S.B.I. Distribution Maps Scheme and will be sent on receipt of an application together with a stamped addressed envelope.

ARCHIVES OF THE SOCIETY

It has been decided by Council that the Society should collect together pamphlets, articles, photographs and other materials relevant to its history and organization. Any member who possesses items which may be of interest in this connection is asked to contact D. E. Allen, Botanical Society of the British Isles, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

RECORDERS AND REFEREES—ADDENDUM

A. R. Smith, c/o The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, is willing to act as a referee for the remaining British species of *Euphorbia* (Dr. T. Pritchard remains in our list (p. 498) for *E. uralensis—E. cyparissias*) and for alien species.

H. S. Marshall, c/o The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, has agreed to act as referee for Herbals and early botanical literature.

The address of J. Anthony, Recorder for E. & W. Sutherland, was omitted from p. 495 in error. It is 120 Trinity Road, Edinburgh.

BACK NUMBERS OF "WATSONIA" AND "PROCEEDINGS"

Part of the Society's revenue is obtained from the sale of sets of *Watsonia* and *Proceedings* to booksellers and libraries.

Unfortunately, certain parts of both periodicals are now in short supply and it will soon become difficult to prepare complete "runs". The numbers concerned are *Watsonia*, Vol. 2, Parts 5 and 6, and Vol. 3, Part 5, and *Proceedings*, Vol. 2, Part 4. Members who have any of these parts that they no longer require are invited to assist the Society by sending them to Mr. E. B. Bangerter, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

B.S.B.I. BOOK SERVICE

Many county Floras and other botanical books are out of print and difficult to obtain and the officers of the Society receive many enquiries from members as to where they may be obtained.

A card index of members' desiderata has now been prepared with the object of assisting them to obtain books they need to carry out their studies.

The index has been prepared by the Hon. Assistant Secretary, Mr. D. H. Kent, 75 Adelaide Road, London, W.13, and members desiring to make use of this facility are invited to write to him giving details of the books which they are anxious to acquire. A stamped addressed post-card, for reply, should be sent for each book required. It must be pointed out that some botanical works are very scarce indeed and it may be some time before they can be tracked down; every effort will, however, be made to trace copies of books required.

Members who have botanical books for disposal are also invited to write to Mr. Kent giving details of the volumes concerned and their prices.

THREATS TO BRITISH FLORA

Members are urged to report to R. M. Harley, Dept. of Botany, The University, Bristol, 8, 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 SPRAY DAMAGE

Any damage due to the spraying of roadside verges with toxic chemicals should be reported immediately to the Secretary of the B.S.B.I. Conservation Committee (R. M. Harley, Dept. of Botany, The University, Bristol, 8), who will send a form listing the detailed information required by the Nature Conservancy. These forms have been prepared after discussions between the B.S.B.I. and the Conservancy, and when completed will be forwarded to the Conservancy who are carrying out active work on this subject.

TRANSPLANT AND INTRODUCTION EXPERIMENTS

The Secretary of the Conservation Committee (Dr. D. H. Dalby, 108 Gordon Road, Camberley, Surrey) would like to hear from anyone who is carrying out any experiments involving the transplanting of species from one locality to another, or who is engaged in the introduction of species by seed or any other means. It is becoming very necessary to keep a central record of experiments of this nature, and it is hoped that this request will meet with active support. The Secretary will gladly send a short list of the information required in the recording of such experiments.

ADVERTISEMENTS

A limited number of relevant advertisements will be accepted for the Society's publications as space permits. Enquiries should be addressed to D. H. Kent, 75 Adelaide Road, London, W.13.

Continued from inside front cover.

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†Appointed by the Botanical Society of the British Isles.

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PROCEEDINGS

OF THE

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Editor: D. H. KENT

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THE BERKSHIRE RECORDS OF JOB LOUSLEY (1790-1855)

By J. Edward Lousley

Detailed accounts of the flora of small areas over a century old provide an important source of information for the study of changes but such accounts are unfortunately rare. My great-great-grandfather, Job Lousley, left unusually detailed records of the flora round Blewbury and Hampstead Norris. He included for most species, frequency, precise localities, distribution and sometimes habitat requirements, assessment of status, and other observations, and this at a time when few local botanists took an interest in such matters. Less than a third of his records have been published, and a lot of valuable information remains in manuscript.

Job Lousley, the eldest son of Joseph Lousley, was born at Moreton House, near Didcot, in 1790. His early life was spent at Blewbury, and his stay at boarding school was cut short so that he could manage one of his father's farms at West Hagbourne. Joseph died in 1825 and left him, together with other property, the freehold of an estate at Hampstead Norris. When the lease expired at Michaelmas 1827, he married, and moved into the Manor House, living there until his death in 1855.

Job's botanical experience thus fell into two distinct phases. The first, up to 1827, as a young man with no help except from books, exploring the Vale of Berkshire round Blewbury, Upton Hagbourne and Aston; the second, after 1827, gaining an intimate knowledge of his own estate round Hampstead Norris and Hermitage in the "Hill Country". He continued to make visits to the Vale where he had property and friends, but essentially his knowledge of this area was botanically immature, while his records of the hill country were all made when he was older and closely associated with Dr. Joseph Bunny, surgeon and doctor of Newbury, W. Hewitt, a surgeon of East Ilsley, and W. Hewitt, junior, his son. These friends sometimes led him astray, but he was no longer working in complete isolation. Throughout his writings, Job preserved a sharp distinction between Hill and Vale, and contrasted differences in their floras.

My ancestor had other interests besides botany, and these are reflected in his records. He was an authority on agriculture and contributed monthly reports to *Bell's Weekly Messenger* and other London papers for over 30 years. Many of his keenest botanical observations were on weeds, grasses, trees and other plants of special interest to the farmer. He was a leading opponent of the repeal of the Corn Laws and his views attracted nation-wide publicity and respect. He was an avid book collector,

and amassed a library of at least 30,000 volumes of which an account is in the Press. He was also a keen antiquarian and wrote the accounts of four parishes for the *History of Newbury*. His visits to antiquities, and other antiquarians are reflected in his plant records.

His biggest contribution of printed botanical records appeared in the *History of Newbury,* published in 1839. This was an important collective work edited by E. W. Gray and mainly devoted, as the title suggests, to the history and antiquities of Newbury and the immediate neighbourhood. It was decided to include also an account of the flora, and a list of species was supplied by Mrs. Anna Russell. This lady was a competent botanist, but her contribution was drawn up after only "a very short acquaintance with the neighbourhood" on visits to a relation and, as she herself recognized, was very imperfect. The publishers, therefore, appealed to Job for help, and provided him with an interleaved copy of Hooker's *British Flora,* edition 2, 1831, which is still in the possession of the family. In this he entered his records, perhaps copied from an earlier notebook. Then a few entries for W. Coles, 1837, were added, and then further records by J. Bunny, W. Hewitt and W. Hewitt, junior.

Someone with literary skill, but little knowledge of botany, then edited these records—his pencil marks are still in the manuscript. Some 150 species not listed by Mrs. Russell were added to her account on Job's authority with localities extending far beyond the neighbourhood of Newbury. Since Mrs. Russell gave only the names (with few exceptions), and made no distinction between Hampshire and Berkshire plants, the resulting compilation is a curious hotch-pot including a number of dubious records. Druce, in his *Flora of Berkshire,* 1897, republished almost all the records given in this account, "Russell's Catalogue" as he called it, attributing ten first records for the county to Job Lousley. His transcription was accurate, and his comments appropriate in the light of the information available to him, but it seems that he did not have access to the manuscript which would have explained many of his problems.

"A Catalogue of Plants found in the Neighbourhood of Newbury", as the chapter in the *History* was entitled, was also issued as a separate publication. After the work had gone to Press, Job added numerous records to the interleaved book in 1839, 1840, and 1841 and corrected some of the earlier entries. He continued to make occasional additions, and further entries were made by his son Luke as late as 1883. The entries of the various contributors are clearly distinguished by handwriting, ink, initials and dates. Here I am concerned only with Job's own records which covered 459 species and gave about 1,200 localities. A few further records appeared in William Hewitt, Junior's *History . . . of the Hundred of Compton,* 1844, and these are all in the manuscript. There are a few others scattered through my ancestor's agricultural writings and letters to James Hardy.

From childhood I have known some of the rarer species growing in the places where Job found them, and two years ago I decided to make a systematic search to try to confirm as many of his localities as possible. I was soon impressed by the quite remarkable persistence of many species in exactly the same spots. This is, of course, well known for some of the rarer and more conspicuous species such as **Pulsatilla vulgaris, Fritillaria meleagris,* and *Colchicum autumnale, Ornithogalum pyrenaicum* and *Polygonatum multiflorum* which occur in great abundance in the same woods, but I soon found that it applied equally to commoner plants. During the past 125 years *Astragalus glycyphyllus* on Cholsey Hill must have come perilously near to extinction from road widening and road-making on many occasions. *Parietaria diffusa* must have been often threatened by maintenance work on the tower of East Hagbourne church, and one would hardly have expected *Euphorbia lathyrus* to have survived the weeding of Hampstead Norris gardens for so long. In some cases, such as *Vinca major,* I refound the plant before I realised it was one of Job's localities. In others, like *Papaver somniferum* at Ashridge, and *Populus canescens* at Blewbury in damp meadows, the old records add a new significance to modern occurrences and suggest that Druce's statements on status need reconsideration.

At first I hoped that an overall statistical comparison of the floristics would be possible, but marking up Maps Scheme cards for 1839 and 1963 revealed serious difficulties. Most of my ancestor's records were made on his own land which he walked over as a matter of routine at all seasons of the year. My own visits, though numerous, entailed six hours' travelling for each day's work, and the property is now in the hands of many owners. Hence my search could never be as thorough. An even greater difficulty is that taxonomic standards have changed so greatly in the last century. Hooker's *British Flora* lumped many well-marked species such as *Silene dioica* and *S. alba, Ononis repens* and *O. spinosa, Trifolium dubium* and *T. micranthum, Sonchus asper* and *S. oleraceus, Prunus cerasus* and *P. avium,* besides all the lumping in such genera as *Arctium, Betula, Crataegus, Platanthera, Melilotus, Polygala* and *Viola,* and the splits in other groups which we no longer recognize. Marking up the cards also made it clear that there were considerable gaps in Job's records, some of them in genera like *Carex* and *Juncus* which required critical knowledge, but others in common easily named plants like thistles which he did not take the trouble to record. Although my cards show more species they do not indicate a general increase in the flora since 1839; for a valid comparison it is necessary to consider individual species.

By far the greatest changes have taken place in the Vale, and

*Scientific names are given as in Dandy (1958), and the spelling of place names is in accordance with modern usage.

the least in the woodland of the Hill Country. The downs have suffered greatly in loss of natural vegetation but sufficient turf remains to support representatives of most chalk grassland species and the alterations in the weeds of arable there are in quantity rather than plants present. The area is exceptional in that it has suffered very little from industry and building and overspill from towns. The major factor has been changes in agricultural use.

Job lived at a time when the standards of agriculture were improving rapidly under the pressure of the Industrial Revolution. Enclosures led to the ploughing of "waste", that is to say rough grazing, while drainage and better cultivation resulted in the destruction of many interesting plants. More recently, the replacement of horses by machines, and hence larger fields, the immediate ploughing of stubble, and cleaner cultivation, have changed the face of the countryside. Higher standards of clean seed, and lately the use of toxic sprays in great quantity are other factors reflected in changes in the flora.

Drainage has destroyed most of the interest of the wet area north of Blewbury. In this, West Hagbourne Moor produced such plants as *Pinguicula vulgaris* and *Pedicularis palustris* in Job's time but it is now far too dry, and has been further drained and treated with toxic sprays recently. Similarly it is unlikely that *Parnassia palustris* can be refound in the meadows below Aston, and it is doubtful if *Fritillaria meleagris* persists in the district.

Another important change is the reduction of weeds of arable land. For example, my ancestor gave *Agrostemma githago* as "Common in cornfields at Hampstead Norris and at Blewbury, and nearly everywhere else. A pretty plant but a troublesome weed". This I have not seen recently in the area though I remember it at Streatley over forty years ago. *Centaurea cyanus* grew "On Long Meer Piece, Blewbury, and in cornfields near Eling, and at Hampstead Norris, in some places plentiful". *Bupleurum rotundifolium* he knew "on the ridge of hills above the Vale of Berks.—on Robin Hill and on Long Meer Piece, Blewbury—Rare, in many places". These I have not refound, but two aliens, *Veronica persica* and *Matricaria matricarioides,* which have come into the country since his time, are amongst the most frequent of the now scanty cornfield weeds.

Superficially, the woodland round Hampstead Norris has changed very little, and displays of spring flowers to-day are much as Job described them in a letter in March 1854. In Beech Wood, where there is a monument to his memory, I have found 29 out of the 42 species he recorded, and most of the remainder are plants like *Helleborus viridis* and orchids likely to be very local and difficult to find in a wood of 118 acres. In Down Wood, which is smaller, I found 12 out of the 13 species he recorded, and the missing one is *Polypodium vulgare.* In Park Coppice, 45 out of 61 is the score to date. But although so many plants may still be in the same woods, it is unlikely that they are in exactly the same spots. Management of woodlands means that species

have to move round to grow under the conditions they require, and it is the fact that these woods are so extensive that has made it possible for so many species to survive for so long.

Even in the Hampstead Norris woods there have been two major changes. Job's record of *Acer pseudoplatanus* reads "This tree is not very common. It grows in Lower Farm Close, Blewbury. It grows in my orchard, Hampstead Norris, and it grows in hedges in many places, but not anywhere very plentiful". The sycamore now occurs in the greatest abundance in his woods and is no doubt a great pest. Similarly, *Chamaenerion angustifolium* is now exceedingly common, and its flowers colour whole clearings after felling, but there is no record in Job's manuscript.

The acid heathy woodlands round Hermitage still produce most of his species. *Pinus sylvestris* which he says "grows by thousands from self-sown seeds in Eling Common and Courage Common and in many other places" still does so, but *Rhododendron ponticum* is a newcomer now established locally and spreading. *Juncus tenuis* on Eling Common is another increasing introduction unknown to him.

The Didcot to Newbury railway line was constructed partly on land acquired from Job's eldest son, but I am not aware of any localities for interesting native plants which it destroyed. However, it brought in several aliens such as *Senecio squalidus,* and natives like *Chaenorhinum minus.* Farther afield, *Ruscus aculeatus* is likely to have been a railway casualty. This he found on 17th December 1841 "by the side of the Turnpike Road going from Pangbourne to Reading just beyond the Roe Buck Inn on the bank". The Western Region main line was cut right through this locality. All the plants he knew from the old canal from Abingdon to Wantage are probably gone, and those from the Kennet and Avon Canal at Newbury were few. Road widening may account for the loss of an interesting assemblage of plants from sandy banks near Hermitage. Here *Jasione montana, Orobanche rapum-genistae* and *Turritis glabra* grew in Long Lane, which is now an important road.

Two native species I have failed to refind are *Sorbus torminalis* which my ancestor found in Beech Wood and Park Coppice and thought the fruits "curious", and *Genista tinctoria,* which he, Hewitt and Bunny found in a number of places. A puzzling, apparent reduction is *Echium vulgare,* which I have failed to find even on Bezel Way, Blewbury, where it was particularly common. On the other hand, *Geranium pratense* and *Onobrychis viciifolia* have clearly increased. The latter he found "By roadsides on the hills above Blewbury but not very plentiful—exceedingly plentiful as cultivated". It is still by lanesides above Blewbury, but also in very many other places to which no doubt it has found its way as a relic of cultivation. *Euphorbia uralensis, Crepis biennis* and *Vicia tenuifolia* are well established aliens on Blewburton Hill which were unknown to him like *Crepis vesicaria* which is now abundant in many places.

Job was keenly interested in conservation. He deplored the grubbing up of woods, the enclosure and cultivation of commons, and the ploughing up of downs. He was also concerned about threats to individual species very similar to those with which we are faced to-day. He wrote that publication of the account in the *History of Newbury* ". . . . soon caused a sort of rage for the study, and many young ladies and gentlemen, knowing from the list where many of the plants grew, took a great interest in Botany, and we now have many Botanists springing up around us, but I am sorry to say that some few of the rare plants are becoming nearly extinct owing to the constant visits and pilferings for specimens". Incidentally, he had no herbarium of his own, except one he bought, and I have been unable to trace any specimens collected by him.

In 1840 he complained that several species, including *Fritillaria meleagris* and *Daphne mezereum*, were "getting very scarce in consequence of being taken up for gardens". But his great enemies were the herb collectors, and here he was able to take effective action. There was a great demand from London quacks for the roots of *Daphne laureola* for the treatment of venereal diseases, and in several letters he described how he chased the men out of his woods when they sneaked in to collect the plant. Similarly *Atropa belladonna* was raided to such an extent that he said it could hardly be found except on premises where the herb collector dare not tresspass. *Marrubium vulgare* was amongst other species he says were heavily raided, and it may be that *Sambucus ebulus* "of great use for the dropsy" became extinct in both his stations because the demand exceeded the supply.

Nevertheless, a comparison of his records and notes with the present flora clearly indicates that the threats to individual species which concerned him have been shown by the passage of time to have been of far less importance than the destruction of habitats. *Pulsatilla vulgaris* still grows in some quantity in two of his localities in spite of repeated and increasing raiding for 125 years, while the Ilsley station was ploughed up long ago. *Fritillaria meleagris* was still abundant at Burghfield when I last looked, and at Blewbury, drainage and agricultural changes were the main threat. *Daphne laureola*, from its present size and plenty, evidently recovered completely in my ancestor's woods and others in the district, while *Atropa belladonna* is far from scarce.

My work on Job Lousley's records has not produced any surprising results but it has proved a useful exercise with three aspects of general interest. First, it has demonstrated the danger of taking records from second-hand sources and the importance of interpreting them by the floras used by the recorder. Second, it has provided factual evidence of changes in the flora of this part of Berkshire and the increase or decrease of individual species. Third, it indicates that threats to species often prove of less long-term importance than seems likely at the time, and may

divert effort from the essential work of conservation of habitats. There is still much to be learned from the examination of work of previous generations.

I am grateful to the officers of the Berwickshire Naturalists' Club for making available the volume of the Hardy MSS. containing letters from Job Lousley, and to Mrs. Arnott Betts for lending me the interleaved *Flora* with his records.

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SENECIO SQUALIDUS L. IN THE BRITISH ISLES— 4, SOUTHERN ENGLAND (1940→)

By Douglas H. Kent

The spread of the alien, *Senecio squalidus,* from Oxford along the railway systems of southern England up to the year 1939 has been previously outlined (Kent, 1960). The distribution in East Anglia up to 1956 has also been given (Kent, 1957).

At the outbreak of the Second World War the species was firmly established, often in large quantity, in the vicinity of railways, particularly in and near industrial areas.

The razed sites resulting from the bombing of many southern English towns, especially areas devastated by fire, provided ideal conditions for the germination of the air-borne fruits of *S. squalidus* and vast colonies soon appeared in the City and central London (cf. Fitter & Lousley, 1953), Bristol, Plymouth (Phillips, 1946), Canterbury (Kent, 1951) and elsewhere. The clearing of the sites and subsequent dumping of much of the debris into gravel pits in rural areas aided the dispersal of the species which soon began to spread to adjacent waste ground, roadsides, canal paths and walls.

In N. Essex, *S. squalidus* was apparently unrecorded until 1940 when specimens were collected at Wickham Bishops. During 1942 it was noted at Dunstable, Luton and other localities in Bedfordshire (Dony, 1946), and was gathered also at Cassington, Oxfordshire. In 1943 it was seen at Fyfield, N. Essex, and was reported to be spreading along the canal path at Rickmansworth, Herts., probably from adjacent gravel pits. During this year it was collected also from a roadside verge between Eynsham and Woodstock, Oxford. This spread into rural Oxfordshire is of some interest as Turrill (1948) has recorded his failure in attempting to establish the plant artificially by transplants or fruits on walls at Woodstock in the early years of the present century.

During 1944 it was gathered on the banks of Wilstone Reservoir, Tring, Herts., and appeared in new localities in Bedfordshire (Dony, 1946). In the same year a few plants appeared in the bombed shell of a church in Canterbury, E. Kent, and the species rapidly colonised the ruins of the fire damaged city (Kent, 1951). *S. squalidus* had not been recorded from the Canterbury area since 1875 (Hanbury & Marshall, 1899), and it seems probable that it was re-introduced by means of seed accidentally imported on fire-fighting equipment brought in from the Rochester area where the species is abundant. In 1945 it was noted to be increasing rapidly at Penzance and had spread to Hayle, W. Cornwall. In the extreme south-east of the country

it appeared in Eastbourne, W. Sussex, where it began to colonise bombed sites, and was seen on the site of an old Army camp at Hothfield Heath, E. Kent, and also at Westerham, W. Kent. In S. Essex it made its appearance at Leigh-on-Sea, where S. T. Jermyn believes it was introduced with air-raid debris. During 1946 *S. squalidus* was noted at Weston-super-Mare, N. Somerset, having undoubtedly spread from Bristol. A few plants were noted also growing on ballast used in making a new road at Chartham, E. Kent, while in Berkshire it was discovered on Buckleberry Common far from the railway. In 1947 plants were seen at Cathanger Wood, S. Wilts. (Grose, 1947); the recorder remarking that this was the first time he had seen the species at any great distance from the railway in Wiltshire. It was noted also at Gerrards Cross and Great Missenden, Bucks., where it had probably spread from the Uxbridge-Denham area. In Huntingdon it was seen at Woodston (Dony, 1951). During 1948 it was noted by the railway at Godalming, Surrey, at Harpenden, Herts., and Connington, Hunts. Before 1949 it was plentiful at Dover, E. Kent, and was slowly spreading into Folkestone (Day, 1950). By 1949 it had also spread along the railway from the Rochester area to the Isle of Sheppey, E. Kent: here it was plentiful by the railway and on waste ground from Swale Halt to Queenborough and Sheerness-on-Sea. In 1950 it was seen at Sandwich Bay, E. Kent, where it had been introduced with builder's rubble, and on the north Kent coast it had extended its range to Whitstable. At Portsmouth, S. Hants, it had succeeded in becoming established on bombed sites. During this year it was seen by the railway at Colchester, N. Essex, and in Herts. was noted at Hatfield and Bishops Stortford. Additional records from Hunts. (Dony, 1951) show that it was spreading in that county and a supplementary list of records from J. L. Gilbert added confirmation.

S. squalidus has always been of very local occurrence in Sussex, but in 1952 isolated specimens were seen in the Brighton area, E. Sussex, and a solitary plant appeared near Mayfield Station, E. Sussex, the latter flourished and its progeny resulted in the establishment of a small but increasing colony. In the same year it was seen in the railway yard at Ongar, S. Essex, and also at Felixstowe, N. Essex. Before 1953 it had extended its range to Swanage, Dorset, and on to sandhills at Mudeford, S. Hants.—it is likely that these plants originated from colonies in the Southampton-Bournemouth-Weymouth area. A solitary plant was seen also on a hedgebank at Nutfield, Surrey, but this proved to be merely ephemeral.

A further Sussex record was made in 1954 when *S. squalidus* was noted colonising waste ground and rubble heaps at Holmbush Potteries between Horsham and Crawley. In E. Kent a massive spread from Canterbury into Thanet was under way and plants could be seen at intervals along roads and railways through Chislet, Hersden, Upstreet and Sturry to Margate and Ramsgate.

During 1955 plants were noted by the road at Knebworth, and between Baldock and Royston, Herts. A detailed list of Herts records from Dr. J. G. Dony indicated that the species was now very widespread in the county. Further information on the species in Sussex was provided by K. E. Bull who reported that it was gradually disappearing from Eastbourne as the bombed sites became built upon: he noted, however, that it was plentiful and well established on the Crumbles. In E. Kent, *S. squalidus* was seen on shingle at Dungeness, in the Elham valley, and on the beach at Leysdown, Sheppey. In Surrey it was noted at Farnham, and in Berkshire on railway banks at Ascot, while in the adjacent county of Oxon. a number of plants were seen on waste ground at Thame.

The first record for the Channel Islands was made in 1957 when Dr. H. J. M. Bowen found plants growing on a rubbish-tip by Vale Castle, Guernsey (McClintock, 1959). *S. squalidus* was by now fairly widespread in Wiltshire and the historical spread in that county was given in detail by Grose (1957) supplemented by a map. In W. Sussex solitary plants were seen by the railway at Battle and at Frant. During 1958 the species was found growing in several side streets near St. Sampson's Harbour, Guernsey (McClintock, 1959), and in the following year plants were seen at Chailey Common, W. Sussex, and at Gomshall station, Surrey.

In 1961 a few plants were seen at Osborne, Isle of Wight (White, 1962), these had increased in number by 1962 when further plants were seen elsewhere in the island—at Haverstreet and near Ryde. The Haverstreet plants are believed to have been introduced with building materials. Finally, in 1962 plants were noted on a wall in Holford, S. Somerset, a remote village in the Quantocks, six miles from the nearest railway.

S. squalidus is now found in all the vice-counties of southern England, in many of them in local abundance. It is perhaps most local in Cornwall, particularly in the north, Devon, Dorset, North Hampshire, Sussex and parts of southern East Kent, but as these areas become more urbanised it is likely that the plant will arrive and become established.

The following exsiccata, additional to those given by Kent (1960), supporting the records and observations mentioned above have been seen by the author. The abbreviations used for herbaria are those given by Kent, Bangerter and Lousley (1958).

V.c. 18, S. Essex. West Thurrock Marshes, 1954, *S. T. Jermyn* (BM).

V.c. 19, N. Essex. Wickham Bishops, 1940, *M. S. Campbell* (BM).

V.c. 23, Oxford. Cassington gravel pits, 1942: roadside verge between Eynsham and Woodstock, 1943, *W. B. Turrill* (K).

V.c. 31, Huntingdon. Connington, 1948 (BM).

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SENECIO SQUALIDUS L. IN THE BRITISH ISLES— 5, THE MIDLANDS (1940→)

By Douglas H. Kent

The spread of the south European adventive, *Senecio squalidus,* in southern England and East Anglia and its subsequent arrival in the Midlands has already been outlined (Druce, 1927; Kent, 1957, 1960 and 1964).

By 1939 the species was locally common near railways in Northants, Hereford, Worcester, Warwick and south Stafford. In Salop it was rare, in N. Lincoln virtually confined to the Scunthorpe area, and in Leicester, S. Lincoln, Nottingham and Derby of very local occurrence. During the war years it spread rapidly, and was recorded from Peterborough, Northants, where it soon became common (Gilbert, 1948); from Trowell, Notts. (Howitt & Howitt, 1963) and Beeston, Notts., where it increased in great abundance (Bull, 1944); from Madeley, Staffs. (Bemrose, 1941); from Cosford, Salop, and from the City of Leicester. It was noted also as becoming a common weed in Derbyshire (Hollick, 1945).

During 1946 *S. squalidus* occurred, but did not persist, at Holton le Moor, N. Lincs., and was gathered also at Nottingham Castle. By this time it had also spread along the railway from Rugby to Coventry, Warwick, where it soon became abundant on bombed sites. In 1948 it was noted colonising limestone debris in a quarry near Dudley and was collected at Aylestone and at Lutterworth, both in Leicester. During 1949 it was noted at Barton-on-Humber, N. Lincoln, and was seen in great quantity on shingle by the river Trent at Swarkestone, Derby. Further N. Lincoln localities were revealed in 1950 when *S. squalidus* was found to be well established on slum clearance ground in the small town of Kinton Lindsey, at Redbourne R.A.F. station and on filter beds at a sugar beet factory at Brigg. All three localities are east of Scunthorpe, from which area Miss E. J. Gibbons believes the plant to have spread. Isolated plants were also noted at Scawby Woods, and by the roadside at Broughton, N. Lincs. In the latter locality the plants appeared with other alien species and were traced, by Miss Gibbons, as having been introduced with malt-kiln sweepings from a brewery at Burton-on-Trent. In Nottingham it was reported to be still on the Castle Rock, and frequent in many parts of the city, from whence it was spreading along the roads to Brampton and Chilwell. In Derbyshire it was recorded as abundant about Spondon and extending along the railway to Borrowash. During 1951 it was noted at Stamford, N. Lincs., and in 1953 was seen growing abundantly in a stone quarry at Elton, Northants. (Gilbert, 1953). It was seen also at

Binbrook R.A.F. Camp, S. Lincs., and was noted to be well established, though in small quantity, on waste ground and on the city walls at Hereford. Further localities reported from N. Lincs. were Boston Docks, where it was abundant, and Grimsby. During 1954 it was seen spreading along the main road from Stamford, at Easton, Northants., and was recorded also from Market Deeping, N. Lincoln and railway sidings at Stratford-on-Avon, Warwick. In Rutland it was observed colonising raw limestone verges along a road at Woolfox.

In 1955 it was noted on roadsides and disturbed ground at Wellesbourne, Warwick, while in Staffs. E. S. Edees reported that he had records from 52 civil parishes in the county, and that it was now abundant on waste ground in the industrial areas in the south of the county but much less common in the north. It was noted also on railway sidings at Ludlow and along a roadside at Ketley, both localities in Salop. During 1956 it was recorded as established on railway sidings at Grantham, S. Lincs., and in the following year was said to be not uncommon and spreading in Salop (Lloyd and Rutter, 1957), while Kendrick (1957) published a number of records indicating that it was spreading into rural areas in Herefordshire. During 1960 it was noted along the road at intervals between Scunthorpe and Brigg, N. Lincs., and in 1961 Edees (1961) published a map showing the distribution of the species in Staffs. The following year it was seen at Weedon Beck and Towcester, both in Northants.

At present *S. squalidus* is abundant in many parts of Northants, Worcester, Warwick and south Stafford, N. Lincoln, Nottingham and Derby, and is locally common and increasing in Hereford, north Stafford, Salop, S. Lincoln and Leicester.

The following exsiccata, additional to those given by Kent (1960), support some of the records given above. The abbreviations used for herbaria are those given by Kent, Bangerter and Lousley (1958).

39, Stafford. Burton-on-Trent, 1948, *R. C. L. Burges* and *T. G. Tutin* (LEICS.)

55, Leicester. Leicester, 1945, *T. G. Tutin*: Aylestone, 1948, *E. K. Horwood* (LEICS.)

56, Nottingham. Nottingham Castle, 1948, *C. W. Muirhead* (CLE).

Acknowledgments

I am indebted to Miss C. W. Muirhead for providing information of a specimen in the herbarium at Carlisle Museum and to Professor T. G. Tutin for details of specimens at the University of Leicester. Grateful thanks are also due to the following for providing records and information:—D. E. Allen, Dr. R. W. Butcher, J. H. Chandler, F. M. Day, E. S. Edees, Miss E. J. Gibbons, J. L. Gilbert, Miss K. M. Hollick, C. C. Townsend, Dr. S. M. Walters and Mrs. L. E. Whitehead.

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SENECIO SQUALIDUS L. IN THE BRITISH ISLES— 6, NORTHERN ENGLAND (1940→)

By Douglas H. Kent

The spread from Oxford of the south European species *Senecio squalidus,* its colonisation of suitable habitats in southern England, the Midlands and Wales and its arrival in northern England has already been outlined (Kent, 1957, 1960, 1964 and 1964b).

Prior to the outbreak of the Second World War, *S. squalidus* was well established in the Northwich area of Cheshire, and also in the Liverpool area, both in Cheshire and S. Lancs. In S.-E. York it was known from Hull, in N.E. York it had been recorded from Teesmouth, while in S.W. York it was locally common about Doncaster, Rotherham and Sheffield. In Co. Durham it was recorded from Darlington, Stockton and Durham, and in Cumberland it had apparently occurred only once as a casual.

During the war the plant rapidly became established on coal outcrop sites and waste ground in rural areas of south and S.-W. York, and L. Magee informs me that he has no doubt that both plants and seeds were carried from site to site by heavy earth-working machinery used in open cast mining.

In 1940 Miss C. M. Rob noted *S. squalidus* at Catterick Camp, N.-W. York, though it was described as "scarcely more than casual but likely to become permanent". In 1943 it was collected at Kirk Bramwell, S.-W. York, and in the following year it was seen at Preston and Blackpool, both Mid W.-Lancs. (Whellan, 1948); near Shipley, and near Bradford, both S.W. York, and on the Durham side of the river at Middlesborough.

By the end of hostilities the species was commonly established on bombed sites in Hull, and was spreading on to waste ground in adjacent villages in S.-E. York. In N.-E. York it was plentiful by the railway between Middlesborough and Thornaby, also between Thornaby and Eaglescliffe; on the race-course at Thornaby, and plentifully on the roadside approaching Saltburn from Marske (Rob, 1945). In S.-W. York it was frequent about Sheffield and increasing about Barnsley, Dodsworth, Chapelstone, Ecclesfield, and Penistone. During 1947 a single plant was seen on a wall at Folkton, near Scarborough, S.-E. York; in the following year a small colony had become established (Rowntree, 1953). A number of new northern localities were provided in 1948 when the plant was found at Otterspool, S. Lancs. (Jones, 1953); Staxton, S.-E. York (Cross, 1948); Northallerton, N.-E. York (Rob, 1948); and Ramsden Dock, Barrow-in-Furness, N. Lancs. During 1949 it was noted on a canal path at Wigan, S. Lancs., and on a railway bank near York, Mid W.-York. In Cumberland, it occurred at Workington Shore, but did not persist.

In 1950 a single plant was recorded from the Spurn peninsula, S.-E. York (Meiklejohn, 1950), and it was reported also to be widespread in Durham from South Shields to the Tees in the east, and had just appeared at Birtley (Harrison, 1950); it was noted also to be spreading westward up the Team Valley at Urpeth, Durham (Harrison, 1950b). During 1951 a patch was noted on waste ground at Newcastle-upon-Tyne, Northumberland S., and in the following year it was seen by the side of Watling Street between Lostock and Plumley, S. Lancs.; in a lime quarry near Pontefract, and by the roadside near Scammonden, both localities in S.-W. York (Murgatroyd, 1952), and at Hamsterley, Durham (Harrison, 1952). It was seen also on railway banks between Sedby and Carlisle, Cumberland.

The recent spread in Cheshire was confirmed by Savidge (1954) who gave records for Chester, Capenhurst, Mollington, Port Sunlight, and Newferry Shore; elsewhere the plant was reported from Bolton-by-Bowland, S.-W. York, while Harrison (1953) noted it at Greatham Saltworks, Durham. In 1954 it was seen plentifully at Platt Bridge, S. Lancs. (Edmondson, 1954), and was recorded as being common about Thorne, S.-W. York. During 1955 records were received from Wilton, S.-E. York, and Anston Stones and Lindrick Common, both S.-W. York. By 1957 *S. squalidus* was plentiful about York and Topcliffe railway sidings, N.-E. York, and in 1959 was seen at Accrington and Tyldesley, S. Lancs. (Savidge, Heywood and Gordon, 1963), Stokesley station, N.-E. York (Rob, 1959), and Gunthwaite, S.-W. York (Wakefield, 1959), it was noted also at Newburn, Northumberland, S., and was reported to be spreading up the Tyne Valley (Harrison, 1959). In 1961 it was recorded as established on Newcastle Town Moor, Northumberland, S. (Swan, 1961) and in 1962 was noted in two further localities in S.-W. York—Todmorden (Elliman, 1962) and Keighley (Houseman, 1963). Finally, in 1963 it was reported from Adel, near Leeds, Mid W. York (Nelson, *etal.*, 1963).

S. squalidus is now well established and widespread in northern England, but is still apparently very local in N.-W. York, Northumberland, S., N. Lancs. and Cumberland. It is, as yet, apparently unrecorded for Cheviotland, Westmorland, and the Isle of Man.

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THE NATURAL SOWING OF SEEDS

By H. E. Green, M.A.

The importance of ensuring, when sowing seeds, that they are covered by soil, varying in amount according to the size of the particular kind of seed, is usually stressed in instructions given to gardeners and it surely follows that there must be a similar requirement for plants that grow under wild conditions. In some instances it is not difficult to see how such a result is brought about but in others what takes place is less obvious.

We can readily appreciate how the small round seeds of species of Papaveraceae and Cruciferae will roll into cracks and crevices so reaching shade and moisture. Species, like the Dandelion, with a pappus carried on a long beak may, after reaching the ground, be blown along until the fruit slips into a crevice, when the beak will usually be broken by the wind, because teeth at the top of the achene will engage the sides of the hole and prevent withdrawal.

The heavy round seeds of many of the Papilionaceae will sink down through herbage and will be held firmly between the bases of the grass stems in a moist position and having so much reserve material, the seedlings can push through to the light.

The manner of burial is even more obvious in the case of species of *Erodium* where the fruit is actually driven into the ground by the action of the hygroscopic awn. Variations in the moisture in the atmosphere cause it to move and, the bent upper part striking against other plants, the pressure is transferred to the lower part and the fruit forced into the ground. Withdrawal later is prevented by hairs arising from near the end of the fruit and pointing backwards. A comparable structure is found on some grasses, of which perhaps the foreign species of the genus *Stipa* are the most extreme, being so strong that some of them cause considerable trouble through piercing the skin of domestic animals. The very much weaker examples of such awns on some of our grasses, such as *Avena fatua,* are effective in quite a different way. Though not strong enough to force the grain into the ground, by constant movement, caused by changes of moisture, the light fruit is pushed about until it slips into a crevice.

Another way in which seeds are sown is through the production of sharply triquetrous seeds or fruits, such as are produced by the Beech and some species of *Polygonum.* Any animal walking over these will force them into the ground.

It is, however, when we consider plants with small seeds growing in exposed places that a different provision would appear necessary to ensure that the seed is covered. Such light seeds, after once alighting would be liable to be lifted again by the next gust

of wind and if blown along with dust or sand, would usually fall last because so light, and thus never get the covering necessary to make growth possible. What is essential for growth is that the seed be anchored and that dust or soil falling on it be retained to serve as a covering and various striking developments of mucilage achieve these results.

The most obvious example is provided by the Common Groundsel, *Senecio vulgaris*. If we consider the conditions under which this species must have evolved we shall not be surprised to find that it has elaborate structures. It grows quickly and produces seed before other species arrive for it cannot stand competition, being simply a pioneer species that grows on bare ground. Before man started cultivation such ground must have

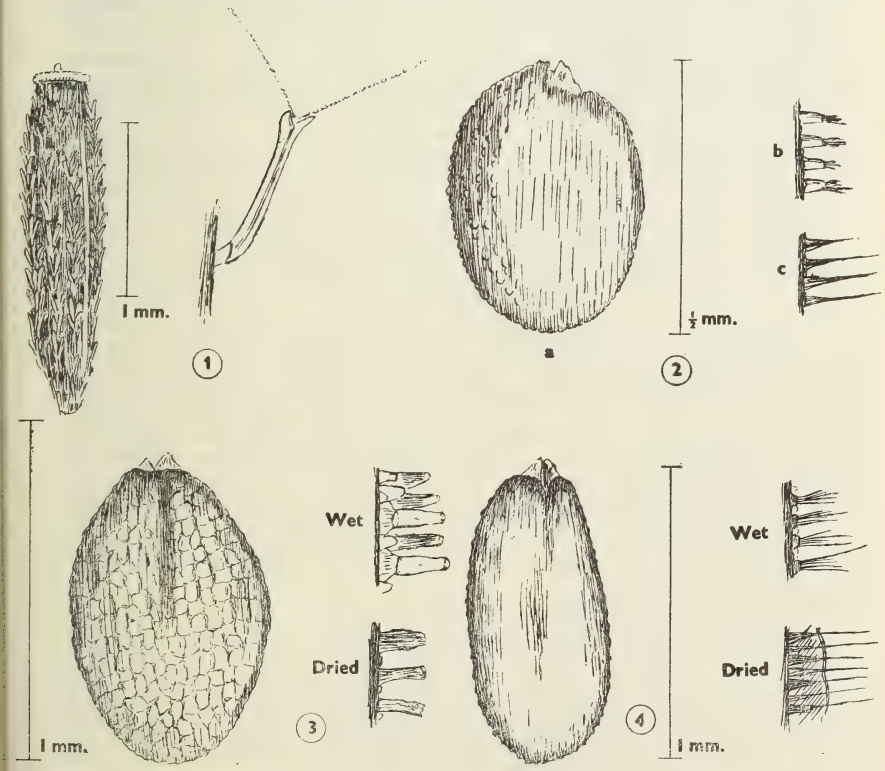

Fig. 1.

1. *Senecio vulgaris* (a) Achene dry. (b) Individual hair wetted.
2. *Hornungia petraea* (a) Seed. (b) Detail of surface when wetted. (c) When later dried.
3. *Draba muralis* (a) Seed. (b) Detail of surface when wetted. (c) When later dried.
4. *Capsella bursa-pastoris* (a) Seed. (b) Detail of surface when wetted. (c) When later dried, showing general spread of mucilage with streams going beyond.

been comparatively rare, consisting usually of places where animals had been scratching or burrowing, where trees when falling had lifted soil on roots, or similar casual happenings had taken place. A species surviving under these conditions must be particularly well adapted for rapid growth and production of seed and have a very efficient dispersal mechanism, and that is what we find. Rapid production of seed must also go with a rapid burial for no seed can start into growth on open ground exposed to full sunshine.

From the ends of each of the blunt hairs which line the sides of the achenes moisture causes two fine streams of mucilage to be given off which, when dried, become fine threads. These will cause adherence and thus assist dispersal but also cement the fruit to the ground and so prevent its being constantly blown about, but once it is held firmly dust or sand may well be blown on to it. If rain falls soil may be splashed on it, but in any case rain or dew will bring out the threads and the fact of the threads being raised above the surface of the fruit means that some fine dust may lie below it and when the threads are sent out they, in some instances, will pass between grains lying lower and become attached to some above, thus causing more than one layer to be held over the fruit. The effect can be demonstrated by placing the fruits on a glass slip, covering with fine sand, moistening and then allowing to dry. When the glass is turned over and loose sand allowed to fall there will be found remaining a small heap over the fruit.

This feature is found repeated in one form or another on seeds of a number of plants found growing in exposed places. These include *Hornungia petraea, Draba muralis* and *Capsella bursa-pastoris.* On the first, immediately the seed is moistened, transparent blunt tubes appear all over the surface and from these mucilage extrudes. These tubes, like the blunt hairs on the Groundsel, have the effect of raising the point where mucilage is first released above the surface of the seed so that it is bound to reach beyond some of the finer grains of dust and thus produce a better effect from the limited amount of mucilage produced by these very small seeds.

Though raised tubes were not seen on seeds of *Teesdalia nudicaulis* mucilage was released in many individual streams though apparently not quite as effectively as in the case of some other species, but the seeds of *Draba muralis* show similar tubes and mucilage is given off, though without the same development of threads. On *Capsella* the tubes are less prominent but the streams of mucilage are well developed.

On *Sisymbrium irio* the tubes are very obvious, the seed will adhere and there is sufficient mucilage to cause adherence, while with this and the others mentioned the tubes do not shrink back on drying.

Cardamine hirsuta, which grows in dry places, develops mucilage and, though it does not have the thin streams directed from special openings it does appear to spread and be broken up so

that there extends from the outer edge fine strands that become attached to the grains of earth. On the other hand the nearly related *C. flexuosa*, growing in sheltered or shaded situations, has seeds without mucilage.

It should be mentioned that on species that flower for a long time, such as Groundsel, the mucilage is not produced when fruit is produced late in the season. Thus it was found that seeds of *Capsella* collected in October showed little, though others tested at the same time, but collected earlier, showed it strongly.

When plants grow on fairly deep soil and their seeds, after falling, remain for some months, probably partly hidden by other vegetation, the action of worms in the soil may be expected to cover them. Darwin showed that up to a quarter of an inch was deposited annually on the surface of such ground by worm casts. In the case, however, of the species mentioned, shallow soil, or the need for immediate growth, as with Groundsel, prevents this result being effected. Again these seeds falling on exposed ground will be more likely to escape being eaten by birds if covered rapidly.

MORE ON THE INTRODUCED BORDON AND ALDERNEY GERANIUMS

By C. C. Townsend

In *Proceedings of the B.S.B.I.*, **4**, 413, 1962, J. E. Lousley has noted the *Geranium* established at Bordon, Hants, which was the subject of a previous paper by myself (*Watsonia*, **5**, 43-44, 1961), and states that this plant cannot be referred to *G. microphyllum* (the name under which I recorded it), but that it is, in fact, *G. retrorsum*, "which is established in Alderney". Since I had eliminated *G. retrorsum* from consideration as the Bordon plant on the basis of a gathering from Alderney in the Kew Herbarium (Jackson and Airy-Shaw, 409) named as "cf. *retrorsum*" by Mr. Lousley himself, and ultimately of the British Museum isotypes of the species, this came as something of a surprise to me, and I felt the necessity of re-examining the relevant material. As a result of this work, I now present this note in order to support my belief that:

(a) The Bordon and Alderney Geraniums are not referable to the same species.

(b) The Bordon plant is not *Geranium retrorsum* L'Hérit. ex DC.

(c) Neither is the Alderney plant.

One of the chief characters on which I separated the Bordon *Geranium* from *G. dissectum* was that of the reticulation of the seed testa. In *G. dissectum* the reticulation is isodiametric; in *G. microphyllum* it is considerably elongate, as Australasian writers have noted. The same character may be used to separate *G. retrorsum* and *G. microphyllum*. The type specimen of *G. microphyllum* is, unfortunately, possessed of only one crushed seed; hence as my comparative specimen I have taken a specimen from the Herbarium Hookerianum, labelled as *G. microphyllum* in Hooker's handwriting, and collected in New Zealand by Dr. Sinclair. This has been determined by Dr. Roger Carolin of Sydney, who is currently revising the Australasian species of this group, as *G. potentilloides* L'Hérit. ex DC., from which he considers *G. microphyllum* not to be separable. Although, as Mr. Lousley states, *G. retrorsum* was described with the note "Banks (v.s. cum semin. immat.)", yet ripe seed is readily available in the British Museum isotype specimens! Fig. 1, a and b, represent the seeds of Sinclair's "*microphyllum*" and Banks's isotype of *G. retrorsum* respectively. It is clear from the figure in my original paper that the Bordon plant has seeds of type (a). There are differences in foliage between the Bordon plant and *G. retrorsum*; the leaves of

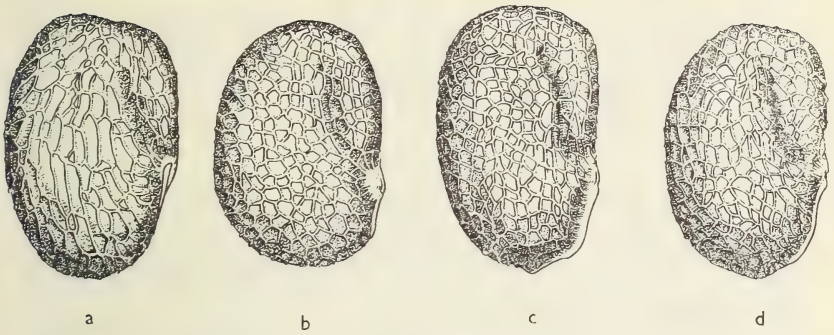

Fig. 1. (a) Seed of *Geranium potentilloides* L'Hérit. ex DC. (Sinclair, Hb. Hooker, as *G. microphyllum*). (b) Seed of *G. retrorsum* L'Hérit. ex DC. (Banks isotype). (c) Seed of Alderney Geraniums, Jackson and Airy-Shaw 409. (d) Seed of Werdermann 560, "*G. submolle* Steud.". All × 16.

the latter are more narrowly and acutely divided, with hairs chiefly confined to the veins of the lower surface; in *G. potentilloides* (incl. *G. microphyllum*) as represented by Sinclair's specimens, the leaf lobes are blunter and hair distribution is more general. I do not feel that habit and size comparisons alone, as relied upon by Mr. Lousley, are really valid. Such species as *G. molle* in Britain vary tremendously in dimensions and habit, according to habitat, and it is perhaps hardly to be expected that a plant of *G. potentilloides* growing on a British railway bank will be similar in habit to one growing on an Antarctic island, where the type of *G. microphyllum* was collected (Auckland Island). The Bordon specimens which I have seen fall well within the range of Kew Australasian material of *G. potentilloides,* in any event.

Examination of the Alderney plant showed that the seed areolation was similar to that of *G. retrorsum,* i.e. isodiametric (fig. 1c). But in vegetative respects the two plants seemed to me to differ markedly. The leaves of *G. retrorsum* are very deeply and acutely divided, with hairs chiefly on the veins of the lower surface, as remarked above; long hairs are also present on the calyx (as in Sinclair's "*microphyllum*"). In the Alderney plant the leaves are less deeply divided even than those of *G. potentilloides,* the lobes much blunter than in *G. retrorsum,* the hair distribution is soft and general, and the calyx indument is entirely soft, short and appressed. Thus I could not happily assign the Alderney plant to *G. retrorsum* and felt obliged to try and find another name for it. Much to my pleasure, a specimen was found in the Kew South American covers which combined the characters which the Alderney plant shared with *G. retrorsum* and those in which it differed from that species. This specimen is Werdermann, *Plantae Chilenses* No. 560, and is labelled "*Geranium submolle* Steud."; the seed of this plant is represented by fig. 1d. I cannot, however, vouch for the accuracy of this name.

The type specimen of *G. submolle* (Bertero 294) is probably at the Istituto Botanico dell' Università, Turin, to which institution the cream of Bertero's collections appear to have been presented. Two requests for its loan, or even information as to its presence there have, however, been ignored, and search for possible isotypes unsuccessful. It is here that I must mention the one cause for doubt which may be raised with regard to the Bordon plant; it has a very thick rootstock, appearing semi-tuberous, whereas *G. potentilloides,* in the few specimens where roots are present, does not appear to show this feature. Both *G. retrorsum* and the Alderney plant have a thick root. Whether this has taxonomic significance I do not know.

A further character which has been employed by writers on Australasian botany in distinguishing *G. microphyllum* is that the peduncles are said to be 1-flowered. When investigating the plant I did not find that this character worked particularly well. It is perhaps significant that while Hooker (*Handb. N.Z. Fl.,* 36 (1867)) remarks of *G. microphyllum* "Peduncles rarely 2-flowered", in the latest Flora of New Zealand (Allan, 1961, Vol. 1, p. 235) we find the species described as having peduncles 1-2-flowered, with no comment as to the relative frequency of either form.

It is obvious that here we are dealing with two members of a group raising great taxonomic difficulties. When Dr. Carolin's revision is published these will probably be cleared up for us if both our introduced species are Australasian. In the case of the Bordon plant, of course, it is almost certain that it is Australian in origin, if not native in that country; but in the case of the Alderney plant we have no clue as to origin. Meanwhile, I believe that the best names available for these two are (a) for the Bordon plant, *G. potentilloides* L'Hérit. ex DC. (incl. *G. microphyllum* Hook. f.) and (b) for the Alderney plant, *G. submolle* Steud.

I am very grateful to my colleague, Miss Mary Grierson, for her care in preparing the figure, and to Miss M. McCallum Webster for information on the rootstock of the Bordon *Geranium*.

SUPPLEMENT TO "WEST NORFOLK PLANTS TO-DAY"

By C. P. Petch and E. L. Swann

The interest aroused by the publication of *West Norfolk Plants To-day* (1962, Supplement to *Proc. B.S.B.I.*, **4** (4)) has brought us much assistance in refinding species that we had provisionally regarded as extinct, as well as extending our knowledge of the range of some rarities. The more interesting of these records are here reported. As in the original work, each species has been seen growing by the authors, who are alone responsible for records in which no other name appears. Taxa additional to the main text of *West Norfolk Plants To-day* are prefixed by an asterisk.

*Polystichum setiferum (Forsk) Woynar. *Soft Shield-fern.* Native. Relatively common in v.c. 27 (East Norfolk); a single plant in v.c. 28 at Bulfer Grove, Gunthorpe, 1963, P. D. Moore.

*Turritis glabra L. *Tower Mustard.* Alien. Roadside at Bradenham West End, 1963, A. L. Bull.

*Linum bienne Mill. *Pale Flax.* Native. Wells sea-bank, 1963, P. D. Moore. This is presumably C. E. Salmon's locality (1914). We had erroneously regarded the plant as *L. usitatissimum* L., which was common as a survival from crops when flax was grown in West Norfolk. Cultivation of this has ceased, making the native population apparent.

*Trifolium ochroleucon Huds. *Sulphur Clover.* Native. Roadsides at Beeston, Mileham, Miss D. M. Maxey, and Cranworth, A. L. Bull. This is another species frequent in v.c. 27.

Lotus tenuis Waldst. & Kit. ex Willd. *Slender Birdsfoot-trefoil.* Native. Oxborough, near Foulden Common, 1963, is an additional station.

*Sanguisorba officinalis L. *Great Burnet.* Native. Still persisting in 1963 at Blo' Norton Fen, where it was found by W. G. Clarke (1914), F. Rose.

*Rosa sherardii Davies. Native. Hedges on the Peddar's Way, Sedgeford, and at Bradenham, 1963.

Cicuta virosa L. *Cowbane.* Native. Scoulton Mere, 1963, represents a second station, whence it was recorded by F. C. Newton (1914).

*Myosotis sylvatica Hoffm. *Wood Forget-me-not.* Native. Although some records are clearly garden escapes of this or related species, the woods at Cranworth seem to have a native population, A. L. Bull.

*Veronica triphyllos L. *Fingered Speedwell.* Native. Plentiful in a sandy field near Thetford, 1963, Mrs. A. Willé.

V. praecox All. Alien. In the same field as *V. triphyllos* but much scarcer.

*Rhinanthus minor subsp. stenophyllus (Schur) O. Schwarz. Now that this plant has been restored to the second edition of the *Flora of the British Isles* we list the West Norfolk stations: Cranberry Rough, Hockham; Old Hunstanton; Low Fen, South Lopham; East Walton Common; and Beetley.

Parentucellia viscosa (L.) Caruel. *Yellow Bartsia.* Casual alien. Although the plants have now gone from East Winch Common we have recently seen a few at Leziate in grassland, C. J. Cadbury.

Littorella uniflora (L.) Aschers. *Shore-weed.* Native. Abundant along the margins of one of the Breckland meres at Wretham, A. L. Bull.

*Ornithogalum nutans L. *Nodding Star-of-Bethlehem.* Alien. Roadside bank near the church at Bodney, F. H. Perring.

Epipactis helleborine (L.) Crantz. *Broad Helleborine.* Native. Pinewoods at Weeting represent an outlying and unusual station in which the plants are numerous.

*Goodyera repens (L.) R. Br. *Creeping Ladies' Tresses.* Established alien. Known in plantations near Holt (v.c. 27) for fifty years and recently seen in pine plantations on Holkham Meols (v.c. 28). This orchid is never seen in the native woodland, and we accept Nicholson's view that it is not native in Norfolk. It is reputed to have been introduced with young trees from Scotland.

Carex appropinquata Schumach. Native. Overa Heath, 1963, must be added to the other existing station at Cranberry Rough, Hockham.

Festuca tenuifolia Sibth. *Fine-leaved Sheep's Fescue.* Native. This grass is not rare and has been overlooked. Longham, 1963, C. E. Hubbard; South Wootton; Roydon; Hockham.

*Poa bulbosa L. *Bulbous Meadow-grass.* Native. Wells seabank, 1963. This is an extension of its range from the Yarmouth district. It has not been previously recorded for v.c. 28.

Poa subcaerulea Sm. (P. irrigata Lindm.) *Spreading Meadow-grass.* Native. Like *Festuca tenuifolia* this grass is not rare but overlooked. As Lindman's specific epithet implies it is a grass of wet places and has been seen in the *Juncetum effusi* at Foulden Common; Roydon Common; and Rockland All Saints Fen. Although said to occur in damp coastal sands this species does not appear to be present along the West Norfolk littoral. A littoral form of the variable *P. pratensis* has possibly been mistaken for it.

SPARTINA "63 chromosomes". As there is some doubt concerning the specific epithet to be given to this primary hybrid we designate it temporarily as "63 chromosomes". Three or four colonies of this male-sterile hybrid have been seen at Wolferton where it was first pointed out by Dr. Hubbard (1962). Further colonies have been seen along the river bank at King's Lynn. It may readily be distinguished in the field by its narrower, more erect leaves; shorter ligules; and smaller non-dehiscent anthers.

We still hope to refind *Veronica verna,* but what is shown to us as this "species" is never correctly identified. Likewise specimens referred to *Lactuca serriola* always prove to be *L. virosa,* the former remaining a very rare casual.

ALEXANDER MARSHALL (1639?-1682), FLOWER PAINTER

By Phyllis I. Edwards

The Hon. and Rev. Henry Compton (1632-1713), Bishop of London from 1675 to 1713 had, according to Peter Collinson, the greatest collection of rare plants from America and the West Indies in his garden at Fulham Palace. He also appears to have had a collection of drawings which included illustrations of at least some of the plants in his garden and also had a set of drawings made at the Cape of Good Hope. Richard Pulteney refers to this collection as the 'Codex Comptoniensis'.

For some time now I have been trying to obtain information as to the fate, or present whereabouts of this 'Codex'. John Evelyn states that on August 1st, 1682, 'I went to the Bishop of London at Fulham, to review the additions which Mr. Marshall had made to his Curious book of flowers in miniature and collection of insects'. It was for this reason that I visited the Royal Library at Windsor to see two volumes of drawings by an Alexander Marshall. Among the drawings of well-known garden flowers and recent horticultural introductions are some delightful studies of common British flowers, a fact that I thought worth recording. As these drawings do not appear to have been the property of Bishop Compton, one must assume that they were not part of the 'Codex' referred to by Collinson.

Very little is known about Marshall. The *Museum Tradescantianum,* 1656, lists 'A Book of Mr. Tradescant's choicest flowers and plants, exquisitely limned on vellum by Mr. Alex. Marshall'. This volume which is neither in the Bodleian Library or the Ashmolean Museum at Oxford is another most interesting collection of plant illustrations that appears to have been lost.

PLANT NOTES

497. Dipsacus. Dr. A. Hansen, Botanical Museum, Copenhagen, has recently drawn attention to the occurrence of *Dipsacus strigosus* Willd. as an adventive in England (1963, *Proc. B.S.B.I.*, **5**, 123-124).

D. strigosus may easily be passed over for *D. pilosus*, but the two species differ in the following characters:—

	Dipsacus pilosus L.	Dipsacus strigosus Willd.
Heads	15-25 mm. in diameter.	30-40 (45) mm. in diameter.
Involucral Bracts	10-12 mm. long, narrowly triangular, not conspicuously narrowed towards the tip, abruptly contracted into a spiny point.	15-25 mm. long, linear or narrowly triangular, gradually tapering into a spiny point.
Receptacular Bracts	obovate, abruptly contracted into a green, spine-like appendage shorter than the bract (about 3-5 mm. long), tipped with a spiny point.	broadly obovate, more or less gradually tapering into a spine-like appendage longer than the bract (about 10-12 mm. long), much darker towards the tip, ending with a spiny point.
Stem	30-120 cm. long, angled, hollow, furrowed, with scattered upward-pointing prickles.	50-150 cm. long, angled, hollow, deeply furrowed with strongly upward-pointing prickles.
Leaves	upper stem leaves in pairs, short stalked, prickly on midrib beneath, ovate to elliptical, sometimes crenate toothed, margins hairy; lower leaves long stalked, ovate acuminate, crenate toothed with one pair of basal leaflets.	upper stem leaves in pairs, short stalked, narrowly ovate, sparsely hairy on upper surface; lower leaves long stalked, broadly ovate, crenate toothed with one pair of broad basal leaflets.
Distribution	England and Wales northwards to S. Lancs. and Yorks. Outside Britain: Central Europe from Spain, N. Italy, N. Balkans, Central and Southern part of the European U.S.S.R., Crimea, Caucasus, Iran. Doubtful in the Black Sea region.	Central and S. Eastern part of the European U.S.S.R., Black Sea region, Crimea, Caucasus, Asia Minor, Iran, Central Asia (Turkmenia). Introduced in Sweden.

I should be glad to receive any new records and fresh specimens of *Dipsacus strigosus* Willd., for further study. They should be sent to me at the Department of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

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Perring, F. H. & Walters, S. M., 1962, Dipsacus pilosus L., *Atlas of the British Flora*, 269.

—Margaret B. Gerrans.

506. Senecio. Miss E. M. Bullard sent me in 1962 a series of puzzling *Senecio* specimens found growing at the edge of sand dunes at Burray, Orkney. Study of this material revealed that the plants were undoubtedly part of a hybrid population between *Senecio aquaticus* and *S. jacobaea*, in which considerable back-crossing with both parents had taken place. Most of the material examined appeared to be producing fertile seed.—D. H. Kent.

*570. Elodea. A recent revision of the S. American species of *Elodea* (1963, St. John, H., *Darwiniana*, **12**, 639-652) shows that the plant naturalised in the Longford River, Stanwell, Middlesex, v.c. 21, which has been referred to *E. callitrichoides* is in fact a newly described species **E. ernstae** St. John. It is likely that all other British gatherings of '*E. callitrichoides*' are referable to *E. ernstae*.

In his monograph the author keys the two species as follows:—

Middle and upper leaves in whorls of 2-4; lower leaves opposite; flowers dioecious.
Middle and upper leaves opposite or occasionally some in whorls of 3; staminate petals linear-spatulate ..... *E. callitrichoides*
Middle and upper leaves in whorls of 3; staminate petals spatulate; pistillate petals 3 mm. long ..... *E. ernstae*

—D. H. Kent.

676/4. Poa alpina. *P. alpina* is a circumpolar arctic species that extends southwards in Europe to the Alps and the Caucasian mountains. In Britain it is widespread in the Central Highlands of Scotland, with scattered localities in the north and west of Scotland. Further south it is found in the Lake District and on Ingleborough in England, in Snowdonia in Wales, and in Sligo and Kerry in Ireland.

Vivipary is common in the species, and in Britain *P. alpina* is almost exclusively viviparous. Previously only two sites have been known for the seminiferous form, namely Caenlochan Glen in Angus, and Ingleborough in Yorkshire (Raven and Walters, 1956, *Mountain Flowers*, London).

In September 1962, seminiferous *Poa alpina* was found in Teesdale. A few plants were growing in rock crevices in an east-facing cliff at an altitude of 1900 ft. (580 m.) in the Maize Beck valley. These limestone cliffs have been described briefly by Pigott (1956, *J. Ecol.*, **44**, 545).

Seed collected from the wild plants proved to be viable and the resultant plants, raised in the Cambridge Botanic Garden, also produced seed in 1963. Root tips from the cultivated material were prepared by

*See p. 253.—Ed.

the late G. L. Smith for cytological study, and the chromosome number was found to be $2n=32$. This compares with $2n=28$ (seminiferous) and 35 (viviparous) recorded by Tutin (Clapham, Tutin and Warburg, 1962, *Flora of the British Isles*. Edition 2. Cambridge), and with $2n=$c. 32 (seminiferous) and 39 (viviparous) recorded by Hedberg (1958, *Svensk. Bot. Tidskr.*, **52**, 37). Tutin's seminiferous material came from Ingleborough; that of Hedberg from Angus.

Muntzing (1954, *Hereditas*, **40**, 459) has shown that *Poa alpina* is apomictic, and has found Scandinavian and Alpine material to have a range of chromosome numbers from $2n=14$ to $2n=74$, with 33, 38 and 44 most frequent in Sweden. In Iceland $2n=33$ is the most frequent number, in the range from 22 to 47 found by Löve and Löve (1956, *Act. Hort. Got.*, **20**, 65). Muntzing has found that viviparous forms tend to have higher chromosome numbers than do seminiferous forms, and on the limited data available, this is borne out by the British material.

The Teesdale population of *Poa alpina* is thus interesting in that it represents an extension of the known distribution of the species in Britain; it is of the rare (in this country) seminiferous form; and its chromosome number of $2n=32$ shows it to be distinct from the nearest seminiferous population, at Ingleborough.—P. S. Lloyd.

676/6. Poa nemoralis L. Most floras fail to indicate that this species is an introduction in many of its recorded stations. One of the few to have done so, Scully's *Flora of County Kerry* (p. 349), notes that it is a favourite constituent of grass mixtures sold by seedsmen for sowing in shady places. In Kerry, Scully could only find it in demesnes or near residences which had imported plants, not in the older and more remote woods.

In the Isle of Man, similarly, all the known occurrences of this species are on garden walls or on banks by houses. And this pattern is doubtless repeated over much of north and west Britain.

Even in Central London it is possible to find odd individuals occurring in flower borders and on newly-deposited soil. Along the edge of one shrubbery in Kensington Gardens in 1961 many specimens came up which were all growing in one or two obvious straight lines. This suggests that the species is still being offered by seedsmen and intentionally sown.—D. E. Allen.

PLANT RECORDS

Compiled by E. C. Wallace

"Plant Records" are arranged in the order given in the *List of British Vascular Plants* (*L.B.V.P.*) by J. E. Dandy (1958).

Records where no date is given are for the year 1962.

The following signs are used:—

§ before the *L.B.V.P.* number: to indicate that the paragraph contains information necessitating a correction to an annotated copy of the *Comital Flora.*

† before the *L.B.V.P.* 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.* Some of these records may, however, appear as dots on maps of the particular species in the *Atlas of the British Flora.*

‡ before the record: to indicate a record additional to an annotated copy of the *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 National Grid Co-ordinates, made as accurate as is thought advisable, are added to all records. These will not be published, but the original cards containing them will be filed and may be made available for reference.

§4/4. Equisetum variegatum Schleich. ex Weber & Mohr. *106, E. Ross; sand-dunes east of Tain, C.S.S.F. Field Meeting, comm. U. K. Duncan.

§4/10. Equisetum telmateia Ehrh. *110, Outer Hebrides; at foot of waterfall, Tarbert, Harris, C. N. Page, comm. A. C. Jermy.

§9/1. Cryptogramma crispa (L.) R.Br. ex Hook. ‡45, Pemb.; on waste scree in a long-disused quarry, Rosebush, 1,000 ft., J. W. O'Donovan (1962, *Nature in Wales,* **8**, 70).

15/6. Asplenium viride Huds. 98, Argyll; Cnog an fithead, Loch Craiguish, 500 ft., A. G. Kenneth.

§16/1. Ceterach officinarum DC. *90, Forfar; Bridge of Brewlands, Glen Isla, U. K. Duncan.

§21/3. Dryopteris abbreviata (DC.) Newm. *109, Caithness; rock faces, etc., Creog riabhach, c. 6 miles south of Cape Wrath, 1,200 ft., A. G. Kenneth, det. A. C. Jermy.

21/8. Dryopteris aemula (Ait.) Kuntze. 51, Flint; pondside, Tyn y Morfa, Prestatyn, H. Spooner, comm. B. Seddon.

§22/1. Polystichum setiferum (Forsk) Woynar. *28, W. Norfolk; Bulfer Grove, Gunthorpe, a single plant, 1963, P. D. Moore, comm. C. P. Petch & E. L. Swann.

22/2×1. Polystichum × bicknellii (Christ) Hahne. 101, Kintyre; steep ground by Crinan Canal, A. G. Kenneth, det. J. A. Crabbe.

§25/I. Polypodium interjectum Shivas. *73, Kirkcudbr.; wooded cliffs, Sandyhills; wood near Bar Point, Kirkcudbright Bay: *74, Wigtown; St. Ninian's Cove, Whithorn: *75, Ayr; Tourgill Glen, Noddesdale, Largs: *76, Renfrew; Shielhill Glen, Inverskip: *87, W. Perth; Glenny Glen, Port of Menteith, A. McG. Stirling.

25/I×1. Polypodium interjectum × vulgare. 111, Orkney; among boulders above high water mark in geo near Mull Head, Deerness, E. R. Bullard, det. A. C. Jermy.

40/1. Aconitum anglicum Stapf. 44, Carm.; Carreg Ceunen, in scrub woodland below carboniferous limestone cliff and adjacent to ruined cottage, I. M. Vaughan.

§88/5. Cochlearia danica L. *75, Ayr; common about the harbour, Troon; shore rocks, Glenapp, 1963, A. McG. Stirling.

§88/6. Cochlearia anglica L. *76, Renfrew; muddy banks of river Cart, Inchinnan, 1963, A. McG. Stirling.

†90/1. Bunias orientalis L. 24, Bucks; farm field, Marlow, 1963, Miss A. M. Lee, det. and comm. C. C. Townsend.

§†98/4. Barbarea verna (Mill.) Aschers. *112, Zetland; garden border, Hoswick, Sandwick (said not to have been planted), R. C. Palmer.

102/2×1. Rorippa × sterilis Airy Shaw. 42, Brecon; by stream east of Craig, Cerrig-gleisiad, south-west of Brecon, 1961, Birmingham N.H. & Phil. Soc. Field Meeting, det. A. E. Wade, comm. J. A. Kiernan.

§102/3. Rorippa sylvestris (L.) Bess. *78, Peebles; banks of river Tweed between Walkerburn and Holylee, C. W. Muirhead.

§†104/1. Hesperis matronalis L. *51, Flint; waste ground, Gwaenysgor, 1961, H. Spooner, comm. B. Seddon.

113/4. Viola riviniana subsp. riviniana. 111, Orkney; wooded burn, Berriedale, Hoy. The common Orkney species is *V. riviniana* subsp. *minor* (Gregory) Valentine, E. R. Bullard, conf. F. H. Perring.

113/11×12. VIOLA LUTEA × TRICOLOR. 90, Forfar; near Tulchan, Glen Isla, 1959, U. K. DUNCAN, conf. R. D. MEIKLE.

§122/1. ELATINE HEXANDRA (Lapierre) DC. *44, Carm.; Talley Lakes, I. M. VAUGHAN and D. DAVIS.

133/5. STELLARIA HOLOSTEA L. 111, Orkney; Firth, 1960, Mrs. B. GRIEVE; 1963, E. R. BULLARD.

†153/4. AMARANTHUS LIVIDUS L. 21, Middx.; abundant, with *Galinsoga parviflora*, in a greenhouse, Tangley Park Nursery, Hampton, 1963, C. C. TOWNSEND.

160/3. SALICORNIA EUROPAEA L. 111, Orkney; bare mud patches in salt marsh, Fidge, Orphir, E. R. BULLARD, det. T. G. TUTIN.

§168/9. GERANIUM PYRENAICUM Burm. f. *106, E. Ross; roadside near Alness, U. K. DUNCAN.

§168/10. GERANIUM COLUMBINUM L. *101, Kintyre; limestone rock outcrop near shore, Barr a thormaid, A. G. KENNETH, det. E. C. WALLACE.

†173/1. ACER PSEUDOPLATANUS L. 111, Orkney; a single 3-4-year-old seedling in heather on hillside, Dale, Rendall, 300 ft.; about 30 yards from a solitary mature tree. The establishment of self-sown seedlings in uncultivated ground in the Orkneys is very unusual.—E. R. BULLARD.

§†190/2. MEDICAGO SATIVA L. *112, Zetland; cornfield near Ringasta, a single non-flowering plant, W. SCOTT, det. J. E. LOUSLEY.

§220/3(2). ALCHEMILLA FILICAULIS subsp. VESTITA (Buser) M. E. Bradshaw. *91, Kincardine; heathy pasture, Burn o' Guinea, Glenberrie, 1952, J. C. GARDINER.

†225/3. ROSA MULTIFLORA Thunb. 3, S. Devon; in a hedge a mile from Clifford Bridge towards Drewsteignton, 1963, Mrs. N. M. TUKE, det. and comm. C. C. TOWNSEND.

§225/12. ROSA SHERARDII Davies. *28, W. Norfolk; hedges on the Peddar's Way, Sedgeford, Bradenham, 1963, C. P. PETCH and E. L. SWANN.

224/14×12. ROSA RUBIGINOSA × SHERARDII. 106, E. Ross; Munlochy Bay, C.S.S.F. FIELD MEETING, det. R. MELVILLE, comm. U. K. DUNCAN.

†240/1. TELLIMA GRANDIFLORA (Pursh) Dougl. ex Lindl. 43, Radnor; roadside verge between Nash and Walton, near Stanner, 1961, E. M. RUTTER, det. and comm. B. SEDDON.

§252/1. HIPPOPHAE RHAMNOIDES L. *51, Flint; marsh near the railway, Prestatyn, 1961, H. SPOONER, comm. B. SEDDON.

§†254/6. EPILOBIUM ADENOCAULON Hausskn. *42, Brecon; path on north-east side of Onllwyn, south-south-west of Llwyn-or, 1961, BIRMINGHAM N.H. & PHIL. SOC. FIELD MEETING, comm. J. A. KIERNAN.

§†290/1. Falcaria vulgaris Bernh. *14, E. Sussex; waste ground, Denton, near Newhaven, R. C. Palmer.

§300/4. Oenanthe lachenalii C. C. Gmel. *90, Forfar; field by seashore, Mains of Usan, near Montrose, U. K. Duncan and E. J. Gibbons.

§300/5. Oenanthe crocata L. *106, E. Ross; shore near Killearnan, U. K. Duncan.

§311/2. Heracleum mantegazzianum Somm. & Levier. *44, Carm.; hedgebank near Llanwrda, J. R. Gates, det. and comm. B. Seddon. *106, E. Ross; roadside near Munlochy, C.S.S.F. Field Meeting, comm. U. K. Duncan.

325/1(3). Rumex tenuifolius (Wallr.) Löve. 106, E. Ross; sand-dunes east of Tain, C.S.S.F. Field Meeting, conf. at Kew, comm. U. K. Duncan.

355/1. Arctous alpinus (L.) Nied. 111. Orkney; north shoulder of Knucker Hill, Westray, 300 ft., one plant, 1961, E. R. Bullard.

358/3. Vaccinium uliginosum L. 109, Caithness; Glas bheinn, near Inchnadamph, A. G. Kenneth.

†392/3. Symphytum orientale L. 51, Flint; waste ground, Meliden, 1961, H. Spooner, comm. B. Seddon.

†392/7. Symphytum grandiflorum DC. 66, Durham; well established on rough ground near the church, Gainford, I. C. Lawrence, comm. C. M. Rob.

†394/1. Trachystemon orientalis (L.) G. Don. 66, Durham; well established on rough ground near the church, Gainford, I. C. Lawrence, comm. C. M. Rob.

†406/1×3. Calystegia × lucana (Ten.) G. Don. 16, W. Kent; in about 20 localities within 3 miles of Tunbridge Wells; almost always clambering over hedges or fences; with or without parents, 1957→; Lamberhurst Hill, rampant over hedges, 1961: 17, Surrey; in 3 places near the Thames between Kew and Chiswick Bridges, 1961, C. A. Stace.

†413/4. Solanum sarrachoides Sendtn. 17, Surrey; abundant in market-garden field, Ewell, D. P. Young.

†420/5. Linaria dalmatica (L.) Mill. 6, N. Som.; established for many years on a railway embankment, Huish Episcopi, Miss C. Andrews, det. C. C. Townsend.

†428/1. Erinus alpinus L. 79, Selkirk, walls of Tushielaw Bridge, C. W. Muirhead.

†430/14. Veronica peregrina L. 72, Dumfries; Kinmount, near Annan, 1963, Mrs. P. Henderson, det. F. H. Perring.

§433/2. Rhinanthus stenophyllus (Schur.) O. Schwartz. *45, Pemb.; bog near Mathry, T. A. W. Davis, det. F. H. Perring.

435/2. Euphrasia scottica Wettst. 101, Kintyre; Sliabh gaoil, A. G. Kenneth, det. P. F. Yeo.

§435/8. Euphrasia rotundifolia Pugsl. *111, Orkney; Marwick Head, 1959, E. R. Bullard, det. P. F. Yeo.

§435/12. Euphrasia occidentalis Wettst. *106, E. Ross; sea shore, Rosemarkie, 1956, U. K. Duncan, conf. E. F. Warburg.

§435/15. Euphrasia confusa Pugsl. *106, E. Ross; Tarbet Ness, near Portmanomack, U. K. Duncan, conf. P. F. Yeo.

435/15×10. Euphrasia confusa × curta. 102, S. Ebudes; cliff turf, Eileach an Naoimh; Dun Chonnwill, Garvellach Isles, 1961, B.S.B.I. Field Meeting, det. P. F. Yeo, comm. C. W. Muirhead.

§435/19. Euphrasia rostkoviana Hayne. *98, Argyll; fields by river Add, Leckvary, A. G. Kenneth, det. P. F. Yeo.

440/4. Orobanche alba Steph. ex Willd. 98, Argyll; slate cliffs facing east, on roots of *Thymus drucei*, Easdale Island, 1961, B.S.B.I. Field Meeting, comm. C. W. Muirhead.

†455/0. Salvia officinalis L. 52, Anglesey; on the shore, Holyhead, 1963, S. G. Soal, det. and comm. C. C. Townsend.

§462/1. Lamium amplexicaule Fr. *112, Zetland; sandy roadside, Ringasta, 1955; common in sandy cornfield near Ringasta, W. Scott.

472/4. Plantago maritima L. †17, Surrey; many large clumps on waste ground near Norwood Junction station, once a turfing contractors' establishment, with *P. coronopus*, D. P. Young.

§473/1. Littorella uniflora (L.) Aschers. *35, Monmouth; Westwood Reservoir, Monmouth, on the sandy bed of the lake in shallow water; exposed during drought, Mrs. A. Parris, comm. B. Seddon.

§485/3. Galium mollugo L. *†98, Argyll; retaining wall of Kilmartin burn, probably not native, A. G. Kenneth. *†112, Zetland; several plants within enclosure of reservoir at Helliers Water, Unst, introduced by building operations, W. Scott.

†502/3. Bidens frondosa L. 37, Worcs.; south side of Worcester and Birmingham Canal, Stoke Wharf, south of Bromsgrove, J. A. Kiernan.

§†503/2. Galinsoga ciliata (Raf.) Blake. *33, E. Glos.; Cheltenham, Mrs. E. L. Sell, comm. Miss D. E. De Vesian.

§525/1. Eupatorium cannabinum L. *111, Orkney; cliffs at Kame of Stews, South Ronaldsay, several large patches, none accessible except by rope, E. R. Bullard.

§526/3. ANTHEMIS ARVENSIS L. *45, Pemb.; in grass ley, St. Ishmaels, T. A. W. Davis (1963, *Nature in Wales*, **8**, 131).

§540/7. CIRSIUM HETEROPHYLLUM (L.) Hill. *†111, Orkney; waste land, Cattie Maggie's Quarry, St. Ola, probably introduced; farm roadside, Fea, Orphir, planted, E. R. BULLARD.

†544/2. CENTAUREA MONTANA L. 112, Zetland; waste ground, near Stove, Sandwick, in two or three places, R. C. PALMER.

§562/1. LURONIUM NATANS (L.) Raf. *44, Carm.; Bishop's Pool, Abergwili, R. F. May (1963, *Nature in Wales*, **8**, 129).

§563/2. ALISMA LANCEOLATUM With. *35, Mon.; reens near Peterstone Wentlloog, S. G. HARRISON, comm. B. SEDDON.

§†598/2. ORNITHOGALUM NUTANS L. *28, W. Norfolk; roadside bank near the church, Bodney, F. H. PERRING, comm. C. P. PETCH and E. L. SWANN.

§†607/10. ALLIUM TRIQUETRUM L. ‡44, Carm.; roadside, Burry Port, R. F. May (1963, *Nature in Wales*, **8**, 129).

§624/2. CEPHALANTHERA LONGIFOLIA (L.) Fritsch. *8, S. Wilts.; Winterbourne Down, north-east of Salisbury, in beech plantation, with *C. damasonium*, 1956, V. S. SUMMERHAYES (*Hb. Kew*).

627/1. SPIRANTHES SPIRALIS (L.) Chevall. 47, Montg.; Careghofa Hill, Llanymynech, 1957, V. S. SUMMERHAYES (*Hb. Kew*).

§635/1. COELOGLOSSUM VIRIDE (L.) Hartm. 98, Argyll; Creog an fitheach, Loch Craignish: 101, Kintyre; rock outcrop near sea, Barra Thormaid, A. G. KENNETH. 102, S. Ebudes; Eileach an Naoimh, 1961, B.S.B.I. FIELD MEETING, comm. C. W. MUIRHEAD. *H.30, Cavan; one mile east of Kilgolagh, north of Lough Sheelin, in broken ground of old quarry, 1961, V. S. SUMMERHAYES (*Hb. Kew*).

636/1. GYMNADENIA CONOPSEA subsp. CONOPSEA. 44, Carm.; Pen Rhiwdar, Rhandermwyn, one colony in moorland turf at c. 1,000 ft., I. M. VAUGHAN.

643/1b. DACTYLORCHIS FUCHSII subsp. OKELLYI (Druce) Vermeul. 101, Kintyre; Mull of Kintyre near Vamh na ropa, A. G. KENNETH, det. V. S. SUMMERHAYES.

§†646/1. ACORUS CALAMUS L. *98, Argyll; Loch Awe, near Inverliever, A. G. KENNETH, det. E. C. WALLACE.

§663/8. CAREX DEMISSA Hornem. *78, Peebles; Heathpool Farm, north of Peebles, T. M. BELL.

§663/20. CAREX RIPARIA Curt. *43, Radnor; near Llananno, I. M. VAUGHAN, det. B. SEDDON.

663/57×71. CAREX × PSEUDOAXILLARIS K. Richt. 48, Mer.; side of Barmouth-Dolgellau road near Glandwr bridge, 1961, P. M. Benoit, det. A. O. Chater (recorded as *C. divulsa* in *Nature in Wales*, **7**, 161, 1961), *Nature in Wales*, **8**, 73 (1963).

674/2. CATAPODIUM MARINUM (L.) C. E. Hubbard. 33, E. Glos.; railway embankment, Ashchurch, F. H. PERRING, comm. D. E. DE VESIAN.

§676/3. POA BULBOSA L. *28, W. Norfolk; Wells sea-bank, 1963; an extension of range from the Yarmouth district, C. P. PETCH and E. L. SWANN.

§683/13. BROMUS LEPIDUS Holmberg. *†100, Clyde Isles; waste ground, Lamlash, 1961, U. K. DUNCAN. †111, Orkney; re-seeded grassland, Dale, Rendall, E. R. BULLARD, det. F. H. PERRING.

†683/19. BROMUS CARINATUS Hook. & Arn. 17, Surrey; roadside rubble-tip, Chelsham, F. G. & R. A. R. CLARKE, det. and comm. D. P. YOUNG.

685/5×3. AGROPYRON JUNCEIFORME × REPENS. 106, E. Ross; sea shore, Hilton near Balintore, C.S.S.F. FIELD MEETING, det. at KEW as *A. junceiforme* × *repens* var. *caesium* (C. Bolle) Beck, comm. U. K. DUNCAN. 111, Orkney; sandy shore, Burray, E. R. BULLARD, det. F. H. PERRING.

ABSTRACTS FROM LITERATURE

Compiled by D. H. Kent

Thanks are due to D. E. Allen, E. B. Bangerter, Dr. J. G. Dony and A. C. Jermy for their assistance.

SYSTEMATIC, ETC.

3. Isoetes. Reed, C. F., 1962, Marsileaceae, Azollaceae e Isoetaceae de Portugal, *Bol. Soc. Brot.*, **36**, 73-94. Gives a key to the identification of the species of *Isoetes* found in Portugal.—[D.H.K.]

5→ Pteropsida. Takahashi, C., 1962, Cytological study on induced apospory in ferns, *Cytologia*, **27**, 79-96.

5→ Pteropsida. Wagner, W. H., Junr., 1963, Biosystematics and taxonomic categories in lower vascular plants, *Regnum Veg.*, **27**, 63-71.

7/2. Hymenophyllum wilsonii Hook. Webb, D. A., 1963, Hymenophyllum wilsonii in the Burren, *Irish Nat. J.*, **14**, 155-156. Reports the discovery of *Hymenophyllum wilsonii* in the Burren, 20 miles from the previously known nearest locality.—[D.H.K.]

11. Adiantum. Nayar, K. B., 1962, Studies in Pteridaceae, 5. Contributions to the morphology of some species of the maidenhair ferns, *J. Linn. Soc.*, **58**, 185-199.

15. Asplenium. Meyer, D. E., 1963, Über neue und seltene Asplenien Europas, *Ber. Deutsch. Bot. Ges.*, **76**, 13-22.

16/1. Ceterach officinarum DC. Oppenheimer, H. R. & Halevy, J., 1962, Anabiosis of Ceterach officinarum Lam. et DC., *Bull. Research Council Israel*, Sect. D., **11**, 127-147.

16/1. Ceterach officinarum DC. Pettersson, B., 1962, Om Ceterach officinarum och dess ekologi, *Bot. Not.*, **115**, 237-240.

16/1. Ceterach officinarum DC. Van der Voo, E. E. & Van Leeuwen, C. G., 1963, Ceterach officinarum Lamk. & DC., *Gorteria*, **1**, 96-97. *Ceterach officinarum*, a very rare species in the Netherlands, was known only from a single locality near Utrecht. It is now extinct in that locality but a second station, also near Utrecht, has been discovered.—[D.H.K.]

19/2. Cystopteris dickieana Sim. Oberholzer, E., Sulger Büel, E. & Reichstein, T., 1962, Cystopteris dickieana Sim. am Foostock (Kanton Glarus), *Ber. Schweiz. Bot. Ges.*, **72**, 286-289.

21. Dryopteris. Segal, S., 1963, Pteridologische aantekeningen 2. Dryopteris tavelii in Nederland, *Gorteria*, **1**, 121-128. *Dryopteris* × *tavelii* Rothm. has been found in the Netherlands in several localities. The morphological characters are enumerated and compared with those of *D. filix-mas* and *D. borreri*. *D.* × *tavelii* showing a considerable variation in its characters, the general opinion that all its forms habitually resemble *D. borreri* much more than *D. filix-mas* is erroneous. The possible occurrence of secondary hybridisation (*D. tavelii* ♂ × *D. filix-mas* ♀) must not be excluded. Not all forms of the hybrid-swarm reproduce

apogamously, a quite sterile form, with relatively many characters of *D. filix-mas*, having been found at Winterswijk. *D. borreri* has never been recorded from the Netherlands.—[Author's summary.]

21/2. DRYOPTERIS BORRERI Newm. Döpp, W., Gatzi, W. & Oberholzer, E., 1963, Dryopteris borreri Newm. (D. paleacea Hand.-Mazz.) var. pseudo-disjuncta v. Travel, *Ber. Deutsch. Bot. Ges.*, **76**, 99-111.

21/2. DRYOPTERIS BORRERI Newm. Lawalrée, A., 1962, Dryopteris borreri Newm. (Aspidiaceae) en Rorêt de Soignes (Belgique), *Bull. Jard. Bot. Brux.*, **32**, 477-480.

21/2×1. DRYOPTERIS × TAVELII Rothm. Lawalrée, A., 1962, Dryopteris × tavelii Rothmaler en Hollande, *Gorteria*, **1**, 111-112. *Dryopteris* × *tavelii*, new to the flora of the Netherlands, is reported from three localities in the country. The differences between this hybrid and its parents are given.—[D.H.K.]

25. POLYPODIUM. Lenski, I., 1962, Nachweis von Paraphysen-tragenden Polypodien in Deutschland, *Ber. Deutsch, Bot. Ges.*, **75**, 189-192.

25. POLYPODIUM. Werner, K. & Schneider, U., 1962, Die Gattung Polypodium in Europa, *Kulturpflanze Beih.*, **3**, 234-248. The morphology and taxonomy of the three taxa included in the *Polypodium vulgare* complex are discussed in the light of the researches of Manton and Shivas. A further character, i.e. the number of branches of the secondary veins in the pinnae, is illustrated, but this, in fact, is unreliable. The authors disagree with Dr. Shivas' conclusion that each of the three cytotypes should be treated as a species and treat the hexaploid (*P. interjectum* Shivas) as **P. vulgare** subsp. **prionodes** Rothm. This gives rise to complications when the authors propose epithets for the hybrids *P. australe* × *vulgare* subsp. *prionodes* (*P.* × *shivasiae*) and *P. vulgare* subsp. *prionodes* × *vulgare* subsp. *vulgare* (*P.* × *mantoniae*), and both names are illegitimate according to the International Code. The chromosome numbers of these two hybrids are given incorrectly; *P.* × *shivasiae* should read $2n=148$, and *P.* × *mantoniae*, $2n=155$.—[A.C.J.].

27. AZOLLA.—See 3. ISOETES.

33. PINUS. Jährig, M., 1963, Beiträge zur Nadelanatomie und Taxonomie der Gattung Pinus L., *Willdenowia*, **3**, 329-366.

34/1. JUNIPERUS COMMUNIS L. Franco, J. D. A., 1962, Taxonomy of the common juniper, *Bol. Soc. Brot.*, **36**, 101-120. Describes the various subspecies of *Juniperus communis* and gives details of their geographical range.—[D.H.K.]

34/1. JUNIPERUS COMMUNIS L. Harrison, J. W. Heslop-, 1962, Notes on the juniper in Durham, *Vasc.*, **47**, 30. Reports the disappearance of *Juniperus communis* from coastal localities and elsewhere in Durham where it was formerly plentiful. The cause of this decline is not known.—[D.H.K.]

43/1. ANEMONE NEMOROSA L. Trela, Z., 1961, Przebieg mejozy w pylnikach Anemone nemorosa L., *Acta Biol. Cracov.*, **4**, 66-74. Studies on meiosis in the anthers of *Anemone nemorosa*.—[D.H.K.]

46/8. RANUNCULUS MARGINATUS subsp. TRACHYCARPUS (Fisch. & Mey.) Hayek. Shinners, L. H., 1962, Ranunculus trachycarpus (Ranunculaceae) in south central Louisiana: new to North America, *Sida*, **1**, 104-105.

67. Brassica. Curran, P. L., 1962, The nature of our Brassica crops. Part 1. Nomenclature and cytology, *Sci. Proc. Roy. Dublin Soc.*, Ser. A, **1**, 319-335.

67/1. Brassica oleracea L. Helm, J., 1962, Die laciniaten Sippen von Brassica oleracea L., *Kulturpflanze*, **10**, 111-121. The laciniate forms of *Brassica oleracea* as illustrated in some of the older herbals, are reviewed. Laciniate forms are rarely seen in cultivation to-day but it is concluded that they are best placed under var. *selenisia* L.—[D.H.K.]

67/J. Brassica juncea Coss & Czern. Vaughan, J. G., Hemingway, J. S. & Schofield, H. J., 1963, Contributions to a study of variation in Brassica juncea, *J. Linn. Soc. Bot.*, **58**, 435-448.

81. Cardaria. Mulligan, G. A. & Frankton, C., 1962, Taxonomy of the genus Cardaria with particular reference to the species introduced into North America, *Canad. J. Bot.*, **40**, 1411-1425. In the opinion of the authors the genus *Cardaria contains* five species. They are described and a key is given. Two taxa are transferred from *Lepidum* to *Cardaria*, as *C. propinqua* (Fisch. & Mey.) Mulligan & Frankton, and its var. *auriculata* (Boiss.) Mulligan & Frankton. Chromosome numbers reported, *C. chalepensis* (L.) Hand.-Mazz., $2n=80$, and *C. pubescens* (K. A. Mey.) Jarmelenko, $2n=16$, are new, as are those of naturally occurring and previously unrecognized hybrids between *C. chalapensis* and *C. draba*, $2n=64$. Three species, *C. draba, C. chalapensis* and *C. pubescens*, are introductions to N. America, where they have become prominent agricultural weeds. The morphological and specific limits of these three species are discussed in detail.—[Author's summary.]

C. draba is widespread in England, and *C. chalepensis* has occurred as a casual adventive but is rare. The key given in the above paper is reproduced below:—

Key to the Species, etc., of Cardaria

a. Dissepiment fenestrate, silicles subquadrangular ..... *C. fenestrata*
a. Dissepiment entire, silicles not angular.
  b. Silicles and sepals with short simple hairs, silicles strongly inflated, ovoid to subglobose ..... *C. pubescens*
  b. Silicles and sepals glabrous (sepals of *C. chalepensis* rarely with a few simple hairs), silicles inflated but not ovoid to subglobose.
    c. Silicles cordate, usually constricted at septum, especially towards base ..... *C. draba*
    c. Silicles not cordate, rarely constricted at septum, if constricted only slightly so towards base and apex.
      d. Cauline leaves slightly constricted above base; silicles subreniform to broadly obovate, if orbicular larger than 3·5 × 3·5 mm. ..... *C. chalepensis*
      d. Cauline leaves not constricted above base; silicles orbicular, 2·5 × 2·5 to 3·0 × 3·0 (3·5 × 3·5) mm.
        e. Cauline leaves narrowed to a sessile base ..... *C. propinqua* var. *propinqua*
        e. Cauline leaves with acute sagittate leaf bases ..... *C. propinqua* var. *auriculata*

—D.H.K.

102. Rorippa. Green, P. S., 1962, Watercress in the New World, *Rhodora*, **64**, 32-43. *Rorippa microphylla, R. nasturtium-aquaticum* and their hybrid are all introductions from Europe in the New World. *R. nasturtium-aquaticum* is widespread in the U.S.A. and is recorded from

every state. *R. microphylla* and *R.* × *sterilis* are much less common and are largely restricted to the north-eastern states and Canada.

In Central and S. America and the West Indies only *R. nasturtium-aquaticum* is known.—[D.H.K.]

105. Erysimum. Konětopský, A., 1963 Nejduležitějsi výsledky taxonomické revise československých druhu rodu Erysimum L., *Preslia*, **35**, 135-145. A revision of the Czech species of *Erysimum*.—[D.H.K.]

113. Viola. Gadella, T. W. J., 1963, A cytotaxonomic study of Viola in the Netherlands, *Acta Bot. Neerl.*, **12**, 17-39. Chromosome numbers of the 10 species of *Viola* found in the Netherlands are given.

V. riviniana has $2n = 35$, 40, 45, 46 and 47 (most often $2n = 40$), but it was not possible to find correlations between morphological characters and chromosome numbers. In spite of variability in this species it was not found possible to divide Dutch material into subspecies.—[D.H.K.]

113. Viola. Valentine, D. H., 1962, Variation and evolution in the genus Viola, *Preslia*, **34**, 190-206.

123. Silene. Kruckerberg, A. R., 1962, Intergeneric hybrids in the Lychnideae (Caryophyllaceae), *Brittonia*, **14**, 311-321.

123/13. Silene dioica (L.) Clairv. Sivadjian, J., 1962, Sur un pied de Lychnis dioica anormal, *Bull. Soc. Bot. France*, **109**, 126. A short illustrated note on an abnormal male specimen of *Silene dioica* with green petals and calyx lobes split almost to the base.—[E.B.B.]

124. Lychnis—See 123. Silene.

127/1. Dianthus armeria L. Lehr, J. H., 1963, A new color form of Dianthus armeria, *Bull. Torr. Bot. Club*, **90**, 207. A plant of *Dianthus armeria* with petals which were white on the inner face and greenish-white on the outer face, dotted with black was found in Rockland County, New York. It is described as f. *albiviridis* Lehr, f. nov.—[D.H.K.]

141. Arenaria. Favarger, c., 1963, Les Sablines du Jura: Arenaria ciliata L. et Arenaria gothica Fries, *Le Monde des Plantes*, **338**, 2-3.

144/G. Gypsophila. Barkoudah, Y. I., 1962, A revision of Gysophila, Bolanthus, Ankyropetalum and Phryna, *Wentia*, **9**, 1-203

145/1. Corrigiola litoralis L. Coker, P. D., 1962, Corrigiola litoralis L. (Biological Flora), *J. Ecol.*, **50**, 833-840.

149. Montia. Moore, D. M., 1963, The subspecies of Montia fontana L., *Bot. Not.*, **116**, 16-30. The cosmopolitan *Montia fontana* L. is a variable complex of forms which has been variously subdivided by workers in Europe and N. America. The latest treatments in both continents acknowledge the difficulty of splitting the complex on the basis of habit and gross morphological characters: this seems to be due to the considerable phenotypic plasticity, the limits of which cannot yet be adequately determined. In both regions testa characters have given the best basis for the delimitation of taxa and it is here pointed out that the same four taxa are common to both N. America and Europe, and that three of these also occur in the Southern Hemisphere.

The four taxa are:—*M. fontana* subsp. *fontana*, subsp. *chondrosperma* (Fenzl) Walters, subsp. *amporitana* Sennen (subsp. *intermedia* (Beeby) Walters) and subsp. *variabilis* Walters. It is suggested that subsp. *amporitana* and subsp. *chondrosperma* have been introduced in to N. America and the Southern Hemisphere, that subsp. *fontana* has followed

the normal circumboreal migration route to N. America from Europe, and may have followed the mountain ranges into the Southern Hemisphere or it may be alien there. Subsp. *variabilis* may well have migrated from Europe to N. America in the same manner as subsp. *fontana*. Information on the chromosome numbers of the taxa is summarised.—[Author's summary].

149/1. MONTIA FONTANA L. De Jongh, S. E. & Hegnauer, R., 1963, Montia fontana L. in een stadstuintje, *Gorteria*, **1**, 131-132. A short account of a terrestrial form of *Montia fontana* subsp. *rivularis* found in a garden at Leiden. As this form closely resembled some forms of *M. fontana* subsp. *fontana* the differences between the two subspecies are discussed.—[D.H.K.]

154/4. CHENOPODIUM ALBUM L. Shamsiyev, G., 1963, The effect of day-length on the development of different forms of Chenopodium album, *Bot. Zhurn.*, **48**, 118-122 (in Russian).

157/1. HALIMIONE PORTULACOIDES (L.) Aellen. Malcoste, R., 1963, Germination des Semences d'Obione portulacoides Moq., *Bull. Soc. Linn. Normandie*, Ser. 10, **3**, 24. Substances soluble in water present in the seed of *Halimione portulacoides* cause difficulties in germination. In view of the dense populations that may be observed of this plant some further study of its asexual multiplication is desirable.—[E.B.B.]

157/1. HALIMIONE PORTULACOIDES (L.) Aellen. Malcoste, R., 1963, Bouturage chez Obione portulacoides Moq., *Bull. Soc. Linn. Normandie*, Ser. 10, **3**, 24-29. Experiments on different soils and in different liquid media were carried out to show the facility with which this plant forms adventitious roots to counteract its poor seed germination.—[E.B.B.]

158/1. SUAEDA MARITIMA (L.) Dumort. Boucaud, J., 1963, Etude morphologique et écophysiologique de la germination de trois variétés de Suaeda maritima Dum., *Bull. Soc. Linn. Normandie*, **3**, 63-74. Statistical and morphological studies of the seeds of *Suaeda maritima* confirm the existence of three varieties—*S. macrocarpa* Moq., *S. flexilis* Focke and *S. vulgaris* Moq., on the coastal regions of Calvados.—[E.B.B.]

160. SALICORNIA. Langlois, J., 1962. Aspects morphologiques et écophysiologiques de la germination de trois variétés de Salicornia herbacea L., *Bull. Soc. Linn. Normandie*, **10** (**2**), 160-174. Statistical population studies on the seeds of three varieties of *Salicornia herbacea*, including the effects of various factors, e.g. darkness, cold, saline solutions, on germination in nature and in the laboratory.[E.B.B.]

160. SALICORNIA. Langlois, J., 1962, Croissance morphogenése et floraison de trois variétés de Salicornia herbacea L., *Bull. Soc. Linn. Normandie*, **10** (**2**), 261-276. Studies in the growth and flowering, in nature and in the green house, of three varieties of *Salicornia herbacea*.—[E.B.B.]

160/5. SALICORNIA PUSILLA Woods. Dalby, D. H., 1963, Seed dispersal in Salicornia pusilla, *Nature*, **199**, 197-198.

166. LINUM. Osborne, W. P., & Lewis, W. H., 1962, Chromosome numbers of Linum from the southern United States and Mexico, *Sida*, **1**, 63-68. Cytological examination of material of *Linum usitatissimum* from Texas revealed $n = 15$.[D.H.K.]

166/2. LINUM USITATISSIMUM L. Kulpa, W. & Danert, S., 1962. Zur Systematik von Linum usitatissimum, *Kulturpflanze Beih.*, **3**, 341-388. A detailed account of *Linum usitatissimum* including a key to the numerous forms and varieties in cultivation.—[D.H.K.]

170/8. OXALIS LATIFOLIA Kunth. Robb, S. M., 1963, Oxalis latifolia Kunth, *New Phyt.*, **62**, 75-79. Some morphological and anatomical aspects of the Devon and Cornwall form of *Oxalis latifolia* are presented, together with an account of the method by which vegetative propagation is achieved. Although distribution by seed does not appear to play a large part in disseminating the species in this country, a few capsules and seeds are recorded as having occurred in Exeter, the seeds being non-viable.

The behaviour and possible functions of the fleshy roots which develop are discussed.—[Author's summary].

171/3. IMPATIENS PARVIFLORA DC. Evans, G. C. & Hughes, A. P., 1961-62. Plant growth and the aerial environment: 1. Effect of artificial shading on Impatiens parviflora, *New Phyt.*, **60**, 150-180. 2. Effects of light intensity on Impatiens parviflora, *loc. cit.*, **61**, 154-174.

183→ LEGUMINOSAE. Meusel, H. & Jager, H., 1962, Über die Verbreitung einiger Papilionaceen-Gattungen, *Kulturpflanze Beih.*, **3**, 249-285.

190/1 × 2. MEDICAGO × VARIA Martyn. Farragher, M. A. & Curran, P. L., 1962. Observations on native sand-lucerne, *Sci. Proc. Roy. Dublin Soc.*, Ser. B., **1**, 59-66. The populations of sand lucerne (*Medicago* × *varia* Martyn) growing in north Co. Dublin are not quite uniform. Variations in vegetative characteristics and in fertility are described and are attributed to segregation of the original triploid hybrids and possibly to backcrossing to *M. sativa*. Seed viability, as determined from the number of seedlings becoming successfully established, is less than 1% for the great bulk of the populations but reaches 20% in a vigorous segregate found in one population. Pollen viability ranges from 0 to 40%. The flowers are more difficult to trip than those of cultivated varieties.—[Author's summary].

192/17. TRIFOLIUM HYBRIDUM L. Hjelmqvist, H., 1962, A case of virescence in Trifolium hybridum, *Bot. Not.*, **115**, 429-436.

192/18. TRIFOLIUM REPENS L. Harberd, D. J., 1963, Observations on natural clones of Trifolium repens, *New Phyt.*, **62**, 198-204.

206. VICIA. Rousi, A., 1962, Cytotaxonomical studies on Vicia cracca L. and V. tenuifolia Roth. 2. Meiosis, *Hereditas*, **48**, 390-408.

207/10. LATHYRUS JAPONICUS Willd. Hansen, A., 1963, En plante, der breder sig (Strand-aert, Lathyrus maritimus), *Bot. Tidsskr.*, **58**, 297-299.

211. RUBUS. Thompson, M. M., 1962, Cytogenetics of Rubus, 3. Meiotic instability in some higher polyploids, *Amer. J. Bot.*, **49**, 575-582.

212. POTENTILLA. Swan, G. A. & Swan, M. 1962, A Northumbrian plant thought to be extinct, *Vasc.*, **47**, 29-30. Reports the discovery of a *Potentilla* apparently intermediate between *P. crantzii* and *P. tabernaemontani* on basalt near the coast of Cheviotland. Both *P. crantzii* and *P. tabernaemontani* have been recorded for Northumberland but were thought to have been long extinct. Specimens of the plant have been taken to Cambridge for cultivation and study.—[D.H.K.]

212/12. POTENTILLA CRANTZII (Crantz) G. Beck ex Fritsch. Czapik, R.,

1961, Bandania embriologiczne nad rodzajem Potentilla L. 1. P. crantzii, *Acta Biol. Cracov.*, **4**, 97-119. Embryological studies on tetraploid and hexaploid types of *Potentilla crantzii*.—[D.H.K.]

220. ALCHEMILLA. Bradshaw, M. E., 1962, The distribution and status of five species of the Alchemilla vulgaris L. aggregates in Upper Teesdale, *J. Ecol.*, **50**, 681-706. In the Teesdale-Weardale area of northern England are five of the less common species of the *Alchemilla vulgaris* aggregate. The distributions of each in the Teesdale area, Britain and Europe are shown on maps.

A. monticola, *A. acutiloba* and *A. subcrenata* are Northern Montane species. In Britain, *A. monticola* is mainly a meadow plant centred in Teesdale; *A. acutiloba* is in both dales, mainly along roadsides; *A. subcrenata* is restricted to a few meadows in both dales. In Europe these species occur in meadows and open woodlands; the floristics of the Teesdale meadows and a Swedish park-meadow show a close similarity.

The Arctic species *A. wichurae* has a disjunct distribution in northern England and Scotland; the Arctic-Alpine *A. glomerulans* is in Teesdale (one record in Weardale) and Scotland; both species occur in more or less natural habitats in these regions and in meadows in the Teesdale area. On the Continent both grow in open coniferous and Betula woodland and sub-Alpine meadows, which show some floristic similarity to British habitats.

Sub-fossil remains from Zones II-V are determinable to the genus only. There is evidence to suggest that suitable habitats for the five species could have been available from late-glacial times. The late development and continued pastoral farming of the dales presumably favoured the survival of the *Alchemilla* species.

The distribution patterns of *A. wichurae* (and to a less extent *A. glomerulans*) are so similar to those of known Late-glacial relicts that those Alchemillas are considered to be relict species in Britain. The synanthropic characteristics and almost complete absence from natural habitats indicate against such a history for the Northern-Montane species, but it is equally difficult to find evidence to support the introduction of the three species into only these two valleys. Thus the status of these species is still not clear.—[Author's summary.]

225. ROSA. Rowley, G., 1961, The Scotch Rose and its garden descendents, *J. Roy. Hort. Soc.*, **86**, 433-437.

235/5. SEDUM ANGLICUM Huds. Turesson, G., 1963, Sedum anglicum Huds. funnen på Christiansö, *Bot. Not.*, **116**, 105-106. *Sedum anglicum*, hitherto known in Scandinavia only from the west coasts of Norway and Sweden has been found in four places on the small island of Christianso, north-east of Bornholm. It is believed to have been introduced by the agency of sea birds from either Norwegian, Swedish or English colonies. The chromosome number of the Christianso plants is $2n = \pm 144$.—[D.H.K.]

242. CHRYSOSPLENIUM. Packer, J. G., 1963, The taxonomy of some North American species of Chrysosplenium section alternifolia Franchet., *Canad. J. Bot.*, **41**, 85-103.

246. RIBES. Keep, E., 1963, Interspecific hybridization in Ribes. *Genetica*, **33**, 1-23.

247. DROSERA. Shinners, L. H., 1962, Drosera (Droseraceae) in the

south-eastern United States: an interim report, *Sida*, **1**, 53-59. A key is given to the identification of the species of *Drosera* found in the south-eastern United States, and descriptive and nomenclatural notes are provided. Both *D. rotundifolia* and *D. intermedia* occur in the area.—[D.H.K.]

254. EPILOBIUM. Van Ooststroom, S. J. & Reichgelt, T. J., 1963, Een Nieuw-zeelandse Epilobium in Nederland verwilderd, *Gorteria*, **1**, 93-95. *Epilobium inornatum* Melville, a species native in New Zealand, and cultivated in rock-gardens, has established itself in a number of parks and gardens in the Netherlands.—[Author's summary.]

256. OENOTHERA. Gregory, D. P., 1963, Hawkmoth pollination in the genus Oenothera, *El Aliso*, **5**, 357-384.

262. CALLITRICHE. Schotsman, H. D., 1961. Notes on some Portuguese species of Callitriche, *Bol. Soc. Brot.*, **35**, 95-128. Describes and gives a key to the species of *Callitriche* found in Portugal. *C. stagnalis* is very common, while *C. pedunculata*, *C. truncata* sensu lato and *C. obtusangula* have scattered distributions.

The plant passing as "*C. autumnalis*" is distinct from that species and is described as *C. lusitanica* sp. nov., it is confined to the Iberian peninsula. *C. deflexa* A. Br. from America has been found as an adventive.

C. platycarpa and *C. palustris* have not yet been found in Portugal but may occur there.—[D.H.K.]

267/1. CHAMAEPERICLYMENUM SUECICUM (L.) Aschers. & Graebn. Barkman, J. J., 1963, Over de standplaats van Cornus suecica in Oostfriesland, *Gorteria*, **1**, 100-105. An account of the habitat of *Chamaepericlymenum suecicum* in pine and spruce plantations near Wilhelmshaven, north-west Germany, one of its southernmost stations in Europe.—[D.H.K.]

314. DAUCUS. Nehou, J., 1962, Recherches sur la taxonomie du genre Daucus (Ombellifères) en Bretagne, *Bull. Soc. Sci. Bretagne*, **36**, 81-107. Some account of the taxonomic history of the genus *Daucus* is given and the conclusion is drawn, after study of the genus in the field and experimentally, that the three sub-species occurring in Brittany should be arranged thus:

D. carota L. subsp. *eu-carota*
subsp. *gadecaei* Ry. & C.
D. gingidium L. subsp. *gummifer* Lmk.

The following table is given showing differentiating characters:—

	Subsp. EU-CAROTA	Subsp. GUMMIFER	Subsp. GADECAEI
HABIT	upright, primary branch making angle 15°-30° with stem.	more spreading, angle 30°-90°.	prostrate or ascending.
LEAVES	mat, thin, 0·1-0·25 mm. thick.	shining, 2-6 mm. thick.	slightly shining, 2-5 mm. thick.
PILOSITY	strong.	variable.	none.
UMBELS AT FLOWERING	flat.	convex.	flat.
FRUITING UMBELS	very concave.	flat or very slightly concave.	very concave.
FRUITS	spines long and straight.	spines ascending, length variable.	spines ascending.
YOUNG ROSETTES	leaves upright.	leaves prostrate.	leaves prostrate.

(The last character only valid in experimentally grown plants.)

—[E.B.B.]

319/5. EUPHORBIA HYBERNA L. Stelfox, A. W., 1963, Does the Irish Spurge (Euphorbia hyberna L.) produce viable seeds when grown in a garden?, *Irish Nat. J.*, **14**, 123. *Euphorbia hyberna* rarely produces fertile seed under cultivation but an instance is discussed where numerous self-sown seedlings appeared in a garden.—[D.H.K.]

325. RUMEX. Gajewski, W., Swietlinska, Z. & Zuc., J., 1963, Relationship between biosystematics and formal taxonomy of the Rumex acetosa group, *Regnum Veg.*, **27**, 16-23.

325. RUMEX. Zuc, J., 1963, An investigation on polyploidy and sex determination within the genus Rumex, *Acta Soc. Bot. Pol.*, **32**, 5-67.

325/2. RUMEX OBTUSIFOLIUS L. Marly, V., Engelhardt, M. & Silberschmidt, K., 1963, The influence of temperature on the germination response to light of seeds of Rumex obtusifolius, *Phyton* (Argentina), **19**, 163-167.

335. BETULA. Jansson, C. A., 1962, Some species and varieties of Betula section Verrucosae Suk. in East Asia and North West America. *Acta Hort. Got.*, **25**, 103-156.

335. BETULA. Vassilijev, I. G., 1961, De genere Betula L. notulae systematicae et geographicae, *Not. Syst. Herb. Inst. Bot. Nom. V. L. Komarov Acad. Sci. U.R.S.S.*, **21**, 93-103.

341. QUERCUS. Edlin, H. L., 1963, A modern Sylva, or a discourse of forest trees. 4. Oak, *Quart. J. For.*, **57**, 20-28.

341/4. QUERCUS PETRAEA (Mattuschka) Liebl. Jarvis, P. G., 1963, The effect of acorn size and provenence on the growth of seedlings of the sessile oak, *Quart. J. For.*, **57**, 11-19.

342/3. POPULUS TREMULA L. Gramuglio, G., 1962, Osservazioni sul comportamento sessuale del Populus tremula L. in Italia, *Giorn. Bot. Ital.*, **69**, 78-90.

356/1. CALLUNA VULGARIS (L.) Hull. Whittaker, E. & Gimingham, C. H., 1962, The effects of fire on the regeneration of Calluna vulgaris (L.) Hull from seed, *J. Ecol.*, **50**, 815-822.

357. ERICA. Verdus, M.-C., 1962, Les rameaux nains des bruyères européennes, *Bull. Soc. Hist. Nat. Toulouse*, **97**, 61-77. The dwarf branches, or the very short secondary branches of the inflorescence bearing scaly leaves, of some species of *Erica*, e.g. *E. mediterranea*, *E. vagans* and *E. carnea*, are described and stated to be variable between the species. To use them as characters for classification demands examination of a great number of examples and the number of verticils produced is affected by ecological conditions.—[E.B.B.]

358. VACCINIUM. Aalders, L. E. & Hall, I. V., 1962, New evidence on the cytotaxonomy of Vaccinium species as revealed by stomatal measurements from herbarium specimens, *Nature*, **196**, 694.

361/1. MONESES UNIFLORA (L.) A. Gray. Borkman, J. J., 1963, Pyrola uniflora in Oostfriesland, *Gorteria*, **1**, 109-110. A description is given of a locality for *Moneses uniflora* in north-west Germany, probably its most western station in the plains of central Europe. Details of associated species are provided.—[D.H.K.]

363/1. DIAPENSIA LAPPONICA L. Steele, F. L., 1963. A double-flowered form of Diapensia lapponica. *Rhodora*, **65**, 21. A double-flowered form of *Diapensia lapponica* is reported from the Presidential Range, New Hampshire, U.S.A.—[D.H.K.]

365→ PLUMBAGINACEAE. Labbe, A., 1962. Les Plumbaginacées, structure, développement, répartition, conséquences en systématique. *Trav. Lab. Biol. Vég. Grenoble et du Lautaret*, **1962**, 9-113.

367. PRIMULA. Valentine, D. H. & Woodell, S. R. J., 1963. Studies in British Primulas. 10. Seed incompatibility in intraspecific and interspecific crosses at diploid and tetraploid levels. *New Phyt.*, **62**, 125-143.

379. VINCA. Penzes, A., 1962. Description des nouvelles espèces de Vinca et de Schoenus de la péninsule des Balkans. *Acta Bot. Acad. Sci. Hung.*, **8**, 329-333. *Vinca balcanica* Penzes, allied to *V. major* but smaller in all its parts and with pilose leaves, is described as a new species.—[E.B.B.]

379. VINCA. Salisbury, E. J., 1961. The fruiting of the periwinkles (Vinca major and V. minor). *J. Roy. Hort. Soc.*, **86**, 489-492.

400. MYOSOTIS. Merxmuller, H. & Grau, J., 1963. Chromosomenzahlen aus der Gattung Myosotis L. *Ber. Deutsch. Bot. Ges.*, **76**, 23-29. The following counts are given from German material of *Myosotis*—*M. palustris*, $2n=22$ and 66; *M. caespitosa*, $2n=22$ and 44; *M. alpestris*, $2n=24$ and 48; *M. sylvatica*, $2n=18$; and *M. arvensis*, $2n=52$.—[D.H.K.]

401/3. LITHOSPERMUM ARVENSE L. Hanelt, P. & Motel, J. Schultze-, 1962. Beobachtungen an einer blaublühenden Sippe von Lithospermum arvense L. *Kulturpflanze*, **10**, 122-131. In mid-Europe a blue-flowered variant of Lithospermum arvense (var. *coerulescens* DC.) sporadically occurs. It appears to be a more primitive plant than the white-flowered variety, and morphological, ecological, phenological and geographical differences are pointed out.

Many forms of *L. arvense* occur from southern Russia to the Near East and the species is worthy of detailed study.—[D.H.K.]

406. CALYSTEGIA. Holland, P. C., 1963, A survey of Calystegia in the London Area: Progress Report, 1962, *Lond. Nat.*, **42**, 20.

406/4. CALYSTEGIA SOLDANELLA (L.) R.Br. Asai, Y., 1962, On Calystegia soldanella (Linn.) Roemer et Schultes forma rubriflora Asai, f. nov., *J. Jap. Bot.*, **37**, 230. A beautiful dark-pinkish-flowered form of *Calystegia soldanella* collected on the Pacific coast of Honshu, Japan, is described as f. *rubriflora*, forma nov.—[D.H.K.]

416→ SCROPHULARIACEAE. Pedersen, A., 1963, Scrophulariaceernes og Orobanchaceernes udbredelse; Danmark, *Bot. Tidsskr.*, **59**, 1-140. The distribution of the *Scrophulariaceae* and *Orobanchaceae* in Denmark are outlined, discussed, and illustrated by maps.—[D.H.K.]

429. DIGITALIS. Werner, K., 1962, Die Kultivierten Digitalis-Arten, *Kulturpflanze Beih.*, **3**, 168-182. Keys and describes the species of *Digitalis* in cultivation.—[D.H.K.]

429/1. DIGITALIS PURPUREA L. Tavant, H., Miller, B., Mange, M. & Perney, J. P., 1962, Observation tératologique chez Digitalis purpurea; présence d'une étamine supplémentaire, *Bull. Soc. Hist. Nat. Doubs*, **64**, 53-55. A list of the known floral abnormalities in *Digitalis purpurea* is given and a further one noted; the presence of a fifth stamen in a specimen grown in a botanical garden.—[E.B.B.]

430. Veronica. Bangerter, E. B., 1963, A note on Speedwells, Countryside, **19**, 374-375. Gives notes on *Veronica filiformis*, *V. chamaedrys* and *V. montana*.—[D.H.K.]

432. Pedicularis. Sprague, E. F., 1962, Parasitism in Pedicularis, *Madroño*, **16**, 192-200.

432. Pedicularis. Sprague, E. F., 1962, Pollination and evolution in Pedicularis (Scrophulariaceae), *El Aliso*, **5**, 181-209.

435. Euphrasia. Marcello, A., 1962, Ritmo fenoantesico in Euphrasia L., *Giorn. Bot. Ital.*, **69**, 190-195. A study of the phenoanthesis rhythm in *Euphrasia*, with particular reference to Italian species.—[D.H.K.]

436. Odontites. Marcello, A., 1962, Problemi fenologici in Odontites Haller, *Giorn. Bot. Ital.*, **69**, 195-199. Studies on the phenoanthesis rhythm in *Odontites*.—[D.H.K.]

436. Odontites. Pedersen, A., 1963, Odontites verna (Bell.) Dum. subsp. pumila (Nordst.) A. Pedersen in Nederland, *Gorteria*, **1**, 128-131. *Odontites verna* subsp. *pumila* is described, and the difference in characters from *O. verna* subsp. *serotina* are given. *O. verna* subsp. *pumila* is known from sandy pastures along the coasts of south-west Sweden, Denmark, north and north-west Germany and the Netherlands. A map illustrates its distribution in the latter country, based on material in the Rijksherbarium, Leiden.

A survey of the ecology, distribution and differences in flowering time of *O. verna* subsp. *verna*, subsp. *litoralis* (Fr.) A. Pedersen, subsp. *fennica* (Markl.), subsp. *serotina* (Wettst.) E. F. Warb. and subsp. *pumila* (Nordst.) A. Pedersen is also provided.—[D.H.K.]

439→ Orobanchaceae. See 416. Scrophulariaceae.

440/8. Orobanche minor Sm. Evans, D. C., 1962, What about broomrape?, *Agric. Gaz. N.S.W.*, **73**, 200-202. A short account of the history and biology of *Orobanche minor*, together with identification notes and data on control methods.—[D.H.K.]

444. Verbena. Moldenke, H., 1961-63, Materials towards a monograph of the genus Verbena, *Phytologia*, **8**, 103-152, 175-216, 230-272, 274-322, 371-384, 395-453 and 460-496.

445. Mentha. Fujita, Y., 1963, On Mentha citrata Ehrh., *J. Jap. Bot.*, **38**, 171-174. *Mentha citrata* is a relict species in the genus *Mentha* and the mother species of *M. aquatica* and *M. spicata*, though it is often considered to be a hybrid. *M. piperita* may be a hybrid between *M. aquatica* and *M. spicata*.

The phylogenetic relationships between *M. citrata*, *M. aquatica*, *M. spicata* and *M. piperita* are discussed.—[D.H.K.]

445. Mentha. Marklund, G., 1963, Mentha gentilis-komplexet och M. dalmatica i Östfennoskandien, *Mem. Soc. Pro. Fauna Flora Fenn.*, **38**, 2-18.

448. Thymus. Bonnet, A. L. M., 1962, Contribution a l'étude caryologique du genre Thymus, 2. Apropos de Thymus pulegioides L. des Etats-unis d'Amérique et d'Europe, *Natur. Monspel.*, Ser. Bot., **13**, 3-5.

448. Thymus. Machule, M., 1963, Österreichs Thymus-sippen, *Phyton*, **10**, 128-144. The species of *Thymus* found in Austria are described and keyed.—[D.H.K.]

448. Thymus. Roussine, N., 1962. Note complémentaire sur Thymus froelichianus Opiz, espèce méconnue de la flore française. *Natur. Monspel.*, Ser. Bot., **13**, 63-69.

451. Calamintha. Shinners, L. H., 1962, Calamintha (Labiatae) in the southern United States. *Sida*, **1**, 69-75. The distribution of *Calamintha* species in the southern United States is reviewed and a key provided to their identification. *Calamintha nepeta* (L.) Savi occurs over a fairly wide area, and *Acinos arvensis* is found as an introduction from Europe.—[D.H.K.]

452/1. Acinos arvensis (Lam.) Dandy—See 451. Calamintha.

472. Plantago. Langhe, J. E. de & Rompaey, E. van, 1962, Plantago intermedia Gilib. (Plantaginaceae) en Belgique. *Bull. Jard. Bot. Brux.*, **32**, 481-487. The taxonomic history of *Plantago intermedia* indicates that many authors have considered it as a subspecies or variety of *P. major*. A detailed description is given to show differentiation enough to justify the retention of specific rank.—[E.B.B.]

472. Plantago. Losa, T. M., 1962, Los "Plantagos" Españoles, *An. Jard. Bot. Madrid*, **20**, 7-50. The Spanish species of *Plantago* are described and a key provided to their identification.—[D.H.K.]

475. Campanula. Podlech, H., 1962, Beitrag zur Kenntnis der Subsektion Heterophylla (Witas.) Fed. der Gattung Campanula L., *Ber. Deutsch. Bot. Ges.*, **75**, 237-244.

495. Valeriana. Weberling, F., 1961, Die Infloreszenzen der Valerianaceen und ihre systematische Bedeutung, *Abh. Math.-Naturwiss. Akad. Wiss. Lit. Mainz*, **5**, 155-281.

506. Senecio. Ornduff, R., Raven, P. H., Kyhos, D. W. & Kruckeberg, A. R., 1963, Chromosome numbers in Compositae, 3. Senecioneae, *Amer. J. Bot.*, **50**, 131-139.

509. Petasites. Sourek, J., 1962, Rod Petasites v Československu, *Rozpr. Peske. Akad.*, **72**, 1-120.

517. Antennaria. Chrtek, J. & Pouzar, Z., 1962, A contribution to the taxonomy of some European species of the genus Antennaria Gaertn., *Acta Univ. Carol.*, **1962**, 105-136.

518. Solidago. Beaudry, J. R., 1963, Studies on Solidago L., b. Additional chromosome numbers of taxa of the genus Solidago, *Canad. J. Gen. & Cytol.*, **5**, 150-174.

521. Erigeron. Solbrig, O. T., 1963, The South American species of Erigeron, *Contr. Gray Herb.*, **191**, 3-79. The South American species of *Erigeron* are monographed and a key is given to their identification.—[D.H.K.]

540. Cirsium. Lovkist, B., 1962, A case of probable introgression in Cirsium, *Bot. Not.*, **115**, 385-386. An account of a hybrid swarm between *Cirsium heterophyllum* and *C. oleraceum* in a meadow at Trolleholm, Skåne, Sweden.—[D.H.K.]

547/1. Lapsana communis L. Asai, Y., 1962, Lapsana communis L., a new alien plant found in Honshu, *J. Jap. Bot.*, **37**, 118. *Lapsana communis* found as an adventive at Honshu in 1959 was new to Japan. It is thought to have been introduced from the United States.—[D.H.K.]

552/2×1. TRAGOPOGON PORRIFOLIUS × PRATENSIS Van der Ploeg, D. T. E., 1963, Tragopogon porrifolius L. × T. pratensis L. in Friesland, *Gorteria*, **1**, 99-100. *Tragopogon porrifolius* × *pratensis*, hitherto known in the Netherlands only in botanic gardens, where it occurred spontaneously, has been found in a wild state in the province of Friesland.

A survey of the distribution of *T. porrifolius* in Friesland is also provided.—[D.H.K.]

556. SONCHUS. Boulos, L., 1962, Cytotaxonomic studies in the genus Sonchus, 4. The generic status of some species earlier treated as Sonchus, *Bot. Not.*, **115**, 58-60.

559/4. CREPIS MOLLIS (Jacq.) Aschers. Harrison, J. Heslop-, 1962, Crepis mollis (Jacq.) Aschers. in Co. Durham (66), *Vasc.*, **47**, 29.

559/4. CREPIS MOLLIS (Jacq.) Aschers. Swan, G. A. & Swan, M., 1962, The soft hawk's-beard (Crepis mollis Aschers.) in Northumberland, *Vasc.*, **47**, 28-29.

559/6. CREPIS CAPILLARIS (L.) Wallr. Barthelmess, A. & Bauchinger, M., 1963, B-chromosomen in Crepis capillaris, *Genetica*, **33**, 165-166.

560. TARAXACUM. Hou-Liu, S. Y., 1963, The chromosome counts of some Taraxacum species, *Acta Bot. Neerl.*, **12**, 76-83.

560. TARAXACUM. Van Soest, J. L., 1961, Quelques nouvelles espèces de Taraxacum, natives d'Europe, *Acta Bot. Neerl.*, **10**, 280-306.

560/c. CARTHAMUS. Honelt, P., 1962, Monographische Übersicht der Gattung Carthamus L. (Compositae), *Fedde. Rep.*, **67**, 41-180. Describes and keys the species of *Carthamus* and provides distributional and cytological data.—[D.H.K.]

570. ELODEA. St. John, H., 1962, Monograph of the genus Elodea (Hydrocharitaceae), Part 1. The species found in the Great Plains, the Rocky Mountains and the Pacific States and Provinces of North America, *Research Studies* (Washington State Univ.), **30**, 19-44. A revision of the Canadian and western North American species of *Elodea*. The author recognises seven species—*E. bifoliata* sp. nov., related to *E. canadensis*, but the latter differs in having whorled upper leaves, longer pistillate sepals, and dilated petals; *E. brandegeae* sp. nov.; *E. canadensis; E. columbiana* sp. nov.; *E. longivaginata* sp. nov.; *E. nevadensis* sp. nov., and *E. nuttallii*.

Keys are provided to the identification of the various species, some of which are illustrated by line-drawings. The geographical ranges of the species are also given.—[D.H.K.]

570. ELODEA. St. John, H., 1963, Monograph of the genus Elodea (Hydrocharitaceae), Part 3. The species found in northern and eastern South America, *Darwiniana*, **12**, 639-652. Four species are recognised by the author—*Elodea granatensis* Humb. & Bonpl., *E. callitrichoides* (Rich.) Casp., *E. ernstae* sp. nov., and *E. richardii* sp. nov.

**E. ernstae*, which is closely related to *E. callitrichoides*, occurs commonly in north-eastern Argentina. Line-drawings illustrate some of the species and a key is provided to their identification.—[D.H.K.]

572/1. VALLISNERIA SPIRALIS L. Van Ooststroom, S. J. & Reichgelt, T. J., 1963, Nogmaals Vallisneria spiralis L., *Gorteria*, **1**, 95-96. After

*See Plant Notes, p. 232.—ED.

Vallisneria spiralis was found in 1960 at Maastricht in the canal from that town to Liège, the species was discovered in 1962 in large quantities in the overflow of the river Meuse, in the Bosscherveld, north of Maastricht. —[Authors' summary].

574. TRIGLOCHIN. Binet, P., 1962, Les semences de Triglochin palustre L. et de Triglochin maritimum L.: étude comparée de leur germination, *Bull. Soc. Linn. Normandie*, **10** (2), 148-160. Studies have shown that the seeds of *Triglochin maritima* germinate much more readily than those of *T. palustre*. Biometrical and physiological study of the fruits of *T. palustre* reveals the existence of two distinct races.—[E.B.B.]

577. POTAMOGETON. Stern, K. R., 1961, Chromosome numbers in nine taxa of Potamogeton, *Bull. Torr. Bot. Club*, **88**, 411-414. The following chromosome numbers are reported from N. American material—*Potamogeton gramineus*, $n=26$, and *P. natans*, $n=21$.—[D.H.K.]

579/2. RUPPIA MARITIMA L. Reese, G., 1962, Systematik und Cytologie der Ruppia maritima, *Ber. Deutsch. Bot. Ges.*, **75**, 365.

605/14. JUNCUS MARITIMUS Lam. Binet, P., 1962, Les dormances induites. Précisions nouvelles sur l'induction d'une dormance chez les graines de Juncus maritimus Lamk., *Bull. Soc. Linn. Normandie*, **10** (2), 213-222.

607/5. ALLIUM VINEALE L. Lazenby, A., 1963, Studies on Allium vineale L. 6. Effects of cutting, *J. Ecol.*, **51**, 55-73.

615. SISYRINCHIUM. Oliver, R. L. & Lewis, W. H., 1962, Chromosome numbers of Sisyrinchium (Iridaceae) in eastern North America, *Sida*, **1**, 43-48. Material of *Sisyrinchium bermudiana* from Louisiana and Texas both had $n=48$.—[D.H.K.]

619. ROMULEA. Marin, A., 1962, Contribution a l'etude des Romulea de la Côte Nord-Atlantique Marocaine, *Trav. Inst. Scient. Chérifien, Sér. Bot.*, **27**, 7-48.

624→ ORCHIDACEAE. Bisse, J., 1962, Eine Beitrag zur Kenntnis der deutschen Orchideen flora, *Fedde. Rep.*, **67**, 181-189. Notes on *Dactylorchis*, *Gymnadenia*, and *Platanthera* in Germany. Two new subspecies are described—*Gymnadenia conopsea* subsp. *montana* and *Platanthera bifolia* subsp. *graciliflora*.—[D.H.K.]

624→ ORCHIDACEAE. Kliphuis, E., 1963, Cytological observations in relation to the taxonomy of the orchids of the Netherlands, *Acta Bot. Neerl.*, **12**, 172-194. Chromosome counts are given for the species of *Orchidaceae* found in the Netherlands. *Listera ovata* usually proved to be $2n=34$, but $2n=35$ and 36 were also counted.

The separation of *Orchis* and *Dactylorchis* was confirmed cytologically but it seems incorrect to regard *D. fuchsii* as a distinct species, it seems rather that *D. fuchsii* and *D. maculata* represent two types within a complex.—[D.H.K.]

634/1. HERMINIUM MONORCHIS (L.) R.Br. Brightman, F. H., 1963, Darwin's musk orchid bank at Downe, Kent, *Trans. Kent F.C.*, **1**, 150-154.

643. DACTYLORCHIS. Sjögren, U., 1963, Smarre uppsatser och meddelonden, *Bot. Not.*, **116**, 102-104. Short descriptions are given of the hybrids *Dactylorchis incarnata* subsp. *cruenta* × *maculata* and *D. maculata* × *traunsteineri*, recently found in Ostergötland.—[D.H.K.]

643/6. DACTYLORCHIS MAJALIS (Reichb.) Vermeul. Roberts, R. H., 1963, Dactylorchis majalis in Caernarvonshire, *Nature in Wales*, **8**, 43-46. The occurrence of *Dactylorchis majalis* subsp. *cambrensis* in Caernarvonshire is reported and an account given of the plants compared with those known from Cardiganshire and Anglesey. A list of associated species is provided. —[D.H.K.]

650/4. LEMNA GIBBA L. Matreyev, V. I., 1963, On the flowering of Lemna gibba, *Bot. Zhurn.*, **48**, 272 (in Russian).

655. SCIRPUS. Koyama, T., 1963, The genus Scirpus Linn. Critical species of the section Pterolepis, *Canad. J. Bot.*, **41**, 1107-1131. The section Pterolepis of the genus *Scirpus* is enlarged to include section *Schoenoplectus*, and a key to all known species is given.—[D.H.K.]

655. SCIRPUS. Otzen, D., 1962, Chromosome studies in the genus Scirpus L., Section Schoenoplectus Benth. et Hook., in the Netherlands, *Acta Bot. Neerl.*, **11**, 37-46. Cytological studies on *Scirpus* section *Schoenoplectus* in the Netherlands. *Scirpus lacustris*, *S. tabernaemontani* and *S. triqueter* all had $n=21$, and *S. americanus* had $n=39$.—[D.H.K.]

656/A. ELEOCHARIS AUSTRIACA Hayek. Swan, G. A. & Swan, M., 1962, Eleocharis austriaca Hayek in Northumberland and Cumberland, *Vasc.*, **47**, 29.

659. SCHOENUS. Penzes, A., 1962, Description des nouvelles espèces de Vinca et de Schoenus de la péninsule des Balkans, *Acta Bot. Acad. Sci. Hung.*, **8**, 329-333. *Schoenus karpatii* Penzes is described as a new species. It differs from *S. nigricans* in its smaller size and shorter bracts, and from *S. ferrugineus* in its broader, shorter sheath-blades.—[E.B.B.]

659/1. SCHOENUS NIGRICANS L. Boatman, D. J., 1962, The growth of Schoenus nigricans in blanket bog peats. 1. The response to pH and the level of potassium and magnesium, *J. Ecol.*, **50**, 823-832.

663. CAREX. Langhe, J. E. de, 1963, Un Carex nouveau pour la flore Belge: Carex curvata Knaf., *Lejeunia*, **16**, 1-5. *Carex curvata*, a central European species, has been discovered in Belgium.—[D.H.K.]

663/61. CAREX ARENARIA L. Binet, P., 1963, Quelques aspects de la germination chez Carex arenaria L., *Bull. Soc. Linn. Normandie*, ser. 10, **3**, 74-79. The effect of light and dryness on the germination of *Carex arenaria* is studied.—[E.B.B.]

664→ GRAMINEAE. Riedman, S. R., 1962, *World Provider. The Story of Grass.* Pp. 191. London. Price 15/-. A popular account of the economic uses of many species of Gramineae.—[D.H.K.]

664→ GRAMINEAE. Scholz, H., 1963, Zur Gramineenflora Deutschlands, *Ber. Deutsch. Bot. Ges.*, **76**, 135-146. Notes on German species of Gramineae, including *Bromus lepidus*, *Glyceria declinata*, *Poa alpina* and *P. pratensis* subsp. *irrigata*.—[D.H.K.]

664→ GRAMINEAE. Tateoka, T., 1962, Notes on some grasses. 14. Enumeration of genera of Festuceae, *Bot. Mag.*, Tokyo, **75**, 336-343. An attempt is made to provide a more natural grouping of the *Festuceae* based on morphological studies, with particular attention on the features of flowers and caryopses.

Fifty-four genera are enumerated and their geographical distribution and possible evolutional history are discussed.—[D.H.K.]

667/1. Molinia caerulea (L.) Schrank. James, D. B., 1962, Factors affecting the growth of Molinia caerulea on a calcareous soil, *J. Ecol.*, **50**, 521-527. Experiments were carried out to determine the factors which bring about the natural exclusion of *Molinia caerulea* from well-drained calcareous soils. It has been shown that a high concentration of calcium as such is not inimical to the growth of *Molinia* under both free-draining and waterlogged soil conditions. It was found that by increasing very greatly the phosphate level of a well-drained calcareous soil, *Molina* could be caused to grow successfully in such a soil. It was concluded that neither high pH nor high calcium levels in themselves restrict the growth of *Molinia*, but that inability to obtain phosphorus is a factor that prevents *M. caerulea* from growing on dry calcareous soils.—[Author's summary.]

667/1. Molinia caerulea (L.) Schrank. Webster, J. R., 1962, The composition of wet vegetation in relation to aeration of the ground-water and soil. 2. Response of Molinia caerulea to controlled conditions of soil aeration and ground-water movement, *J. Ecol.*, **50**, 639-650.

670/6. Festuca rubra L. Harberd, D. J., 1961, Observations on population structure and longevity of Festuca rubra, *New Phyt.*, **60**, 184-210.

671. Lolium. Vasek, F. C. & Ferguson, J. K., 1963, A note on taxonomic characters in Lolium, *Madroño,* **17**, 79-82. The authors point out that differential characters given for *Lolium perenne* and *L. multiflorum* in some botanical manuals do not work in practice. Studies on populations of *L. multiflorum* and *L. perenne* at Riverside, California, lead to the conclusion that the two "species" are best referred to one variable species. —[D.H.K.]

676. Poa. Chrtek, J. & Václav, J., 1962, Contribution to the systematics of species of the genus Poa L., section Ochlopoa (A. et Gr.) V. Jiras, *Preslia,* **34**, 40-68.

678/1. Dactylis glomerata L. Calder, M., 1963, Environmental control of flowering in Dactylis glomerata, *Nature,* **197**, 882-883.

678/1. Dactylis glomerata L. Grigoriyev, Y. S., 1962, New data on the ecology of the orchard grass (Dactylis glomerata), *Bot. Zhurn.*, **47**, 3-16 (in Russian). The author considers that the genus *Dactylis* comprises two species—*D. glomerata* L., widespread in natural populations and in cultivation in Europe, western Siberia, mid Asia, N. Africa, etc., and *D. smithii* Link, found only in the Canary Islands. The two species differ considerably in a number of morphological characters as well as in ecological preferences.

Three subspecies of *D. glomerata* are recognised—subsp. *aschersoniana*, occurring in the woods of central Europe; subsp. *himalayensis*, found in the western Himalayas and south-east China, and subsp. *euglomerata*, widely distributed over most of the geographical range of the species. The first two subspecies are regarded as mesophytes, and the third subspecies is undoubtedly drought-resistent.

It is the opinion of the author that neither the formation of the drought-resistent *D. glomerata* subsp. *euglomerata*, nor the separation of the species *D. glomerata* and *D. smithii* were due to polyploidy.—[D.H.K.]

684. BRACHYPODIUM. Tateoka, T., 1962, Notes on the genus Brachypodium (Gramineae), *J. Jap. Bot.*, **37**, 225-230. The evolution and distribution of *Brachypodium* species is discussed.—[D.H.K.]

685. AGROPYRON. Heneen, W. K., 1962, Karyotype studies in Agropyron junceum, A. repens and their spontaneous hybrids, *Hereditas*, **48**, 471-502.

685. AGROPYRON. Löve, A., 1962, Biosystematische Analyse der Elytrigia Junceae Gruppe, *Kulturpflanze Beih.*, **3**, 74-85. The taxa in section *Elytrigia* of the genus *Agropyron* are described and keyed, and their geographical distribution is reviewed.—[D.H.K.]

687. HORDEUM. Bowden, W. M., 1962, Cytotaxonomy of the native and adventive species of Hordeum, Eremopyrum, Secale, Sitarion and Triticum in Canada, *Canad. J. Bot.*, **40**, 1675-1711. The following chromosome numbers are reported from Canadian material—*Hordeum glaucum*, $2n=14$; *H. californicum*, $2n=14$; *H. pusillum*, $2n=14$; *H. leporinum* var. *leporinum*, $2n=28$; *H. murinum*, $2n=28$; and *H. jubatum*, $2n=28$.—[D.H.K.]

712. ANTHOXANTHUM. Jones, B. M. G., 1963, Anthoxanthum alpinum A. and D. Löve new to the British Isles, *Nature*, **198**, 610. A grass referable to *Anthoxanthum alpinum** has been collected from a snow patch in the Cairngorms near the Inverness-shire-Aberdeenshire border.

The Scottish plants conform morphologically to the description of *A. alpinum* but differ from the European plant in having $2n=20$, the latter is a diploid with $2n=10$. The author suggests that the difference in chromosome number may raise doubts about the specific status of the plant.—[D.H.K.]

713. PHALARIS. Anderson, D. E., 1961, Taxonomy and distribution of the genus Phalaris, *Iowa State Coll. J. Sci.*, **36**, 1-96.

713/1. PHALARIS ARUNDINACEA L. Vose, P. B., 1962, Delayed germination in reed-canary grass, Phalaris arundinacea L., *Ann. Bot.*, **26**, 197-206

714. PARAPHOLIS. Hansen, A., 1963, "Lepturis" i Danmark, *Bot. Tidsskr.*, **58**, 299-300.

714. PARAPHOLIS. Runemark, H., 1962, A revision of Parapholis and Monerma in the Mediterranean, *Bot. Not.*, **115**, 1-17. A survey of *Parapholis* and *Monerma* is given, including a key, descriptions, chromosome numbers, ecology and distribution.

A new eastern Mediterranean species, *P. marginata* Run., related to *P. incurva*, is described.

A specimen of the western Mediterranean species *P. pycnantha* (Hack.) C. E. Hubbard, collected by G. C. Druce at Iver, Bucks., where it was adventive, is cited from Herb. Wien.—[D.H.K.]

718. ECHINOCHLOA. Paunero, E., 1962, Las Paniceas Españolas, *An. Jard. Bot. Madrid*, **20**, 53-90. The species of *Digitaria*, *Echinochloa*, *Panicum* and *Setaria* found in Spain are described and keyed.—[D.H.K.]

*Dr. A. Melderis, British Museum (Natural History), London, S.W.7, who is familiar with *Anthoxanthum alpinum* Löve and Löve in Europe has examined plants from Scotland which have been referred to this species. He is of the opinion that they belong to a glabrous mountain form of *A. odoratum*.—ED.

718. Echinochloa. Yabuno, T., 1962, Cytotaxonomic studies on the two cultivated species and the wild relatives in the genus Echinochloa. *Cytologia*, **27**, 296-305. Cytotaxonomic studies on *Echinochloa crus-gallii* and *E. frumentacea*.—[D.H.K.]

719. Digitaria. Gould, F. W., 1963, Cytotaxonomy of Digitaria sanguinalis and D. adscendens. *Brittonia*, **15**, 241-244. Counts on N. American material shows that *Digitaria sanguinalis* has $2n=36$ and *D. adscendens* $2n=54$.—[D.H.K.]

719. Digitaria.—See 718. Echinochloa.

720. Setaria. Rominger, I. M., 1962, Taxonomy of Setaria (Gramineae) in North America, *Illinois Biol. Monogr.*, **29**, 1-132.

720. Setaria.—See 718. Echinochloa.

716. Spartina. Marchant, C. J., 1963, Corrected chromosome numbers for Spartina × townsendii and its parent species, *Nature*, **199**, 929. Cytological examination of material of *Spartina maritima* from six localities on the south and east coasts of England showed that the species had $2n=60$. *S. alterniflora* from Southampton Water had $2n=62$, and *S.* × *townsendii* $2n=124$, 120 and 122.—[D.H.K.]

720/P. Panicum.—See 718. Echinochloa.

Characeae. Forsberg, C., 1963, Some remarks on Wood's revision of Characeae, *Taxon*, **12**, 141-144.

TOPOGRAPHICAL

O, Channel Islands. Virville, A. D. de, 1963, Contribution à l'étude de la flore marine des Iles Anglo-Normandes. Première partie: Guernsey, Herm, Jethou, Sercq, Burhou, Aurigny, les Casquets, *Rev. Gen. Bot.*, **70**, 1-66. The geology, climate, etc., of these islands are studied and the published works on the terrestrial and marine floras are discussed. The islands are dealt with separately, the main study being algological, but where appropriate some consideration is given to the phanerogamic flora. A number of characteristics common to all is discussed finally. The paper is illustrated with maps and photographs.—[E.B.B.]

1, W. Cornwall. Kay, E., 1963, *Isles of Flowers. The Story of the Isles of Scilly*. Edition 2. London. Price 21/-. Contains a few notes on the flora of the islands.—[D.H.K.]

7-8, Wilts. Grose, D., 1962, Wiltshire plant notes (22) (Fifth supplement to the Flora of Wiltshire), *Wilts. Arch. & N.H.S. Mag.*, **48**, 269-272.

7-8, Wilts. Grose, D., 1962, The treatment of roadside verges in Wiltshire, *Wilts. Arch. & N.H.S. Mag.*, **48**, 274-291. A detailed study of the effects on, and changes in, the flora of road verges which were (1) mown only (2) treated with a selective weedkiller (3) treated with a grass growth regulator. Data are also provided on the effects of a brushwood killer on roadside scrub.

Selective weedkiller had little effect when applied in early spring except to distort *Anthriscus sylvestris*. Weedkiller has only a moderate effect on the composition of the vegetation for, after spraying, 59 different species of non-Gramineous plants survived on the 160 yards of verge surveyed. Species which suffered most from the effects of weedkiller were *Taraxacum officinale*. *Vicia sepium*. *Galium aparine* and *Anthriscus sylvestris*.

Grasses, particularly *Arrhenatherum elatius*, replaced the species destroyed by the weedkiller.—[D.H.K.]

10, WIGHT. White, T., 1962, Botanical notes for 1961, *Proc. Isle of Wight N.H. & Arch. Soc.*, **5**, 268-269.

12, N. HANTS. & 22, BERKS. Webster, J. R., 1962, The composition of wet vegetation in relation to aeration of the ground-water and soil. 1. Field studies of ground-water and soil aeration in several communities, *J. Ecol.*, **50**, 619-638. Ecological studies on wet-heath vegetation in three localities in Bramshill and Crowthorne Forests.—[D.H.K.]

16, W. KENT. Brightman, F. H., 1963, Darwin's musk orchid bank at Downe, Kent, *Trans. Kent F.C.*, **1**, 150-154 *Herminium monorchis* has not been seen on Darwin's famous orchid bank at Downe since c. 1950. The area has become much overgrown by *Brachypodium pinnatum*, scrub, and various mosses. The mat of grass and moss over an area of about a quarter of an acre was removed by vigorous raking. During the following season the growth of flowering plants was much more vigorous on the raked part of the bank and the orchid species present made much more leaf growth than similar plants in unraked area. *Herminium monorchis* did not, however, reappear.—[D.H.K.]

16, W. KENT, 17, SURREY, 18-19, ESSEX, 20, HERTS, 21, MIDDX. & 24, BUCKS. Holland, P. C.. 1963, A Survey of Calystegia in the London Area: Progress Report, 1962, *Lond. Nat.*, **42**, 20.

16, W. KENT, 17, SURREY, 18-19, ESSEX, 20, HERTS, 21, MIDDX. & 24, BUCKS. Lousley, J. E., 1963, Botanical records for 1962, *Lond. Nat.*, **42**, 8-12. Gives a selection of interesting records made in the London Area during 1962.—[D.H.K.]

17, SURREY. Castell, C. P., 1963, The survey of Bookham Common. Twenty-first year. Progress Report for 1962: Vegetation, *Lond. Nat.*, **42**, 93-95. Notes are provided on the flora of various areas on Bookham Common, e.g. under dense hawthorn, sites of bonfires, scrub clearance areas, etc.—[D.H.K.]

17, SURREY. Howard, M., 1962, *A List of Flowering Plants and Ferns of Haslemere and District.* Pp. 34. Haslemere Natural History Society. Arbroath.

17, SURREY. Prime, C. T., 1963, *The Young Botanist.* Pp. xi + 210. London & Edinburgh. Contains a number of references to the flora of the Warlingham district.—[D.H.K.]

17, SURREY. Smith, J. E. & Welch, B., 1963, Plants of Hurst Park Race-Course, Surrey, *Lond. Nat.*, **42**, 13-15. An account of a number of interesting plants seen on the occasion of three visits to Hurst Park Racecourse, on the Surrey side of the Thames, upstream from Hampton Court Bridge, in 1962.

The account is of particular interest as racing ended in October 1962 and the property is to be developed and partly built on.—[D.H.K.]

17, SURREY. Welch, B., 1963, Some plants of East Sheen Common, *Lond. Nat.*, **42**, 16-18.

18, S. ESSEX. Bayliss, B., 1963, Botanical field work in a school garden, Lond. Nat., 2, 19-20. A brief account of field work carried out in a school garden at Ilford by a sixth-form botany class.—[D.H.K.]

20, HERTS. Evans, L. Lloyd-, 1963, Preliminary flora of Rye Meads, Rye Meads, 1962, *Ann. Rep. Rye Meads Ringing Group,*, **2**, 32-36. A preliminary account of the flora of Rye Meads including a systematic list of the 230 species recorded there.—[D.H.K.]

20, HERTS. Meyer, H. & Meyer, D., 1963, Flowers and trees: a guide to local plant life, in Ross, D. A., (Editor), 1963, *In and around Letchworth. An introduction to the Natural History of the first Garden City*, 9-15. Letchworth Nat. Soc.

21, MIDDLESEX. Groves, E. W., 1962, Vegetation of the Sanctuary, in Bartlett, T. L., 1962, *Bird Sanctuary*, 39-57. An ecological account of the vegetation of Perivale Wood, the Selborne Society's bird sanctuary, near Greenford. A systematic list of plants found there is appended.—[D.H.K.]

31, HUNTS. Gilbert, J. L., 1963, Flora, *Ann. Rep. Hunts. Fauna & Flora Soc.*, **1962**, 4-6. Gives details of the more interesting records made in Huntingdonshire during 1962.—[D.H.K.]

37, WORCS. Hadfield, M., 1963, Shrawley Wood, *Quart. J. For.*, **57**, 35-43. An account is given of the history and present state of Shrawley Wood, c. 7 miles north of Worcester. The wood is noted for the presence of *Tilia cordata*, and notes are provided on this and other trees. **T. cordata** var. **vitifolia** C. K. Schneid., apparently hitherto unrecorded for Britain, is reported.—[D.H.K.]

38, WARWICK. Cooper, G., 1963, Notes on the flora of the Percy Estate, *Ann. Rep. Warwick N.H.S.*, **9**, 16.

44, CARM., 45, PEMB., 46, CARD., 47, MONTG., 48, MER., 49, CAERN. & 52, ANGLESEY. Benoit, P. M., 1963, Field Notes: Plants, Nature in Wales, **8**, 70-73. Gives a number of interesting records including some new vice-county records.—[D.H.K.]

49, CAERN. Roberts, R. H., 1963, Dactylorchis majalis in Caernarvonshire, *Nature in Wales*, **8**, 43-46.

61-65,YORK. Rob, C. M., 1963, One hundred and first Annual Report: Botany, *The Nat.*, **1963**, 19-22. Includes a few new vice-county records.—[D.H.K.]

66, DURHAM. Harrison, J. W. Heslop-, 1962, Crepis mollis (Jacq.) Aschers. in Co. Durham (66), *Vasc.*, **47**, 29.

66, DURHAM. Harrison, J. W. Heslop-, 1962, Notes on the Juniper in Durham, *Vasc.*, **47**, 30.

66, DURHAM, 67-68, NORTHUMBERLAND, 80, Roxburgh & 81, Berwick. Harrison, J. Heslop-, 1962-63, Records: flowering plants and ferns, *Vasc.*, **47**, 30-31 & **48**, 8.

67-68, NORTHUMBERLAND. Swan, G. A. & Swan, M., 1962, The soft hawk's-beard (Crepis mollis Aschers.) in Northumberland, *Vasc.*, **47**, 28-29.

67-68, NORTHUMBERLAND & 70, CUMBERLAND, Swan, G. A. & Swan, M., 1962, Eleocharis austriaca Hayek in Northumberland and Cumberland, *Vasc.*, **47**, 29.

68, CHEVIOTLAND. Swan, G. A. & Swan, M., 1962, A Northumbrian plant thought to have been extinct, *Vasc.*, **47**, 29-30.—See 212. POTENTILLA.

71, Man. Allen, D. E., 1960, Ten years of Manx botany, *Peregrine*, **3** (2), 33-37. A review of the origin, general aims and broad results to date of the work on the projected Flora of the island. 675 species of vascular plants have so far been reliably recorded, exclusive of microspecies, casuals and derivatives of intentional human introduction such as garden escapes and herbal relics. Only 23 out of this total have been added through field-work since 1949. Man has 68% and 45% of the vascular plants recorded for Ireland and Great Britain respectively.—[D.A.A.]

71, Man. Bing, M. B., 1960, Some wild flowers of the Ayres, *Peregrine*, **3** (2), 40-41.

71, Man. Allen, D. E., 1962, Our knowledge of the Manx fauna and flora in 1961: a statistical summary, *Peregrine*, **3** (3), 93-95. A comparison of the total number of species recorded for various groups of the Manx fauna and flora confirms the rule, postulated earlier by the author, that "for any given order . . . . Man should have about two-thirds of the Irish total and about two-fifths of the British".—[D.E.A.]

Scotland. Hunter, R. F., 1962, Hill sheep and their pasture, a study of sheep grazing in south-east Scotland, *J. Ecol.*, **50**, 651-680.

112, Zetland. Scott, W., 1963, Notes on the flora of Shetland, *New Shetlander*, **65**, 16-18.

H.9, Clare. Webb, D. A., 1963, Hymenophyllum wilsonii in the Burren, *Irish Nat. J.*, **14**, 155-156.

H.38, Down. Stelfox, A. W., 1963, Some plants not seen by Stewart and Praeger in the Newcastle District of Co. Down, *Irish Nat. J.*, **14**, 120-121.

ECOLOGICAL (See also TOPOGRAPHICAL)

Clymo, R. S., 1962, An experimental approach to part of the calcicole problem, *J. Ecol.*, **50**, 707-731.

Couteaux, M., 1962, Recherches écologiques et palynologiques sur les forêts de Gaume. Note 1. Les groupements végétaux forestiers actuels des environs de Tontelange, Note 2. Etude palynologique de la tourbière du Buchelbusch à Bonnert et de la tourbière du Heideknapp à Tontelage, *Bull. Soc. Roy. Bot. Belg.*, **94**, 177-278. The first note comprises a detailed ecological study of oak, beech and hornbeam forests in Luxembourg and the second a pollen analysis which bears out the findings of the first. Maps, tables and diagrams illustrate the work.—[E.B.B.]

Durin, L., 1962, Les groupements à Buxus du Bas Chablais (Haute Savoie, France), *Bull. Soc. Roy. Bot. Belg.*, **95**, 85-107. The various associations in which the Box occurs in the area are discussed. It is found in sub-associations of *Querceto-Carpinetum*.—[E.B.B.]

Gehu, J. M., 1962, Quelques observations sur la falaise crétacée du cap Blanc-Nez (P.D.C.) et étude de la végétation de la paroi abrupte: Brassicetum oleraceae nov. ass., *Bull. Soc. Roy. Bot. Belg.*, **95**, 109-129. The vegetation of the steep chalk cliffs of Cape Blanc-Nez is studied and a new association, *Brassicetum-oleraceae* described. In an appended note the author refers to a manuscript by Dr. F. Rose, which indicates that further study will probably show that this association of French cliffs will prove to be a poor vicariant of the *Brassiceto-Limonietum binervosi* of Kentish cliffs.—[E.B.B.]

Lambert, J. M. & Williams, W. T., 1962, Multivariate methods in plant ecology. 4. Nodal analysis, *J. Ecol.*, **50**, 775-802.

Le Brun, P., 1962, Tour d'horizon floristique sur les Alpes Françaises, *Vegetatio*, **11**, 55-70. Lists of species, with distribution, occurring in the French Alps are given under phytogeographical headings. Those confined to the French Alps are indicated as are those rare but widespread in the central Alps; Arctic and Arctic-Alpine species and those with a disjunct distribution are also noted as well as extinct or doubtfully recorded species.—[E.B.B.]

Macfadyen, A. & Newbould, P. J., 1963, Fifty years of ecology, *Nature*, **198**, 1247-1248. An account of the fiftieth Jubilee meeting of the British Ecological Society held at Queen Elizabeth College, London, from 28-30 March 1963.—[D.H K.]

Moore, J. J., 1962, The Braun-Blanquet system: a reassessment, *J. Ecol.*, **50**, 761-769.

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HISTORICAL

Allen, D. E., 1962, From candle-box to collecting tin: the origin of the botanist's vasculum, *Country Life*, **131**, 718-719. A condensed version of the paper in *Proc. B.S.B.I.*, **3**, 135-150 (1959), incorporating some additional evidence.—[D.E.A.]

Anonymous, 1963, Natural History Museum: opening of new Botanical Gallery, *Country-side*, **19**, 378-379.

Dony, J. G., 1963, Botanists in Hertfordshire, *Hertfordshire Past & Present*, **3**, 39-44. An account of some of the botanists who have contributed records to the Hertfordshire flora from the sixteenth century onwards. —[D.H.K.]

Mays, R. H., 1962, Henry Doubleday—the Epping Naturalist, *Essex Nat.*, **30**, 313-324.

Stafleu, F. A., 1963, Dates of botanical publications 1788-1792, *Taxon*, **12**, 43-86. A revue of the botanical publications issued between 1788 and 1792 including a chronological list, and an alphabetical list of the works with publication dates and additional historical data.—[D.H.K.]

PALAEOBOTANY

Bradley, P. C. Sylvester-, 1963, Post-tertiary speciation in Europe, *Nature*, **199**, 126-130. An account of a symposium by the Systematics Association held at the University of Leicester in April, 1962.—[D.H.K.]

Heim, J., 1963, Recherches sur les relations entre la végétation actuelle et le spectre pollinique récent dans les Ardennes belges, *Bull. Soc. Roy. Bot. Belg.*, **96**, 5-92. This study is in three main parts; the production and

dispersal of pollen grains (aeropalynology); pollen analysis of a number of regions in the Ardennes; conclusion showing general agreement between the spectra and the vegetation.—[E.B.B.]

Kotlaba, F., 1962, Nálezy fosilniho jeleniho juzyku-Phyllitis scolopendrium (L.) Newm.—v Ceskoslovensku a poznanky k jeho recentnimu rozsiřeni, *Preslia*, **34**, 255-267. Studies on the fossil remains of *Phyllitis scolopendrium* in Czechoslovakia.—[D.H.K.]

Lambert, C. A., Pearson, R. G. & Sparks, B. W., 1963, A flora and fauna from late Pleistocene deposits at Sidgwick Avenue, Cambridge, *Proc. Linn. Soc.*, **174**, 13-29.

Tralau, H., 1962, Die spättertiären Fagus-Arten Europas, *Bot. Not.*, **115**, 147-176.

West, R. G., 1962, A note on Taxus pollen in the Hoxnian Interglacial, *New Phyt.*, **61**, 189-190.

NOMENCLATURE

Chrtek, J. & Holub, J., 1963, Poznámky k taxonomii a nomenklature rodu Evax Gaertn. a Filago L., *Preslia*, **35**, 1-17. A nomenclatural discussion on *Evax* and *Filago*. The species at present placed under *Evax* are transferred to *Filago* and the species at present under *Filago* are transferred to *Gifola* Cass. under the following combinations—*G. germanica* (L.) Dumort. (*F. germanica* L.), *G. spathulata* (Presl.) Reichb. (*F. spathulata* Presl), **G. apiculata** (G. E. Sm.) Chrtek & Holub, comb. nov. (*F. apiculata* G. E. Sm.).—[D.H.K.]

Eichler, H., 1963, Homonyms, paranyms and orthographic variants, *Taxon*, **12**, 15-20.

Gilbert, J. L., 1963, Convolvulus dubius, nom. nov., *J. Northants. N.H.S. & F.C.*, **34**, 149-150. The author points out that K. A. Wilson in the most recent taxonomic treatment of *Convolvulus* (J. Arnold Arb., 47, 308, 1960), treats *Calystegia* as a section of that genus on the grounds that the characters separating *Calystegia* from *Convolvulus* are too insignificant to warrant segregation into two genera.

In dealing with *Calystegia pulchra* Brummitt & Heywood it is shown that the name *Convolvulus pulcher* has already been used by Dietrich (Syn. Plant., 1, 667, 1839) for a plant now called *Argyreia guichenotii*, Choisy, and thus cannot be used for Brummitt & Heywood's plant. The name **Convolvulus dubius**, nom. nov. is proposed for *Calystegia pulchra*.—[D.H.K.]

Rothmaler, W., 1962, In Floram Germaniae Animadversiones, 1, *Fedde. Rep.*, **67**, 1-11. A number of new combinations and new names in the German flora are given. *Lotus corniculatus* var. *hirsutus* Koch is raised to **L. corniculatus** subsp. **hirsutus** (Koch) Rothm. *Apium dulce* Mill. is reduced to **A. graveolens** subsp. **dulce** (Mill.) Lemke & Rothm. *Calystegia pulchra* Brummitt & Heywood is reduced to **C. silvatica** subsp. **pulchra** (Brummitt & Heywood) Rothm. While *C. sepium* var. *coloratus* Lge. (*C. colorata* (Lge.) Dörfler) is raised to subspecific rank as **C. sepium** subsp. **baltica** Rothm. The correct name for *Dactylorchis majalis* (Reichb.) Vermeul. is said to be **D. latifolia** (L.) Rothm.—[D.H.K.]

Savory, T., 1962, *Naming the Living World.* Pp. xiii †128. English Universities Press Ltd. London. Price 12/6. An introduction to the principles of biological nomenclature. A most useful work which includes information on the codes of nomenclature and the practice of nomenclature.—[D.H.K.]

Solbrig, O. T., 1963, Subfamilial nomenclature of Compositae, *Taxon*, **12**, 229-235. The author provides an annotated list of the validly published names and correct citations for subfamilial categories of the family *Compositae.*—[D.H.K.]

Walters, S. M., 1962, Generic and specific concepts and the European flora, *Preslia,* **34**, 207-226.

MISCELLANEOUS

Astié, M., 1962, Tératologie spontanée et expérimentale. Exemples. Application à l'étude de quelques problèmes de biologie végétale, *Ann. Sci. Nat.*, **3**, 619-844. Some account of previous work on teratology is given and material and methods used in the experimental work are described in the first part of this study. In the second part very detailed attention is given to abnormalities in *Saponaria officinalis* which serves as the main example. In subsequent parts other species, e.g. *Digitalis purpurea, Euphorbia cyparissias,* are taken as examples and an analysis of results is made. An index of technical terms and a bibliography are supplied.—[E.B.B.]

Baker, H. G., 1961, The adaptation of flowering plants to nocturnal and crepuscular pollinators, *Quart. Rev. Biol.,* **36**, 64-73.

Becherer, A., 1962, Fortschritte in der Systematik und Floristik der Schweizerflora (Gefasspflanzen) in den Jahren 1960 und 1961, *Ber. Schweiz. Bot. Ges.*, **72**, 67-117. Gives a selection of the more interesting Swiss records made in 1960 and 1961.—[D.H.K.]

Berner, L., 1962, Des espèces rares, *Bull. Soc. Linn. Lyon,* **31**, 227-231 & 249-250. The conclusion is drawn that there are no truly rare species but only relatively rare, according to ecological exigences in relation to geographical distribution. A number of British species are used as examples in this study.—[E.B.B.]

Blom, C., 1961, Bidrag till kännedomon om Sveriges adventiv och ruderal-flora, 5, *Acta Hort. Got.*, **24**, 62-133. Notes on the adventive flora of Sweden, with particular emphasis on species new to the country since 1939.—[D.H.K.]

Böcher, T. W., 1963, The study of ecotypical variation in relation to experimental morphology, *Regnum Veg.*, **27**, 10-16.

Bultez, P. & Dupontreue, G., 1962, Deux plantes rares en Picardie: Ornithogalum pyrenaicum L. et Actaea spicata L. végètent depuis plus d'un siècle au Bois de Saint-Fuscien, près d'Amiens, *Rev. Trim. Fed. France. Soc. Sci. Nat.*, **1**, 98-100. The continued occurrence of these two species after more than a century is confirmed. The toxic and medicinal qualities of *Actaea* are discussed.—[E.B.B.]

De Visser, A., 1963, Een fraai akkeronkruidengezelschap op Walcheren. *Gorteria*, **1**, 105-107. An enumeration of the weeds found in a flax field near Vrouwenpolder, prov. Zeeland, Netherlands.—[D.H.K.]

Doignon, P., 1963, Cinquante ans de phytosociologie dynamique à la Mare aux Fées (Forêt de Fontainebleau), *Bull. Ass. Nat. Loing*, **39**, 6-10. Fifty years of change in the vegetation of this lake are noted by chronologically recording lists made on excursions, new finds, losses due to cleaning and to fires, etc.—[E.B.B.]

Favarger, C., 1962, Sur l'emploi des nombres de chromosomes en géographie botanique historique, *Trav. Inst. Bot. Univ. Neuchatel*, **9**, 119-146.
1. Polyploidy is probably more in connexion with historical than with ecological data.
2. The method of spectrum of polyploidy in a flora is thoroughly discussed. According to the author it does not allow us to give an account of historical data. The notion of polyploidy for historical purposes is not clear cut. Some polyploids are old, others are very recent.
3. The author proposes to divide polyploids into: paleopolyploids, mesopolyploids, neopolyploids. Those words of historical plant geography are explained and illustrated by examples. Taxa differentiated into "chromosome races" will be treated differently.
4. The author discusses Pignatti's method and thinks that a study of historical plant geography must be based on a spectrum of plant associations.
5. The introduction of a spectrum of relative age of a flora has been proposed. The spectrum enables us to distiguish on the base of cytology ancient elements (paleopolyploids and diploids), middle age elements (mesopolyploids) and recent elements (neopolyploids and taxa differentiated in chromosome races).

The author applies this method to the comparison of the Greenland flora with that of the nival stage of the eastern Swiss Alps.—[Author's summary]

Fernandes, R., 1962, Notas sobre a flora de Portugal, a, *Bull. Soc. Brot.*, **28**, 9-34. Notes on a number of Portuguese plants, including *Dryopteris filix-mas, D. borreri* (as *D. filix-mas* subsp. *borreri*), *D.* × *tavelii, Phleum phleoides, Butomus umbellatus, Minuartia tenuifolia, Papaver argemone, Cheiranthus cheiri, Descurainea sophia, Thlaspi perfoliatum, Agrimonia odorata* (as *A. eupatoria* subsp. *odorata*), *Euphorbia esula, Myosotis caespitosa* and *M. hispida*.—[D.H.K.]

Gadella, T. W. J. & Kliphuis, E., 1963, Chromosome numbers of flowering plants in the Netherlands, *Acta Bot. Neerl.*, **12**, 195-230. Chromosome numbers are given for 154 species of Dutch plants.—[D.H.K.]

Gregor, J. W., 1963, Genecological (Biosystematic) classification: the case for special categories, *Regnum Veg.*, **27**, 24-26.

Hansen, A., 1963, Nye floristiske fund og iagttagelser, mest fra 1962, *Bot. Tidsskr.*, **58**, 301-303. Notes on various Danish species, including *Cephalanthera damasonium, Gentianella baltica, Monotropa hypopithys, Tetragonolobus maritimus* and *Veronica praecox*.—[D.H.K.]

Hara, H., 1962, Racial differences in widespread species with special references to those common to Japan and North America, *Amer. J. Bot.*, **49**, 647-652. Racial differences in different parts of the world are studied in a number of species including *Lathyrus palustris, Ledum palustre, Adoxa moschatellina* and *Triglochin maritima*.—[D.H.K.]

Heywood, V. H., 1963, The 'species aggregate' in theory and practice, *Regnum Veg.*, **27**, 26-36.

Heywood, V. H. & Löve, A., 1963, Symposium on biosystematics, *Regnum Veg.*, **27**, 5-72. An account of the symposium organized by the International Organization of Biosystematics at Montreal in October 1962.

Contributions to the symposium included papers by T. W. Böcher, W. Gajewski, J. W. Gregor, V. H. Heywood, D. D. Keck, H. Lewis, A. Löve, B. Lövkist, H. Merxmüller, Z. Swietlinska, W. H. Wagner Junr. and J. Zuk.—[D.H.K.]

Jovet, P., 1962, Flore et végétation des "Abattoirs" et du Phare—Biarritz, *Bull. Cent. Etud. Rech. Sci. Biarritz*, **4**, 25-27. Two short accounts of two localities at Biarritz, both affected by the activities of man. An increasing alien is *Salpichroa rhomboidea* in both stations; many other American species occur.—[E.B.B.]

Knight, G. H., 1963, Pollen and nectar preferences, *Ann. Rep. Warwick N.H.S.*, **9**, 12-15. Observations on insect food preferences in woodlands in Warwickshire. Plants studied were *Anemone nemorosa*, *Ranunculus ficaria*, *Primula vulgaris* and *Mercurialis perennis*.—[D.H.K.]

Lewis, H., 1963, The taxonomic problem of inbreeders or how to solve any taxonomic problem, *Regnum Veg.*, **27**, 37-44.

Liben, L., 1962, A propos de quelques termes ambigus ou mal connus du vocabulaire phytogéographique, *Bull. Jard. Bot. Brux.*, **32**, 459-470. The precise definitions of a number of terms, which may be not well known or have become ambiguous through misuse, in phytogeography are here recalled and discussed. The term "element", for example, is dealt with at some length.—[E.B.B.]

Löve, A., 1962, The biosystematic species concept, *Preslia*, **34**, 127-139.

Löve, A., 1963, Cytotaxonomy and generic delimitation, *Regnum Veg.*, **27**, 45-51.

Löve, D. & Nadeau, L., 1961, The Hutchinson Polygraph, a method for simultaneous expression of multiple and variable characters, *Canad. J. Gen & Cytol.*, **3**, 289-294.

Lövkist, B., 1963, Taxonomic problems in aneuploid complexes, *Regnum Veg.*, **27**, 51-57.

McClintock, D., 1963, Britain's wealth of wild flowers, *Country Life*, **133**, 112.

Merxmüller, H., 1963, The incompatibility between formal taxonomic recognition of units and their biosystematic definition, *Regnum Veg.*, **27**, 57-62.

Osborne, D. V., 1963, A numerical representation for taxonomic keys, *New Phyt.*, **62**, 35-43. Some of the limitations of the usual type of dichotomous taxonomic key are pointed out. It is suggested that a particular method of representing the characteristic features of a species in numerical form can overcome some of these limitations. Identification by this method is rapid, can often be made correctly in spite of minor errors of observation, and requires no computation or computing equipment. The method may therefore be of particular use in the field.—[Author's summary]

Osborne, D. V., 1963, Some aspects of the theory of dichotomous keys, *New Phyt.*, **62**, 144-160.

PERRING, F. H., 1963, Data-processing for the Atlas of the British Flora, *Taxon*, **12**, 183-190. An account of the technique used for the compilation of the 'Atlas', being a paper presented in a symposium entitled "The Application of Data-Processing Methods to Research in the Biological Sciences", sponsored by the American Society of Plant Taxonomists, The Botanical Society of America and the Ecological Society of America, and held at Corvallis, Oregon, on 29 August 1962.—[D.H.K.]

SOKAL, R. R., 1963, The principles and practice of numerical taxonomy, *Taxon*, **12**, 190-199. The tremendous advances in electronic data-processing are likely to result in revolutionary changes in the theories and practices of taxonomy. The progress of classification is being removed from speculations regarding the origin of the taxa being classified. A natural classification is one whose taxa share the largest number of properties and which is most useful for a wide range of purposes. The principles of numerical taxonomy are stated briefly and illustrated by means of diagrammatic examples. The relative roles of the taxonomist and computer are discussed and estimates given of computer time and costs involved in numerical taxonomic work. The numerical taxonomic work done in botany so far is discussed and the paper concludes with a brief mention of several problems of numerical taxonomy with regard to botanical work. These are: scarcity of characters, correlations between cytogenetic work and phenetic similarities, and problems raised by hybridisation.—[Author's summary]

SUKOPP, H., 1962, Neophyten in natürlichen Pflanzengesellschaften Mitteleuropas, *Ber. Deutsch. Bot. Ges.*, **75**, 193-205.

TRALAU, H., 1962, Die europäisch-arktisch-montanen pflanzen, *Ber. Schweiz. Bot. Ges.*, **72**, 202-235. Includes notes on *Epilobium alsinifolium*, *Myosotis sylvatica* subsp. *frigida*, *Cicerbita alpina* and *Hieracium* species. —[D.H.K.]

VAN OOSTSTROOM, S. J. & REICHGELT, T. J., 1963, Aanwinsten voor de Nederlandse adventief-flora, 4, *Gorteria*, **1**, 113-117. Adventive species new to the flora of the Netherlands, mostly in 1962, are *Cerastium dichotomum* L., *Arabis rosea* DC., *Pavonia urens* Cav. and *Allium atropurpureum* Waldst & Kit. Descriptions of the species are given and their probable methods of introduction are discussed.—[D.H.K.]

VAN OOSTSTROOM, S. J. & REICHGELT, T. J., 1963, Aanwinsten voor de Nederlandse adventief-flora, 5, *Gorteria*, **1**, 141-143. An addition to the adventive flora of the Netherlands is *Navarretia squarrosa* (Eschsch.) Hook. & Arn., believed to have been introduced with birdseed.

All Dutch specimens formerly named *Erodium chium* (Burm. f.) Willd. and *E. cygnorum* Nees, appear to be referable to *E. crinitum* Carolin. The differences between *E. cygnorum* and *E. crinitum* are discussed.—[D.H.K.]

IRISH REGIONAL MEETING, 1963

The first regional meeting of the Society in Ireland was held in the Botany Department, University College, Dublin, on 13 July 1963, by kind permission of the President of the College and Professor P. E. M. Clinch. It was attended by 32 members of the Society and friends, resident in Ireland, and Dr. F. H. Perring and the Honorary General Secretary (Dr. J. G. Dony) representing the Council. The Rev. J. Moore, S.J., was elected to the Chair.

The Honorary General Secretary reported that in accordance with the Rules of the Society he had received one nomination of a member to represent the Region on the Council. The Rev. J. Moore, so nominated, was elected unanimously. After some discussion, a resolution from the Chair that "a committee of the B.S.B.I. be elected for Ireland" was carried unanimously. A further resolution, proposed by Mrs. Pugh, that "a committee of four members of the B.S.B.I. be elected with power to co-opt, the members so co-opted being not necessarily members of the Society", was carried unanimously. The Honorary General Secretary said that the Council would be happy with such an arrangement provided that the majority of the committee were members of the Society.

Father Moore, as the elected regional representative, was unanimously elected as a member of the committee and there were seven nominations for the remaining places. After a ballot, Miss E. M. Booth, Mr. I. K. Ferguson and Mr. H. J. Hudson were elected.

J. G. D.

The following papers were read before the meeting:—

VEGETATION OF SOUTH COUNTY DUBLIN. Father J. Moore, S.J.

The plant ecology of County Dublin was studied early in the century by Pethybridge and Praeger, and since then, until comparatively recently, little ecological work has been done in Ireland. The early work had been done with great care and accuracy, and it was now possible to study the changes in the vegetation and to account for the factors which have brought these changes.

SALICORNIA IN IRELAND. I. K. Ferguson.

Up to the time when this work began, very little was known about the genus *Salicornia* in Ireland. Ball and Tutin suggested that the Irish *Salicornia* might be different from those in Britain. I have found that the genus *Salicornia* in Ireland does not appear to differ very greatly from that in Britain and on adjacent parts of the continent, apart from small local population differences which seem to occur throughout the entire annual section of the genus.

Salicornia perennis Mill. and *S. pusilla* Woods are considered to be good species though it is believed that the latter may hybridise with other annual diploid taxa.

In the remainder of the genus, two chromosome numbers have been found, a diploid number of 18 and a tetraploid number of 36. No evidence of a triploid hybrid has been observed. Photographs and diagrams of measurement were used to illustrate the great variation that exists in the genus. A number of characters were shown to be correlated with chromosome number and it is suggested that the annual section of the genus might be divided into two species based on chromosome number. However, I am not prepared to recognise any further taxa at present.

(Author's summary.)

SOME PROBLEMS IN *EUPHRASIA*. Miss Jean B. Bobear (State University, New York)

This involved some discussion of the extent and possible causes of variation in the genus. Seven of the species listed for Ireland were illustrated and their means and extremes diagrammed for twelve morphological characteristics. The diagramming demonstrated the continuity of variation from group to group with the exception of the species *Euphrasia salisburgensis*, which for the characters used, showed the most distinct discontinuity for lower lip length-width ratio, capsule length-width ratio, and leaf length-width ratio. For the other six species shown it was not possible to select a few 'key' characters; however, combinations of many characters allowed for some separation of these groups.

(Author's summary.)

HISTORY OF THE DUBLIN FLORA. H. J. Hudson.

Plants have been recorded in County Dublin since the 17th century and with great accuracy in Colgan's Flora (1904). The supplement to this, published in 1961, allows conclusions to be drawn as to those species which have been known in the area over a long period of time and those which have been lost or are in danger of being lost. The paper was illustrated with excellent colour slides taken by V. Wolfe, Dublin.

BOGS IN THE DUBLIN AREA. W. Watts.

This paper was read by Mr. Ferguson in the absence of Mr. Watts. It showed how a history of the past vegetation of the Dublin area could be made from the study of a bog in the locality.

The following exhibits were also shown:—

EUPHRASIA IN IRELAND.

Living plants of the groups discussed in the paper. These were grown in cultivation from seed collected in the summer of 1962.

Miss J. B. Bobear (now at Trinity College, Dublin).

SAND-DUNE FLORA FROM CO. WICKLOW

Living material from Arklow.

Mr and Mrs N. Chuter, Arklow, Co. Wicklow.

VIOLA CANINA

Herbarium sheets of coastal and large-stipuled fen form from drainage channels near Derry Hills, Co. Leix.

S. Clark (Trinity College, Dublin).

SALICORNIA IN IRELAND

Photographs of *Salicornia pusilla* Woods and cultivated plants of representatives of diploid and tetraploid taxa and of *S. perennis* Mill. Distribution maps of annual Salicornias showing eight new 10 km. grid square records for *S. pusilla* and 38 new grid records for the diploid and tetraploid aggregate. Living specimens of an annual tetraploid plant showing homogamous development of the reproductive organs and bifid stamens.

POLYGALA VULGARIS Var. *BALLII* NYMAN

Herbarium sheets of large forms of *Polygala vulgaris* from different parts of Ireland and cultivated specimen of var. *ballii* from Ben Bulben, Co. Sligo.

I. K. Ferguson (Trinity College, Dublin).

ANTHRISCUS SYLVESTRIS var. *ANGUSTISECTA* DRUCE

Living specimen from Ben Bulben with herbarium sheets of Colgan's plants for the *Flora of Co. Dublin* (by courtesy of the National Museum).

H. G. Hudson (Dublin Field Club).

VEGETATION OF SOUTH COUNTY DUBLIN

A selection of the original maps by Pethybridge and Praeger with a map showing the present vegetation.

ERICA

Living specimens of *Erica tetralix, E. mackaiana* and *E. praegeri* from Dunlewy, Co. Donegal.

SCHEUCHZERIA PALUSTRIS

Herbarium sheets and distribution map.

Father J. J. Moore (University College, Dublin).

HERBARIUM OF DAVID MOORE

One large bound volume of the *Hortus Siccus* of the Flora of Co. Antrim by David Moore (1807-1879).

ADDITIONS TO THE IRISH FLORA

Herbarium specimens of plants added to the Flora of Ireland in the last decade with specimens of *Taraxacum* segregates and *Viola palustris* subsp. *juressi.*

FLOWER PAINTINGS

One large bound volume of paintings made between 1886 and 1894 of Irish and European plants by the Hon. Fredericka Plunkett (1837-1949).

National Museum of Ireland.

SIMETHIS PLANIFOLIA

Living specimens from Derrynane, Co. Kerry, of a species recently re-established in the Royal Botanic Gardens, Kew, from material sent by the exhibitor.

J. E. O'Donovan.

AN UNUSUAL *RANUNCULUS*

A living specimen of an unusual form of *Ranunculus flammula* from Co. Leitrim.

A. O'Sullivan (University College, Dublin).

DISTRIBUTION MAPS

Maps showing distribution of Irish species of *Euphrasia*.

F. H. Perring (B.S.B.I. Distribution Maps Scheme).

JUNCUS BUFONIUS subsp. *FOLIOSUS*

Herbarium specimens from the Counties Dublin, Wicklow, Sligo and Donegal. This plant was noted in *Proc. Bot. Soc. Brit. Isles* (Vol. 3, 1958, p. 335) from Cork West and Kerry South by Dr. Max Walters and recorded as new to the British list.

RUMEX HIBERNICUS RECHING f.

Herbarium material of the taxon described by Rechinger in *Watsonia* (Vol. 5, Pt. 2, 1961). The material was gathered on sand on Ballyteigue Burrows, Co. Wexford; Mullaghmore, Co. Sligo; shore of Mullaghderg Lough, The Rosses, Co. Donegal; and in the original station on the Mullet Peninsula, Co. Mayo.

SARRACENIA PURPUREA

Specimen collected by Praeger from a bog S.W. of Termonbarry, Co. Roscommon, in 1931 with notes by the planter, Geoffrey Lefroy, remarking on its progress in 1931.

Miss M. Scannell (National Museum of Ireland).

POLYPODIUM SPECIES IN IRELAND

Living material of *Polypodium vulgare* and *P. interjectum* with notes on their distribution in Ireland.

D. Synott (National Museum of Ireland).

In the evening a dinner, attended by twenty members and friends, was held at the Unicorn Restaurant, Merrion Row.

We are grateful to Miss Scannell who undertook the responsibility of organising this most successful and enjoyable meeting, and to the Botany Department, University College, for their hospitality and for providing light refreshments during the day.

J. G. D.

The clouds were scudding low over the domes of Dublin as the party of thirty or so botanists gathered in Upper Merrion Street on the Sunday morning. Undeterred, the procession of cars was led off by Fr. Moore and Mr. Hudson southwards towards the Wicklow Mountains.

The first stop was made beyond Kilbride at Cloghleagh Bridge where the Shankill River hurried down to join the Liffey. The pedunculate oak-wood beside the stream was perhaps most remarkable for the amount of *Crepis paludosa* which grew in sheets in damp crevices on the rocky floor. In the stream the presence of *Saxifraga stellaris* was an indication that though only at 700′ here, the mountains were not far away.

After a sheltered valley woodland it would be difficult to imagine a more violent contrast than the summit of Kippure, 2475′, on a blustery day. Now a television station it is possible, with permission, to drive up to the top of this mountain, though it may not be possible to stand up when you arrive. There are exciting views over the limestone plain to the north and down the valley of the Glencree River eastward to the sea. The plants are more remarkable for their absence than their presence. Once the summit was covered in a thick layer of peat, but during the 19th century this collapsed and has exposed great areas of bare granite, suitable only for minute cushions of *Sagina procumbens*.

We descended into sunlight and lunch was taken in a delightful setting at the head of Glencree. Flushes on this east facing slope produced *Euphrasia scottica*, and *E. anglica* and *E. nemorosa* were found in drier areas. A stream at the bottom of the slope was most rewarding. *Saxifraga stellaris* was in abundance, though not previously seen in this area, and there were quantities of *Hypericum elodes, Myosotis secunda* and *Veronica scutellata*. The *Viola palustris* seen here and elsewhere during the day was all referable to subspecies *juressi*, with hairy petioles.

The final and most important stop of the day was made at Glenasmole. Here calcareous drift overlies the rocks on the eastern side of the valley and the vegetation is rich and variable—from the water plants of the reservoir and the streams to the many meadows, here acid, there basic, with patches of scrub which clothe the slopes. Two groups of plants were outstanding, the orchids and the eyebrights: of the former, *Gymnadenia conopsea, Listera ovata, Dactylorchis maculata* subsp. *ericetorum, D. fuchsii, Platanthera chlorantha, Leucorchis albida, Epipactis palustris*, and *Malaxis paludosa* were seen, and three euphrasias not seen earlier in the day were *E. micrantha, E. brevipila* and *E. rostkoviana*.

For the visitor to Ireland the most startling pleasure, second only to the company in the field for a day of so many charming Irish botanists, was to find within only half-an-hour of the centre of Dublin such a rich flora, including so near to the east coast plants like *Pinguicula lusitanica*, usually only expected when the sea is to one's west.

F. H. P.

SOUTH-EASTERN REGIONAL MEETING, 1963

A meeting was held at the Department of Botany of Reading University on Saturday, 14th September 1963, by kind permission of Professor T. M. Harris. About sixty members attended.

During the morning the President took the chair. Professor A. M. Bunting of Reading spoke first on "Drought on the Chalk—some quantitative studies". He showed that, contrary to general belief, chalk soils are rarely if ever short of water in this country, but that they are strongly deficient in nitrogen, phosphorus and perhaps other elements which limit plant growth. Q. O. N. Kay of Oxford then gave a talk on "Mayweeds". He compared the soil preferences of the four common weedy species and showed that their germination rate was often low in the laboratory. *Tripleurospermum maritimum* subspecies *inodorum* is diploid in Britain but tetraploid in most of Europe. The diploid subspecies *maritimum* differs chiefly in habitat and in having larger seeds of lower density which can float in sea water.

Dr. E. F. Warburg took the chair for the afternoon session. The President, J. E. Lousley, gave an interesting talk on "Changes in the Flora of Berkshire as illustrated by the records of Job Lousley (1790-1855)". He showed that many of the plants recorded by his great-great-grandfather were still to be found in the same localities, but that weeds of arable land had changed considerably*. He was followed by Dr. H. J. M. Bowen speaking on "The new Flora of Berkshire" and Mrs. V. N. Paul on "The Chiltern Orchids", both of whom illustrated their talks with coloured slides of local plants.

On Sunday, members were divided into small parties to make Grid square records for the Flora of Berkshire. About ten underworked squares were visited and over 2,000 records were made for the new Flora. Members reassembled for tea near Aldermaston and were shown *Poa chaixii* and *Carex elongata* growing in woodland nearby.

J. Ounsted acted as local organiser, and was assisted by Dr. F. B. Hora, to whom the society owes its thanks.—H. J. M. Bowen.

*See paper on p. 203.

SHORT NOTES

Adventives at Yeovil, S. Somerset, in 1963

Interesting adventives collected on the Council rubbish-tip at Yeovil, S. Somerset, in 1963, by Mrs. V. I. Ricketts, included *Polygonum nepalense* Meisn., *P. patulum* M. Bieb., *Solanum rostratum* Dunal and *Matricaria aurea* L. All specimens were determined by the writer.—C. C. Townsend.

Spirit Material

P. H. Davis, when giving "Hints for hard-pressed collectors" in *Watsonia*, **4**, 283 (1961), rightly emphasised the value of "pickled" herbarium material. In the case of orchids, indeed, a single pickled flower may be more conclusive than several sheets of pressed stems, and is certainly quicker to examine. A recent episode demonstrated this very well. A student from Kew Gardens collected some specimens for the herbarium there during a holiday in Austria. He was wise enough to supplement his pressed orchids with spirit material. From a superficial inspection his dried specimens did not appear to contain anything of great interest. But one bottle of pickled flowers showed conclusively and at first glance that he had found an orchid hitherto unrecorded from Austria!

A word of warning is necessary about carrying bottles or tubes of spirit by air. Screw-capped containers are rarely completely liquid-tight, and with repeated changes in pressure during a flight are apt to leak. Similarly, corked bottles are likely to blow out their stoppers unless these are tied down. Bottles inside passengers' suitcases in the baggage-hold are as likely to be upside-down as upright, and may empty themselves completely with disastrous results to both the specimens and the luggage. I have found it satisfactory to place screw-capped bottles or tubes (selected for absence of misshapen mouths) upright in the pockets of an overnight bag or brief-case which is taken into the cabin and placed upright on the floor so that it cannot easily topple. Small tubes (e.g. ½-oz. "Trident" vials) may be placed in wooden postal tubes to prevent shattering.

For the same reason, it is inadvisable to send spirit material by air-mail (and most letter-post from the U.K. to Europe goes by air automatically) unless the containers have been tested against leakage under vacuum. With surface transport, the leakage problem is not serious, as liquid will not pass an ordinary closure unless there is a pressure difference between inside and outside.

Tubes and bottles of specimens should always be filled with liquid to within ½ in. of the top to minimise damage to delicate specimens by slopping around when in transit. Movement can be further discouraged by putting pieces of paper inside the tubes. Incidentally, data written in pencil or waterproof ink (not ordinary ink or ball-pen) on a slip of paper put inside the tube are less liable to loss or damage than on a gummed label outside.—D. P. Young.

BOOK REVIEWS

Taxonomy of Setaria (Gramineae) in North America. By James M. Rominger. Pp. 132 (incl. 15 distribution maps, 6 plates and index). Illinois Biological Monographs. No. 29. The University of Illinois Press, Urbana, 1962; $3.00 (paperbound), $4.00 (clothbound).

The genus *Setaria,* Bristle-grasses, comprises about 125 species, many of which are of considerable economic importance, being seed-plants, *S. italica* (Millet), forage grasses or noxious weeds. The species of *Setaria* are distributed throughout temperate and warm regions of the world and are particularly well represented in tropical Africa (about 75 species), S. Asia, S. America and N. America (including C. America and the West Indies).

The first monographic work on *Setaria* in N. America was produced by Scribner and Merrill (1900), who reported 28 species and 10 varieties. Their treatment was revised by Hitchcock (1920). In the second edition of Hitchcock's Manual of Grasses of the United States (1951), revised by Mrs. Agnes Chase, only 22 species were mentioned.

The author has made a complete revision of species of *Setaria,* occurring in N. America, based on a critical examination of extensive herbarium material (about 6,000 specimens), type material and observations in the field. His study resulted in a monograph. According to him, *Setaria* is represented in N. America by 43 species with 4 varieties, of which *S. arizonica* is new to science. Taking into account the general distribution, the author distinguishes 3 categories of species within N. America:—1, Natives to N. America (25 species); 2, Natives to northern S. America, with the range extending into southern N. America or being introduced by human agency (12 species); and 3, Adventive species from the Old World (10 species). Among the species of the last category there are *S. viridis, S. viridis* var. *major, S. verticillata, S. italica* and *S. lutescens,* all of which occur also in Britain.

The book consists of 10 chapters. The first 5 are introductory. They include nomenclatural history of the genus; morphology of inflorescence, spikelet and leaf-blade; geographical distribution; and discussions on phylogenetic relationships (generic and interspecific). The next chapter, the largest, deals with the taxonomy of *Setaria.* There are keys to *Setaria* and allied genera, subgenera of *Setaria* and to their species. They are well prepared and easy to use. Full synonymy has been given. Each species has been described and the characters are set out clearly. Measurements of the vegetative and floral organs are accurate and they cover extremes as well as normal specimens. In many instances transcriptions of the original diagnoses are given. The descriptions of the species are followed by the indication of the type locality, data of the general distribution, lists of specimens examined and by general remarks, which will be very useful to all interested in the genus. Chromosome

numbers are mentioned when known. There is a full bibliography, a good index to numbered exsiccatae, distribution maps, plates illustrating some interesting species, including *S. arizonica*, a diagram which integrates assessments of relationship based on morphological similarity and geographical proximity, etc.

This work, which has been prepared carefully and critically, should be of great value to anyone interested in grasses or aliens and should be especially useful to research agronomists, agricultural research stations or botanical institutes.—A. Melderis.

Collection and Care of Botanical Specimens. D. B. O. Savile. Pp. xii + 124 with 13 text figures. Ottawa: Canada Department of Agriculture. Publication no. 1113. 1962. Price $2.00.

This book is written by a botanist who, with his colleagues of the Plant Research Institute, Ottawa, has done much collecting on expeditions in temperate and arctic N. America. The experience gathered on these trips is here set down in detail, even to the appropriate underwear, to help those who may find themselves in a position to collect for a major institution or who wish to build up their own herbarium. "Collection" being thus covered, "Care" is equally competently dealt with by exhaustive description of furniture, equipment and methods employed at the Research Institute. It is "intended for both amateur and professional botanists" at all stages of experience, even for "those of us who are absent-minded".

Mention is made under the section on "Loan and Exchange" of "20,000 duplicate sheets representing possibly 5,000 collections . . . . in a year". We wish to make it clear, before any sledge-hammer attack by the conservationists, that our remarks and the book under review are for the serious and, we trust, intelligent collector aware or willing to learn of the dangers of over-collecting even in botanically unknown areas. Not to recommend this book would not deter the vandals who persist in acquiring rarities mainly to fill gaps in their and possibly their friends' herbaria.

It is particularly to the school or university teacher engaged in building up teaching herbaria that this work is most warmly recommended. Almost half of it is taken up with chapter one (pp. 1-57) describing methods of collecting, pressing and preparing of vascular plants for the herbarium. The second half of the chapter concentrates on methods of heat drying, mainly adapted to collecting in arctic and cold-temperate areas and therefore of limited use to collectors in the tropics, but which, however, might well be used in the British Isles, particularly in the wetter areas of the north and west. Methods and equipment used in mounting specimens are clearly described; pasting the specimen to the sheet (we suggest thick cartridge paper to meet the requirement "good quality paper that will not go brittle with age") is recommended although the reason, that specimens merely strapped are more easily damaged if frequently handled, is not made obvious. We do not entirely agree that reinforcement by the plastic strip method is preferable to the gummed-linen strap method. The linen straps are more easily removed if necessary and in our opinion look neater. The plastic strip, however, proves an excellent, quick repairer of the broken stem or thick part of a specimen already mounted.

The subsequent chapters on the various groups of cryptogamic plants appear to us to be entirely adequate with occasionally a little too much attention to detail, e.g. in the technique of spore-printing of fungi. We are informed by our bryological colleagues that to recommend washing freshly collected bryophytes "in the nearest pond or stream" is somewhat dangerous: for instance, bryophyte collections are often examined for diatoms and much washing could contaminate the sample and cleaning in vitro is safer.

If those of us who have had some experience of the subject of this book may at times be a little impatient of the excessive detail, we must remember that the beginner will welcome such a "fault". None of us will fail to find numerous ideas in this well-presented and fully-indexed guide. —E. B. Bangerter and A. C. Jermy.

A Flora of Nottinghamshire. By R. C. L. Howitt and B. M. Howitt. Pp. vi + 252 and map. Privately printed. Nottingham. 1963. Price: 30/-.

Few things delight us more than the appearance of a new county flora and we are indebted to Mr. and Mrs. Howitt for the new *Flora of Nottinghamshire*. As the last flora of that county was published in 1839, and it must be more than co-incidence that its author was the great-uncle of Mr. Howitt, it is most desirable that we should have a more recent assessment. The authors of the new flora are to be congratulated on their perseverance in facing a task which has been by no means simple and having produced the finished work at their own expense.

The Flora follows traditional lines with an account of the vegetation of the four botanical divisions of the county which are based on geological formations and were originally adopted by J. W. Carr in an unpublished flora. This is followed by a brief history of the study of field botany in Nottinghamshire and a catalogue of its flowering plants, ferns and fern allies, stoneworts and sphagnum mosses. In the body of the Flora there are familiar details of first record and distribution with localities for the rarer species. Where appropriate the English names of the plants are given. Some groups receive more attention than others and the authors are to be congratulated on their detailed account of the willows and pondweeds which they have studied most thoroughly. With the critical groups they have sought the assistance of specialists and, given so much evidence of care, the reader has some confidence that there are few plants likely to have been found in the county in the twelve years that its flora has been receiving the close attention of the authors of which some account is not given here.

A closer study of the Flora, which at first sight has all the promise of being good by any standards, reveals a number of disturbing features. No mention is made of some well-known Nottinghamshire species including *Rorippa microphylla, Agrostis tenuis* and *Alopecurus aequalis.* The authors have invented their own Rules of Nomenclature and having assured us that this can cause no confusion as the authority is given they fail to give one in some cases. The authorities when they are given are sometimes fictitious and the spelling of correct authors' names is too often

wrong, e.g. Royal for Royle, Arechoug for Areschoug, Rodgers for Rogers, etc. The spelling of the Latin names is most puzzling and *Trifolium* spelt *Trefolium* throughout is apparently deliberate but one wonders whether *tormentosum* for *tomentosum* is the authors' way of expressing annoyance with some species. When, however, *Guizotia* appears as *Guiotzia* in the text and *Guizottia* in the index the reader must suspect carelessness. It is, we are all aware, extremely difficult to keep such a work free from errors but Mr. and Mrs. Howitt would have been well advised to submit their manuscript or galleys to a critical friend. For my own part I could forgive them all their omissions and any errors they had allowed to creep in if they had at some point let me into the secret of the area of their study. In this they err with the authors of most local floras but there is no reason at all why this should continue. Compilers of local floras are free to choose any area they wish for their work but owe it to their readers to state simply what it is.

The treatment of aliens and garden escapes raises a problem which worries all of us who face similar work. In Nottinghamshire there are obviously many and here they are given as much prominence as native species. The originality the authors have shown elsewhere in the Flora could well have been turned to this increasingly difficult problem.

The Nottinghamshire Flora will have its critics but it contains features that must commend it. The comments on the Roman Nettle and *Helxine soleirolii* are gems and the account of the disappearance of the Nottingham Catchfly from the city which gives it its name is of more than passing interest. There can have been few local floras in which the personality of the authors has so much impressed itself and we are grateful to them for having given us the Flora.—J. G. Dony.

A Contribution to a Flora of Merioneth. By Peter Benoit and Mary Richards. Pp. 69, with 13 maps. West Wales Naturalists Trust. Haverfordwest. 1963. Price: 5/8d, post free.

Merioneth is one of our more beautiful and floristically rich counties but a full account of its flora is lacking. This is largely remedied by *A Contribution to a Flora of Merioneth,* which is a list of plants known to have occurred in the county in the past twenty years. The authors write from long experience: Mrs. Richards with an interest of fifty years in the Merioneth flora and Peter Benoit with less than half that time. Merioneth is a large county and the lines of communication do not allow easy access to some of the more remote parts. For these reasons the authors have studied very thoroughly the coast line and the neighbourhood of Dolgelley and it is to these very areas that many visiting botanists have also come. Some of the inland areas have scarcely been studied at all. 1,052 species have been recorded for the county and since 1940 the authors have been able to verify that all but 219 are still to be found in the county. A very small number of those not accounted for, 26, may be presumed extinct; 102 were of the casual or garden escape category hardly worth recording, and 91 native species were apparently erroneously recorded. This should be a warning to all of us who go in a light-hearted and record-making happy mood into areas with which we are not fully

familiar. Casual and careless recording by other botanists and the problem of the under-recorded area will delay the appearance of a complete revision of the Merioneth flora which we so eagerly await.

There can be few comparable works in which so much information has been reduced into so small a space and the economy of words so carefully studied. The plea so often made that local floras must be very expensive to produce may now be safely dismissed. To those of us who are not likely to botanise in Merioneth the account we have here will become one of constant reference for the large number of hybrids (seventy-five) which are listed and the very careful and concise notes it gives of status.

There are twelve maps showing the distribution of twenty-four species. The symbols used represent each 1 km. square for which there is a valid record and for some of the species, e.g. *Juncus acutus, Epipactis palustris, Carex serotina* and *Asplenium obovatum,* the complete distribution is thus probably shown. The result is excellent and the method entirely new but it is very doubtful if all the species in so large a county could be mapped on such a basis. The maps show the present administrative county of Merioneth which the authors describe as Watsonian vice-county 48 but it would, in view of the present confusion in most English counties and the impending changes in Wales, have been useful if they had made it clear that they are indeed the same.

The valuable introduction we have here to the flora of Merioneth leaves us in hope that it will be but a short time that we have to wait for a fuller account, but let those of us who wish to speed the day with help in the field be careful how we tread.—J. G. Dony.

BOOKS RECEIVED

Balls, E. K. *Early Uses of California Plants.* California University Press. Pp.103. Berkeley and Los Angeles. 1962. Price $1.75. Obtainable from Cambridge University Press. Price 14/-.

Fogg, G. E. *The Growth of Plants.* Pp. 288 with 44 plates and 53 figures in the text. Pelican Books. Harmondsworth. 1963. Price 7/6.

Nelson, G. A., et al. A Flora of Leeds and District. Pp. 58. Reprinted from *Proceedings of the Leeds Philosophical and Literary Society, Scientific Section,* vol. **9**, part 5, 1963. Obtainable from the Warden, Swarthmore Educational Centre, 394 Woodhouse Square, Leeds, 3. Price 7/6.

PERSONALIA AND NOTICES TO MEMBERS

COCHLEARIA

C. D. A. Cochran, 165 Brookdale Avenue, Greasby, Wirral, Cheshire, is working on the genus *Cochlearia* and would be grateful for seed of the following species:—*C. groenlandica, C. scotica, C. officinalis, C. danica* and *C. anglica.*

CARDAMINE PRATENSIS L.

D. E. Allen, 11 Lancaster Close, London, W.2, has been working on the taxonomy and distribution of the *Cardamine pratensis* complex in the British Isles for a number of years. Unconvinced that the correlations between chromosome number and morphological characters "do not seem sufficiently clear and constant to warrant a subdivision of the species" (*Flora of the British Isles*, Ed. 2, 162), he would be glad to place the corpus of data he has accumulated at the disposal of any research student or professional botanist, preferably resident in Britain and available for frequent consultation, who may be interested in carrying out the extensive cytological and biometric work that any further progress in our knowledge of the group in this country appears to demand.

STELLARIA

I. J. Gibson, B.Sc., Hatfield College of Technology, Roe Green, Hatfield, Herts., is studying the *Stellaria media* group (*S. media, S. pallida* and *S. neglecta*) and would be very grateful for fresh specimens, herbarium material, ripe capsules and precise locations, particularly of *S. pallida* and *S. neglecta.*

SAGINA

B. D. Morley, 51 Sewall Highway, Wyken, Coventry, is working on the genus *Sagina,* and is particularly interested in *S. apetala* and *S. ciliata.* He would be grateful for fresh material, seed and any information on the genus.

EUPHORBIA

A. R. Smith, c/o The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, is studying the European species of the genus *Euphorbia,* and would be especially grateful for records, herbarium specimens and fresh material of any alien spurges found in the British Isles.

VERONICA PEREGRINA L.

E. B. Bangerter, Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, is studying the distribution of *Veronica peregrina* in the British Isles and would be grateful for specimens and records.

B.S.B.I. DISTRIBUTION MAPS SCHEME.

As from the 6th January 1964 all correspondence about the Botanical Society's Distribution Maps Scheme should be addressed to Dr. F. H. Perring, Biological Information Section, Monks Wood Experimental Station, Abbots Ripton, Hunts. This Section will welcome records of the distribution of British vascular plants.

The following items are available from Dr. Perring, address as above:—

(1) 35 mm. film strips of 100 selected pairs of maps from the *Atlas of the British Flora*, price £2 per set.

(2) Regional Record Cards, price 15/- per hundred.

ATLAS OF THE BRITISH FLORA

Copies of corrections to the first issue of the *Atlas of the British Flora* are available from Dr. F. H. Perring, Biological Information Section, Monks Wood Experimental Station, Abbots Ripton, Hunts., and will be sent on receipt of an application together with a stamped addressed envelope.

ARCHIVES OF THE SOCIETY

It has been decided by Council that the Society should collect together pamphlets, articles, photographs and other materials relevant to its history and organization. Any member who possesses items which may be of interest in this connection is asked to contact D. E. Allen, Botanical Society of the British Isles, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

RECORDERS AND REFEREES—ADDENDUM

A. R. Smith, c/o The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, is willing to act as a referee for the remaining British species of *Euphorbia* (Dr. T. Pritchard remains in our list (p. 498) for *E. uralensis—E. cyparissias*) and for alien species.

H. S. Marshall, c/o The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, has agreed to act as referee for Herbals and early botanical literature.

The address of J. Anthony, Recorder for E. & W. Sutherland, was omitted from p. 495 in error. It is 120 Trinity Road, Edinburgh.

BACK NUMBERS OF "WATSONIA" AND "PROCEEDINGS"

Part of the Society's revenue is obtained from the sale of sets of *Watsonia* and *Proceedings* to booksellers and libraries.

Unfortunately, certain parts of both periodicals are now in short supply and it will soon become difficult to prepare complete "runs". The numbers concerned are *Watsonia*, Vol. 2, Parts 5 and 6, and Vol. 3, Part 5, and *Proceedings*, Vol. 2, Part 4. Members who have any of these parts which they no longer require are invited to assist the Society by sending them to Mr. E. B. Bangerter, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

B.S.B.I. BOOK SERVICE

Many county Floras and other botanical books are out of print and difficult to obtain and the officers of the Society receive many enquiries from members as to where they may be obtained.

A card index of members' desiderata has now been prepared with the object of assisting them to obtain books they need to carry out their studies.

The index has been prepared by the Hon. Assistant Secretary, Mr. D. H. Kent, 75 Adelaide Road, London, W.13, and members desiring to make use of this facility are invited to write to him giving details of the books which they are anxious to acquire. A stamped addressed post-card, for reply, should be sent for each book required. It must be pointed out that some botanical works are very scarce indeed and it may be some time before they can be tracked down; every effort will, however, be made to trace copies of books required.

Members who have botanical books for disposal are also invited to write to Mr. Kent giving details of the volumes concerned and their prices.

THREATS TO BRITISH FLORA

Members are urged to report to R. M. Harley, Dept. of Botany, The University, Bristol, 8, 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 SPRAY DAMAGE

Any damage due to the spraying of roadside verges with toxic chemicals should be reported immediately to the Secretary of the B.S.B.I. Conservation Committee (R. M. Harley, Dept. of Botany, The University, Bristol, 8), who will send a form listing the detailed information required by the Nature Conservancy. These forms have been prepared after discussions between the B.S.B.I. and the Conservancy, and when completed will be forwarded to the Conservancy who are carrying out active work on this subject.

TRANSPLANT AND INTRODUCTION EXPERIMENTS

The Secretary of the Conservation Committee (R. M. Harley, Dept. of Botany, The University, Bristol 8) would be glad to hear from anyone who is carrying out any experiments involving the transplanting of species from one locality to another, or who is engaged in the introduction of species by seed or any other means. It is becoming very necessary to keep a central record of experiments of this nature, and it is hoped that this request will meet with active support. The Secretary will gladly send a short list of the information required in the recording of such experiments.

ADVERTISEMENTS

A limited number of relevant advertisements will be accepted for the Society's publications as space permits. Enquiries should be addressed to D. H. Kent, 75 Adelaide Road, London, W.13.

Continued from inside front cover.

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OF THE

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Editor: D. H. KENT

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Continued on inside of back cover.

A GUIDE FOR LOCAL FLORA WRITERS

Compiled by Franklyn Perring

During the last decade the number of local Floras being prepared has risen dramatically. This is a most welcome development. But, though some authors are able to produce a first-class book without assistance from any others, such achievements are rare, and in 1961 it was felt that many of those engaged in or contemplating the preparation of a local Flora might welcome a Conference devoted to an analysis of the problem from many angles: field workers and authors; editors and publishers; referees and accountants.

One of the main themes of this Conference* was individuality: it was agreed that a successful local Flora should, if possible, have an approach, a flavour, which makes it readily distinguishable from all others; at the same time it was felt that all local Floras ought to meet minimum standards in certain respects. The publication of a Flora of an area, whether good or bad, is likely to mean that no other Flora of that area will be published for a quarter of a century.

At the end of the Conference a resolution was passed recommending the Council to set up an *ad hoc* committee to consider local and comital Floras in all their aspects. The committee was set up and, after a series of meetings during 1962 and 1963, this guide was drawn up for the assistance of local Flora writers.

The Objects and Importance of Local Floras and their preparation

Many people have their interest in wild flowers aroused by coming across, or being given, the Flora of their area. With such a book to guide them they have been able to find and get to know many more species than would have been possible if they had had to roam the countryside at random.

If the botanist is thus led to work on a local Flora for himself the experience will give him excellent training in taxonomy and nomenclature: some of this important knowledge will inevitably be transferred to any others who may assist him.

When his efforts are consummated in the publication of a local Flora, then, if it is a good Flora, that work will be of great value to all naturalists, present and future.

For botanists from other parts of the country an up-to-date local Flora is an essential companion for a holiday area if it gives details of localities, especially for the rare and local species which

*For an account of this conference see Wanstall, P. J., 1963, *Local Floras*. B.S.B.I. Conference Report No. 7.

do not occur in his home area: the task of scientists seeking experimental material is greatly simplified, if localities can be traced with ease: it hardly needs saying that the hundreds of local Floras which now exist for the British Isles have provided invaluable data in preparing such works as the *Atlas of the British Flora*.

The intensive surveys carried out by those preparing local Floras make it possible to provide much more useful notes on the habitats of plants than it is generally possible to include in a national Flora. The habitat of a species differs from one part of the country to another; a series of local Floras can show this. If the field data are collected with care and precision statistics can be prepared to support (or refute) the loose statements about habitat which generally have to suffice in Floras, are often copied from one to the other, and bear little relation to reality. *The Flora of Wiltshire* by J. D. Grose may be cited as a model of how to go about making an analysis of habitat preferences: many useful ideas may also be found in the paper on 'Collecting the Data' by Hawkes and Readett in the report of the Local Floras Conference (Wanstall, 1963).

If data are collected with sufficient precision from evenly placed stands or from recording units of uniform size it may be possible to produce maps of some or all of the plants in a region so that valuable correlations may be drawn between plant distribution and geological, topographical and other physical features, to a degree which was not possible in a publication such as the *Atlas of the British Flora*. *The Geographical Handbook of the Dorset Flora* by R. d'O. Good gives some idea of the possibilities.

The flora of the British Isles is always changing. Native species, particularly of bog and marsh, are disappearing rapidly from lowland Britain. In compensation new species are introduced from abroad and may spread to all parts of the country in a few decades. The pattern and speed of the changes is a fascinating one which can only be studied in detail in a country as closely watched botanically as our own, and only if the observations are recorded in print.

A national Flora, unless it is large and expensive, is usually unable to deal thoroughly with the complete range of variation exhibited by species. Local Floras can often with advantage draw attention to the varieties which occur in the area. Such information may be of inestimable value to any botanist making a detailed taxonomic study of a particular species.

The importance of local Floras is reflected both by the great number that have been produced in the past, and by the fact that there is still a demand for new and more up-to-date examples. The demand comes not only from botanists but from naturalists in other disciplines for whom a detailed knowledge of the distribution of the vascular plants is fundamental to an understanding of the distribution of the organisms with which they are concerned.

Some methods and standards which might be considered by those preparing to compile a local Flora

1. Writers of Floras should cover a well defined area: it may be the vice-county as laid down by Watson in 1859, or the political county at the present day. Authors can save a lot of confusion by stating upon what their boundaries are based and by including a map of the area. Details of the vice-county boundaries of Great Britain can be obtained by consulting the set of 1″ Ordnance Maps prepared by J. E. Dandy and kept in the Botany Dept., British Museum (Nat. Hist.), Cromwell Road, London, S.W.7. It is hoped that copies of these maps will be made so that regional sets are available for circulation. The Ray Society is shortly to publish the vice-county boundaries (including Ireland) on three sheets on a scale of about 10 miles to one inch. These will be adequate as a guide when planning a Flora, though every attempt should be made to see the larger scale maps before the work is completed. County Record Offices are often very helpful to those attempting to follow the boundaries of the past. On no account should the map published with *The Comital Flora* (Druce, 1932) be relied upon.

2. Collection of data should generally be organised in relation to the 10 km. squares of the National Grid: the size of the unit chosen will depend upon the area to be covered, the nature of the terrain and the number of volunteers available, but as far as possible the "tetrad" (2 × 2 km. square) should be adopted as the basic unit of collection. Further thoughts on dividing the area are given by Perring, in Wanstall (1963).

Although the National Grid does not cover Ireland, the grid was extended westward by Webb (1955) for the Distribution Maps Scheme, and copies of the $\frac{1}{2}$″ series of Irish Ordnance Survey maps marked with this grid are kept by Professor Webb at Trinity College, Dublin, by Dr. Perring at Monks Wood Experimental Station, Abbots Ripton, Hunts., and by Miss M. P. H. Kertland, Botany Dept., The University, Belfast (N. Ireland only). Arrangements for copying can be made by writing to any of these addresses.

If records are collected with grid references the data can be used on a national scale to prepare revised editions of the *Atlas of the British Flora.*

3. The data are probably most conveniently collected on record cards of a type similar to those used for the Maps Scheme. If the original Maps Scheme cards are suited to the area in question they can be obtained from Dr. Perring (present cost price including postage 15/- per 100, or less for larger quantities). To produce cards designed specially for one area may cost a little more than this especially if habitat and frequency data are also to be collected. When preparing cards there are a few points to consider:

(i) The system of abbreviation used should not differ too widely

from that on the cards used for the Maps Scheme: volunteers would then find new cards easy to understand.

(ii) The number of species to include, and which species, should be carefully considered. Very rare or extinct species should certainly not be included: for analysing the data it is probably best to print only the common, frequent and occasional species—which may account for only 50% of the total.

4. An attempt should be made to deal separately with the segregates in the groups in the following list. The list has been drawn up to indicate the minimum standard which would usually be expected from local Flora writers. In some cases there may be adequate reasons for not including all these groups and in others authors will wish to include groups not listed here. Notes on hybrids, subspecies, etc., should be included whenever possible. When it is not otherwise obvious a note should be added when a particular taxon has not been found after considerable search.

It is not necessary that the author himself should be competent to deal with the groups concerned: he can often prepare an adequate account, at least noting which taxa occur in his area, by consulting some of the main national herbaria, the literature, or living authorities in the various groups. In this last respect attention is drawn to the "Panel of Referees and Specialists" published from time to time in the *Proceedings* of the Society, and to the "List of Major Sources of information other than County Floras" which appears at the end of this paper (Appendix 2).

A word of warning here though. The services of specialists should not be abused and, to retain their co-operation, good specimens must be prepared and properly labelled, and an attempt made to name the plant, or at least place it in its section of a critical genus. If the Flora is being prepared by a number of people it is probably best to divide the critical groups between them: they can often be trained to name accurately the more widespread species in their groups. In this way the numbers of specimens which have to be sent to specialists can be considerably reduced.

For a more detailed account of the problems of a referee see Townsend in Wanstall (1963).

Critical Groups

1. *Athyrium alpestre* s.l.—*A. alpestre* and *A. flexile*
2. *Dryopteris filix-mas* s.l.—*D. filix-mas, D. borreri* and *D. abbreviata*
3. *Polypodium vulgare* s.l.—*P. australe, P. vulgare* and *P. interjectum*
4. *Ranunculus aquatilis* s.l.—*R. aquatilis* and *R. peltatus*
5. *Papaver dubium* s.l.—*P. dubium* and *P. lecoqii*
6. *Fumaria* spp.
7. *Brassica rapa* and *B. napus*
8. *Rorippa nasturtium-aquaticum* s.l.—*R. nasturtium-aquaticum*, R. *microphylla* and the hybrid
9. *Viola canina* s.l.—*V. canina, V. lactea, V. reichenbachiana* and *V. riviniana*

10. *Sagina* spp.—*S. apetala, S. ciliata* and *S. procumbens*
11. *Arenaria serpyllifolia* agg.—*A. serpyllifolia* and *A. leptoclados*
12. *Chenopodium* spp.
13. *Erodium cicutarium* s.l.—*E. cicutarium* subsp. *cicutarium* and subsp. *dunense*: *E. glutinosum*
14. *Alchemilla vulgaris* agg.
15. *Aphanes arvensis* s.l.—*A. arvensis* and *A. microcarpa*
16. *Crataegus monogyna* s.l.—*C. monogyna, C. oxyacanthoides* and hybrids
17. *Sorbus* spp.
18. *Epilobium adnatum* s.l.—*E. adnatum, E. lamyi* and *E. obscurum*
19. *Circaea alpina* and *C.* × *intermedia*
20. *Callitriche* spp.
21. *Oenanthe aquatica* s.l.—*O. aquatica* and *O. fluviatilis*
22. *Polygonum aviculare* s.l.—*P. aviculare, P. arenastrum, P. rurivagum* and *P. boreale*
23. *Rumex acetosella* s.l.—*R. acetosella* and *R. tenuifolius*
24. *Vaccinium oxycoccus* s.l.—*V. oxycoccus* and *V. microcarpum*
25. *Monotropa hypopithys* s.l.—*M. hypopithys* and *M. hypophegea*
26. *Empetrum nigrum* s.l.—*E. nigrum* and *E. hermaphroditum*
27. *Anagallis arvensis* s.l.—*A. arvensis* and *A. foemina*
28. *Gentianella amarella* s.l.—*G. amarella* and *G. septentrionalis*
29. *Calystegia sepium* s.l.—*C. sepium, C. pulchra* and *C. silvatica*
30. *Veronica anagallis-aquatica* s.l.—*V. anagallis-aquatica* and *V. catenata*
31. *Euphrasia officinalis* agg.
32. *Mentha* spp.
33. *Thymus drucei* s.l.—*T. drucei* and *T. pulegioides*
34. *Galium pumilum* s.l.—*G. pumilum* and *G. sterneri*
35. *Arctium* spp.
36. *Hieracium* spp.
37. *Crepis* spp.
38. *Taraxacum*—*T. officinale* agg., *T. palustre* agg., *T. spectabile* agg. and *T. laevigatum* agg.
39. *Potamogeton* spp.
40. *Dactylorchis* spp.
41. *Carex flava* s.l.—*C. flava, C. lepidocarpa, C. demissa* and *C. serotina*
42. *Carex muricata* s.l.—*C. muricata, C. divulsa, C. polyphylla* and *C. spicata*
43. *Glyceria fluitans* s.l.—*G. fluitans, G. plicata, G. declinata* and the hybrid *G. fluitans* × *plicata*
44. *Festuca ovina* s.l.—*F. ovina, F. tenuifolia* and *F. vivipara*
45. *Poa pratensis* s.l.—*P. pratensis, P. angustifolia* and *P. subcaerulea*
46. *Bromus mollis* s.l.—*B. mollis, B. ferronii, B. thominii* and *B. lepidus*
47. *Bromus commutatus* s.l.—*B. commutatus* and *B. racemosus*
48. *Avena fatua* s.l.—*A. fatua* and *A. ludoviciana*
49. *Phleum pratense* s.l.—*P. pratense* and *P. bertolonii*

5. When writing an account of a species old records should be included where they are of significance in interpreting plant distribution and the process of change of the flora: in general, though, it is unnecessary to give long lists of records of one species for the same locality.

6. First records, including evidence from herbaria and unpublished sources, particularly of species only recently arrived, and last records for species believed to be extinct, should be included whenever possible. The records collected from the literature and the main public herbaria during the Distribution Maps Scheme are now kept by Dr. Perring at Monks Wood Experimental Station, Abbots Ripton, Huntingdonshire. He will be glad to search the records for data on a particular area.

7. It will increase the appeal of a local Flora to the public in the area it covers if generally used English names are included, such as those given in Clapham, Tutin and Warburg (1962) or in Fitter and McClintock (1956). Names in local use should also be added.

8. Information about the distribution of species outside the area need not usually be included as it is nearly always available from other sources: however, there are special cases, e.g. in writing the Floras of islands, when comparison with the adjacent mainland may be an exciting feature of the work. Notes on the different abundance of the species in the area compared with surrounding areas, when this is great, are worthy of inclusion, but would usually only concern a small minority of the species.

9. The sequence and nomenclature followed should be based upon a standard list such as the *List of British Vascular Plants* by Dandy (1958) or upon the most recent edition of the *Flora of the British Isles* by Clapham, Tutin and Warburg, but there is no need to give each species a number. If all Floras follow the same order the need to refer to the index is considerably reduced. There should only be *one* Index of Plants: the former habit of placing common and scientific names in separate indices is most aggravating. A separate topographical index, particularly if it includes grid references, should be added if possible.

One of the most difficult problems facing the local Flora writer is how to prepare the data collected in such a way that the task of *writing* the Flora is simplified. There are two types of aid to this end and it may be advisable to use both. A species card-index is essential, particularly for noting first and last records, herbarium specimens, references, specialists' determinations, etc.: doubtless almost all the records of rare species will be compiled in this way. However, if the area has been divided into several hundred units it will be a very arduous task to transfer the records of common species to the index card, and almost unintelligible when complete: a far better method is to place the records in squares marked on pre-printed outline maps of the county using symbols to indicate the age and nature of the records. If the map is printed on a card index card, e.g. 8″ × 5″, the map and written record are combined in one document. If the area has been divided into fewer than 50 units it may be more convenient,

and will certainly be cheaper, to substitute a register for the map. This is a ruled book in which a line is given to each species and a column to each unit. Symbols can be used for the records in the same way as on the map.

Anyone wishing to have his own record cards or maps printed is advised to consult Dr. J. G. Dony beforehand. He may be able to save both trouble and money.

Perhaps the best way of appreciating the variety and quality of local Floras is to look at a few of the fine examples which have been produced over the years. Attention has been drawn to some of them already in this Guide; others will be found in the list of "Recent Local Floras and Supplements" which follows (Appendix I).

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APPENDIX I.

RECENT LOCAL FLORAS, SUPPLEMENTS, AND WORK IN PROGRESS, 1964

0 CHANNEL ISLES No complete Flora exists. *Flora of Jersey*: L. V. Lester-Garland, 1903, indicates presence in other major islands. *Flora of Guernsey*: E. D. Marquand, 1901, is really a Flora of the Channel Isles excluding Jersey. A check-list of Herm plants was published by Mrs. F. Le Sueur and D. McClintock in 1962 (*La Société Guernesiaise Report and Transactions*, **17**, 36-48), and a check list of Sark plants was published by the same authors in 1963 (*loc. cit.* **17**, 303-318). These two are preparing data for a complete Flora of the Channel Isles.

1a ISLES OF SCILLY No published Flora: coverage in *Flora of Cornwall* by Davey is unreliable. J. E. Lousley has Flora in advanced state: the first draft was typed in 1940.

1-2 CORNWALL *Flora*: F. H. Davey, 1909. *Supplement*: E. Thurston and C. C. Vigurs, 1922 (*Supplement to J. Roy. Inst. Corn.*, **21**). Together these give adequate coverage of all but some critical genera. R. W. David has prepared a card index of records which is now kept by Mrs. E. L. Almond and L. J. Margetts, Wyndham, Treskillard, Redruth, who are collecting

data. The Supplement may still be purchased from the Truro Museum, price 8/6, post free.

3-4 DEVON *Flora*: W. K. Martin and G. T. Fraser, 1939. A modern work which deals with most critical groups and covers well all but some parts of the west of the county.

†5-6 SOMERSET *Flora*: R. P. Murray, 1896. *Supplement*: E. S. Marshall, 1914. Together these give adequate coverage of all but the critical genera. R. G. B. Roe is collecting data for a new Flora. The Supplement may still be purchased from the Taunton Museum.

7-8 WILTS. *Flora*: J. D. Grose, 1957. One of the outstanding modern Floras, admirable in every way. Supplements are regularly issued by the Wilts. Archaeological and Natural History Society, Devizes.

9 DORSET *Flora*, ed. 2: J. C. Mansel-Pleydell, 1895. *A Geographical Handbook of the Dorset Flora*: R. d'O. Good, 1948. These together give an adequate account. Good has produced supplements in 1955 and 1961 which can be obtained from the Dorset Natural History and Archaeological Society, Dorchester. The original maps of the distribution of Dorset plants have been given to the Nature Conservancy, Furzebrook, Wareham, Dorset.

10-11-12 HANTS and ISLE OF WIGHT *Flora*, ed. 2: F. Townsend, 1904. *Supplement*: J. F. Rayner, 1929. These together give adequate coverage of all but critical groups. The late A. W. Westrup began resurveying the county on a 2 × 2 km. square basis about 1960. This will be continued under the guidance of a committee of the Hampshire Naturalists Trust.

13-14 SUSSEX *Flora*: A. H. Wolley-Dod, 1937. This is adequate in most respects but contains some unfortunate errors. O. Buckle is directing a group sponsored by the Sussex Naturalists' Trust which intends to publish a new Flora.

15-*16 KENT *Flora*: F. J. Hanbury and E. S. Marshall, 1899. No supplement to this Flora, which was adequate in its day, has been published and a new account is now needed. This has been prepared by F. Rose and should be published in the 1960s.

*17 SURREY *Flora*: C. E. Salmon, 1931. Well over half this Flora is admirable, but it was completed by W. H. Pearsall after the death of Salmon and the accounts of the monocotyledons and some of the critical groups are poor. For this reason a new Flora or an extensive supplement is needed. Recording the flora on a 2 × 2 km. basis is being organised by the Surrey Flora Committee of which the Chairman is J. E. Lousley.

†*The Flora of Bristol*, J. W. White, 1912, covers a large area of N. Somerset and has been kept up-to-date by annual supplements in the *Proceedings of the Bristol Naturalists' Society*.

*See starred footnote on opposite page.

*18-19 Essex *Flora*: G. S. Gibson, 1862. A new Flora is long overdue. Work is in hand under the direction of B. T. Ward and S. T. Jermyn. The 10 km. squares are being used as a basis of recording.

*20 Herts. *Flora*: A. R. Pryor, 1887. Although the county was well served with two nineteenth-century Floras a new one is now needed. Collection of data on a 2 × 2 km. basis started in 1955 and is being co-ordinated by J. G. Dony. A new Flora may be ready during the 1960s.

*21 Middlesex *Flora*: H. Trimen and W. T. Thistleton Dyer, 1869. Although this largely metropolitan county was well covered by *A Hand List of the Plants of the London Area* the publication of a new Flora of the whole county is desirable. A complete ms. has been prepared by D. H. Kent.

22 Berks. *Flora*: G. C. Druce, 1897. *Supplement*: G. C. Druce, 1919 (*Rep. Bot. Soc. & E.C.*, **5**, 443). These together give an adequate account of the Flora with the exception of the critical groups. The historical introduction is good. H. J. M. Bowen has been collecting records for a new Flora since 1960 on a 5 × 5 km. basis.

23 Oxford *Flora*, ed. 2: G. C. Druce, 1927. An adequate account with the exception of the critical groups. Extensive historical introduction. No work at present.

*24 Bucks. *Flora*: G. C. Druce, 1926. A moderate Flora covering the area unevenly, but the history of the botany of the county is well covered. A supplement would be valuable in the next decade.

†25-26 Suffolk *Flora*: W. M. Hind, 1889. A rather poor Flora for its late date. A complete and up-to-date Flora is badly needed. Recording on a parish basis has been co-ordinated by F. W. Simpson and Miss J. C. N. Willis and the former has prepared an ms.

†27-28 Norfolk *Flora*: W. A. Nicholson, 1914. *W. Norfolk Plants To-day*: C. P. Petch and E. L. Swann, 1962 (Supplement to *Proc. B.S.B.I.*, **4** (4)): a supplement was published in 1964 (*Proc. B.S.B.I.*, **5**, 227-229). Although the county has been fortunate in the number of Floras and Supplements published it has never had a full-scale comprehensive Flora. Messrs. Petch and Swann are now preparing one.

29 Cambridge *Flora*: F. H. Perring, P. D. Sell, S. M. Walters and H. L. K. Whitehouse, 1964. A county flora based on 10 km-square recording.

*For some account of the flora of the parts of these counties which occur within 20 miles of St. Paul's Cathedral see Kent, D. H., and Lousley, J. E., 1951-57, *A Naturalist*, **30-36**. Obtainable from Mrs. L. M. P. Small, 13 Woodfield Crescent, London, W.5, price 11/6, post free.

†Mr Swann is Chairman of a Committee which has begun work on the Flora of Breckland.

30 BEDFORD *Flora*: J. G. Dony, 1953. A modern Flora with a modern look. A fine example to all prospective local Flora writers. Available from Dr. Dony, 9 Stanton Road, Luton, Beds.

31 HUNTS. No Flora as such has ever been published. There is an account by G. C. Druce, 1926, in the Victoria County History. It is a little more than a list with a few localities. Part of an ms. Flora of the Cambridge/Hunts. Border by A. Fryer is kept in the Botany Dept., Oxford University. J. L. Gilbert is collecting data for a modern Flora, which it is hoped will be published at the end of 1964.

32 NORTHAMPTON *Flora*: G. C. Druce, 1930. A very full historical introduction is backed by a rather moderate account of the Flora. A comprehensive supplement would be valuable in the next ten to fifteen years. G. F. Laundon of the Commonwealth Mycological Institute, Ferry Lane, Kew, Richmond, Surrey, made a start on the collection of data in 1960.

33-§34 GLOUCESTER *Flora*: H. J. Riddelsdell, G. W. Hedley and W. R. Price, 1948. A very useful and complete Flora for which a supplement would be of value in about 1980.

*35 MONMOUTH *Flora*: S. Hamilton, 1909. (*Chepstow Flora*: W. H. Shoolbred, 1921, covers the east of the county). No completely adequate Flora has ever been published. Data for a Flora were collected by A. E. Wade between 1920 and 1940. An ms. was prepared about 1942: it would now need revision before publication. If unpublished it will be kept by the National Museum of Wales.

36 HEREFORD *Flora*: W. H. Purchas and A. Ley, 1889. *Additions*: A. Ley 1894: F. M. Kendrick, 1956-7 (*Transactions of the Woolhope Club*). The adequate records of the past now need collecting together and bringing up to date. Work on a new Flora was begun in 1950 by Mrs. L. E. Whitehead.

37 WORCESTER *Flora*: J. Amphlett and C. Rea, 1909. A distinguished and interesting Flora when published, now very much in need of a comprehensive supplement, though no organised work is known of at present.

38 WARWICK *Flora*: J. E. Bagnall, 1891. A moderate Flora now very much outdated. Since 1950 J. G. Hawkes and R. C. Readett have devised a comprehensive and ambitious scheme of recording on a 1 km. square basis. When published about 1966 their Flora promises to be one of the most exciting of the post-war period. Their methods could be adapted to other areas with advantage.

39 STAFFORD *Flora*: J. E. Bagnall, 1901. *Flora of North Staffordshire*: W. T. Boydon-Ridge, 1931. Bagnall's Flora was published as a Supplement to *Journal of Botany*, **39**, and has

§*The Flora of Bristol*, J. W. White, 1912, covers a large area of W. Gloucester, and has been kept up-to-date by annual supplements in the *Proceedings of the Bristol Naturalists' Society*.

*See footnote on opposite page.

never been readily available. Since 1941 E. S. Edees has been collecting data for a Flora on a 2 × 2 km. basis and hopes to publish his work early in the 1970s.

40 SALOP *Flora*: W. A. Leighton, 1841. *Handlist of the Shropshire Flora*: L. C. Lloyd and E. M. Rutter, 1957 (Caradoc and Severn Valley Field Club). Leighton's work included accounts of the species (excluding the Pteridophytes) but rather few localities. Lloyd and Rutter summarised recent knowledge on an area basis, including information based on an ms. Flora prepared in 1913 by W. P. Hamilton which is kept at the Shrewsbury Museum. A modern Flora of this exciting county is badly needed. C. A. Sinker has made a good start in the collection of the data and would welcome assistance.

*41 GLAMORGAN *Flora*: H. J. Riddelsdell, 1907 (Supplement to *J. Bot.*, **45**). *Flora*: A. H. Trow, 1911. *Flowering Plants and Ferns of Glamorganshire*: E. Vachell, 1936 (*Glamorgan County History*, Vol. **1**). Trow's Flora was not reliable and Miss Vachell's account was only a check-list. An up-to-date account is needed. No work at present.

*42 BRECON No Flora has been published, though an ms. Flora by D. P. M. Guile is kept at the National Museum of Wales.

*43 RADNOR No Flora has been published. No work at present.

*44 CARMARTHEN No Flora has been published. The collection of data for a Flora is being co-ordinated by R. F. May and Mrs. I. M. Vaughan. The former has prepared an ms.

*45 PEMBROKE No complete Flora. *List of Pembrokeshire Plants*: F. L. Rees, 1950. This is incomplete. A modern Flora is required. T. A. W. Davis is studying the critical groups of the county, and collecting data for a Flora.

*46 CARDIGAN *Flora*: J. H. Salter, 1935. *Supplement*: A. E. Wade, 1952. These two combine to give an adequate account of the Flora of the county. The works are modest but well suited to small, underpopulated counties. Both may be purchased from the University of Wales Press, Cathays Park, Cardiff.

*47 MONTGOMERY No Flora has been published. No work known at present. Miss V. J. MacNair has a wide knowledge of the area.

*48 MERIONETH *Flora*, ed. 2: P. M. Benoit and M. Richards, 1963 (West Wales Naturalists' Trust). A valuable new Flora with particularly good coverage of the critical groups. Remarkable value for the money. A good example of what can be done for small, underpopulated counties.

*49 CAERNARVON *Flora* (with Anglesey): J. E. Griffith, 1895. A modest account with only a limited number of localities. Work on a new Flora (with Anglesey) using 2 × 2 km. squares is being organised by P. W. Richards.

*Localities for the less common species based on specimens in the National Museum of Wales for these counties are published in *Welsh Flowering Plants*. ed. 2. H. A. Hyde and A. E. Wade 1957, and *Welsh Ferns*. ed. 4. H. A. Hyde and A. E. Wade, 1962.

*50 DENBIGH *Flora*: A. A. Dallman, 1911-13. Dallman's Flora was published in parts in the *Journal of Botany* and has never been readily available. It was little more than a check-list. No work at present.

*51 FLINT *Flora*: A. A. Dallman, 1907-11. Dallman's Flora was published in parts in the *Journal of Botany* and has never been readily available. It was little more than a check-list. No work at present.

*52 ANGLESEY *Flora* (with Caernarvon): J. E. Griffith, 1895. A modest account with only a limited number of localities. Work on a new Flora (with Caernarvon) using 2 × 2 km. squares is being organised by P. W. Richards.

53-54 LINCOLN No complete Flora. *Check-list*: E. A. Woodruffe-Peacock, 1909 (*Transactions of the Lincolnshire Naturalists' Union*). The second largest English county and yet it has no Flora. Woodruffe-Peacock left an ms. Flora which is kept in the Botany School, Cambridge University. Miss E. J. Gibbons has been collecting data for many years and it is expected that a Flora will be published before 1970.

55 LEICESTER and RUTLAND *Flora*: A. R. Horwood and C. W. F. Noel, 1933. A very exhaustive account of the Flora with extensive historical introduction. A supplement within the next decade would be of value. J. Chandler and G. Messenger are preparing a Flora of Rutland.

56 NOTTINGHAM *Flora*: R. C. L. Howitt & B. Howitt, 1963. A new Flora of the county with a very distinct flavour of its own. Fills a gap which has existed for far too long.

57 DERBY *Flora*: W. R. Linton, 1903. An average county Flora now out of date. Work on a new Flora has been in progress since 1930 directed by a committee based at Derby Museum.

58 CHESTER *Flora*: Lord de Tabley, 1899. *Flora of the Liverpool District*, ed. 2: C. T. Green, 1933. These together give moderate cover but little is known of the south of the county. A full supplement or a new Flora is due. Work on the Flora is being co-ordinated by Mrs. M. Cullen.

59 SOUTH LANCASTER *Flora*: J. P. Savidge, V. H. Heywood and V. Gordon (Editors), 1963. A most important new Flora for a highly populated vice-county which has never before had a comprehensive account. The introductory material is particularly interesting: details of the climate are extensive. Collection of data is to continue.

60 W. LANCASTER *Flora*: J. A. Wheldon and A. Wilson, 1907. An adequate account at the time of publication, but both taxonomy and distribution now in need of revision. A supplement is needed and may be prepared by a team led by E. F. Greenwood, 11 Crawshay Drive, Emmer Green, Reading, Berks.

*61 E. York *Flora*: J. F. Robinson, 1902. A mediocre Flora: something on a more ambitious scale is needed. Work has been going on since 1945 directed by R. d'O. Good and Miss E. M. Crackles.

*63-64 W. York *Flora*: F. A. Lees, 1888. A fine Flora in its day but a new one or full supplement is badly needed. No work at present.

*62 & 65 N. York *Flora*, ed. 2: J. G. Baker, 1906. A good Flora and guide to the area which now needs bringing up to date with a full supplement at least. Miss C. M. Rob has been collecting data on a 10 km. square basis and keeps an up-to-date card index.

†66 Durham *Flora* (with Northumberland): J. G. Baker and G. Tate, 1868. An inadequate account. A full Flora is needed. Work began in 1962 under the direction of Dr. M. E. Bradshaw to collect data on a 1 km. square basis.

†67-68 Northumberland *Flora* (with Durham): J. G. Baker and G. Tate, 1868. An inadequate account. A full Flora is needed. Dr. and Mrs. G. A. Swan have made an exhaustive survey of the county during the last decade.

69 Westmorland *Flora*: A. Wilson, 1938. A reasonably adequate Flora with extensive guide to the area in the introduction. A supplement would be valuable soon. No work at present.

69b N. Lancaster *A Flora of the English Lake District*: J. G. Baker, 1885. No modern Flora covers this area adequately: the Floras of W. Lancs. and Westmorland omitted it. No work at present.

†70 Cumberland *Flora*: W. Hodgson, 1899. A modest Flora, mainly of the west of the county. A new comprehensive Flora is needed. D. A. Ratcliffe and Miss C. W. Muirhead are collecting data for a new Flora.

71 Isle of Man *Flora*: C. I. Paton, 1933 (*Supplement to N.W. Nat.*, **3**). This was little more than a check-list: a complete Flora is badly needed. D. E. Allen has been co-ordinating the collecting of data for a Flora since 1949.

72 Dumfries *Flora*: G. F. Scott-Elliot, 1896. An odd Flora which also covers Kirkcudbright and Wigtown sketchily. The format is muddling, which makes it a difficult book to use. A complete modern Flora is needed. No work at present.

73 Kirkcudbright No complete Flora but many references in Scott-Elliot's *Flora of Dumfriesshire*. No work on a Flora at present, but Dr. H. Milne-Redhead and A. McG. Stirling have covered the area extensively in the last decade.

74 Wigtown No complete Flora. *A list of Wigtownshire Plants*: A. C. M'Candlish, 1931. No work at present.

*Additional records for these counties may be found in *Supplement to the Yorkshire Floras*: F. A. Lees *et al.*, 1942.

†Further information for these counties will be found in an account of the Flora of the Three Northern Counties: J. W. H. Harrison and G. W. Temperley in *The Three Northern Counties of England*, Sir Cuthbert Headlam (Editor), 1939.

*75 AYR *Flora*: J. Smith, 1896. A short Flora on a parish basis with few exact localities. An up-to-date Flora is needed. No work at present.

*76 RENFREW No complete Flora. The Andersonian Naturalists have started work on collecting data for a Flora.

*77 LANARK No complete Flora. No work at present.

78 PEEBLES No Flora as such has ever been published. There is an account by F.R.S. Balfour in *The History of Peebleshire*: J. W. Buchan, 1925. No work at present.

79 SELKIRK No Flora has been published. No work at present.

80 ROXBURGH No complete Flora. There is some limited information in *Natural History of the Eastern Borders*: G. Johnston, 1853. No work at present.

81 BERWICK *Flora*: G. Johnston, 1829. Not really a complete Flora of the County. One is needed. Since 1959 A. G. Long has been co-ordinating the collection of data for a Flora.

82-84 LOTHIANS *Field Club Flora*: I. H. Martin, 1927. A moderate account which lacks exact localities, is poor on critical plants and has an infuriating index. Since 1955 Miss E. Beattie has been collecting data on a 10 km. basis for a new Flora.

85 FIFE and KINROSS *Flora*: W. Young, 1936. An adequate account which could be brought up to date with a supplement, particularly for critical groups. Copies are available from the Secretary, Botanical Society of Edinburgh, c/o Royal Botanic Garden, Edinburgh, 3, price 10/-, post free.

*86 STIRLING No Flora has been published. No work at present. (*The Flora of the Clyde Area* deals with only a small part of the west of the county.)

87-89 PERTH with CLACKMANNAN *Flora*: F. Buchanan White, 1898. The only Scottish Flora which resembles its English counterparts, but exact localities are few. A supplement at least is needed. A. W. Robson is Chairman of the Botanical Section of the Perth Society for Natural Science, which is collecting together all available data.

90 FORFAR *Flora*: W. Gardiner, 1848. A very early Flora now out of date. An ms. Flora was prepared many years ago by Mr. and Mrs. R. H. Corstorphine. It is now in the hands of Sir George Taylor at Kew. Eventually he hopes to bring it up to date for publication. Miss U. K. Duncan has done a great deal of work in the county during the last 20 years.

†91 KINCARDINE No complete Flora. Since 1958 Mrs. A. H. Somerville has been collecting data.

*Further informaton for these counties may be found in *The Flora of the Clyde Area*: J. R. Lee, 1933, copies of which are available from the publishers, John Smith & Son (Glasgow) Ltd., 57-61 St. Vincent Street, Glasgow, C.2, price 10/-, post free. Separates of Lees *Additions* are available from A. A. Percy, 5 Buckingham Drive, Glasgow, E.2.

†See footnote marked † on opposite page.

†92 S. ABERDEEN No complete Flora. *Flora of the City Parish of Aberdeen*: J. W. H. Trail, 1923. With Dickie's *Botanist's Guide* there is moderate coverage of the vice-county, but a full Flora is needed. No work at present.

†93 N. ABERDEEN *Flora (of Buchan)*: J. W. H. Trail, 1902. This Flora lists in columns the parishes from which species have been recorded. Some of the parishes are very large and in the absence of more precise localities, many records would be difficult to trace in the field. No work at present.

†94 BANFF *Flora*: W. G. Craib, 1912. This Flora lists the species in the same way as the *Flora of Buchan* and the same observations apply. No work on a Flora at present but Miss M. McCallum Webster has studied the county on a 10 km. basis during the last decade and has extensive information.

95 MORAY *Flora*: J. J. Burgess, 1935. A short Flora with abbreviated parish records and few exact localities. A supplement at least is needed. Miss M. McCallum Webster has studied the county on a 10 km. basis during the last decade and has extensive information (see 96b Nairn).

§96a-97 INVERNESS (8) No Flora. No work at present.

96b NAIRN No Flora. During the last decade Miss M. McCallum Webster has been collecting data for a Flora. She may include both Nairn and Moray (Elgin) between the same covers.

§98 ARGYLL (main) No Flora.

*99 DUNBARTON No Flora. Mr. A. McG. Stirling is collecting data for a Flora.

*100 CLYDE ISLES No Flora. Mrs. A. H. Sommerville is collecting data for a Flora of Arran.

§101 KINTYRE No Flora. *The Flora of the Clyde Area* includes only a small part of Kintyre. Two resident botanists, Miss M. H. Cunningham and A. G. Kenneth, have a wide knowledge of the area, and are currently working on a check-list.

102 S. EBUDES No complete Flora. *Flora of Islay and Jura*: J. K. Morton, 1959 (Supplement to *Proc. B.S.B.I.*, **3**). *An account of the Flora in Colonsay*: M. McNeill, 1910. Flora of Easdale and The Garvellachs: C. W. Muirhead, 1962 (*Trans. & Proc. Bot. Soc. Edin.*, **39**, 316). These together give adequate cover of the vice-county.

103 MID EBUDES No complete Flora. Flora of the Isles of Coll, Tiree and Gunna. J. W. H. Harrison *et al.*, 1941 (*Proc. Univ. Durham Phil. Soc.*, **10**, 274). This work needs revision, and extension to include the other islands in the vice-county.

104 N. EBUDES No complete Flora. Papers: J. W. H. Harrison *et al.*, 1939, *et seq.* (*Proc. Univ. Durham Phil. Soc.*, **10-13**).

†Further information on these counties may be found in the *Botanist's Guide to the Counties of Kincardine, Aberdeen and Banff*: G. Dickie 1860.

§For over 25 years K. N. G. MacLeay has been collecting data for a Flora of the political county of Argyll which he hopes to publish before 1970.

*See footnote marked * on opposite page.

Revision and extension of this work is needed. No work at present.

105 W. Ross *Flora*: G. C. Druce, 1929. By no means complete, but a useful Flora of a very large county. Published as a supplement to *Rep. Bot. Soc. & E.C.*, **8**. A modern supplement required. No work at present.

106 E. Ross No Flora. Miss U. K. Duncan is collecting data on a 10 km. square basis and hopes to publish a Flora in due course.

107-108 Sutherland No Flora. For nearly 10 years J. Anthony has been collecting data on a parish basis for a Flora of this very large county. He hopes to publish the results of his investigations by about 1965.

109 Caithness No Flora. *The Vegetation of Caithness*: C. B. Crampton, 1911. A list of the species, and some information contributed by R. M. Adam, occur in *The Red Deer of Langwell and Braemore*: The Duke of Portland, K.G., G.C.V.O., 1935. No work at present.

110 Outer Hebrides No Flora. Papers: J. W. H. Harrison *et al.*, 1941, *et seq.* (*Proc. Univ. Durham Phil. Soc.*, **10-13**). Revision and completion of this work is needed. See also *The Flora of Uig*: M. S. Campbell, 1945. Miss Campbell and J. Heslop Harrison hope to prepare a Flora some time in the future.

111 Orkney *Flora*: M. Spence, 1914. Papers: H. H. Johnston, 1895, *et seq.* (1914-26, *Trans. Bot. Soc. Edin.*, **26-29**, and privately). Copies are available from the Secretary, Botanical Society of Edinburgh, c/o Royal Botanic Garden, Edinburgh 3. For a remote part of the British Isles the coverage is remarkably good. An up-to-date supplement is needed. Miss E. R. Bullard is collecting together all available data on a 10 km. and island basis.

112 Zetland *Flora*: G. C. Druce, 1921. *Supplement*: G. C. Druce, 1924. Another of Druce's many Floras. Of average standard but the area is in need of a supplement, or a full Flora, Druce's works were published as supplements to *Rep. Bot. Soc. & E.C.* and sold as separates. R. C. Palmer and W. Scott are assembling all available data.

H. 1-2 Kerry *Flora*: R. W. Scully, 1916. An excellent Flora from the classical mould, with some valuable taxonomic notes. A supplement with special attention to critical groups needed. No work at present.

H. 3-5 Cork *Flora*: T. Allin, 1883. Neither this, nor either of the earlier Floras, did justice to this large and variable county. A full scale Flora is required. No work at present.

H. 6 Waterford No Flora. No work at present.

H. 7 & 10 Tipperary No Flora. No work at present.

*H. 8	LIMERICK No Flora. No work at present.
*H. 9	CLARE No Flora. The north of the county will be covered by a Flora of the Galway Region being prepared by the Irish Regional Committee.
H.11	KILKENNY No Flora. No work at present.
H.12	WEXFORD No Flora. No work at present.
H.13	CARLOW No Flora. No work at present. Miss E. M. Booth is a resident with a very wide knowledge of the flora.
H.14	QUEEN'S COUNTY (LEIX) No Flora. No work at present.
*H.15-17	GALWAY No Flora. The whole of H.16 and parts of the west of H.15 will be covered by a Flora of the Galway Region being prepared by the Irish Region Committee.
H.18	KING'S COUNTY (OFFALY) No Flora. No work at present.
H.19	KILDARE No Flora. Work on Flora may be undertaken by the Dublin Naturalists' Field Club.
H.20	WICKLOW *Flora*: J. P. Brunker, 1951. The only post-war Irish County Flora, which would serve as an admirable model for others.
H.21	DUBLIN *Flora*: N. Colgan, 1904. *Supplement*: Dublin Naturalists' Field Club, 1961. The two together give adequate coverage of the county with the exception of the critical groups.
H.22	MEATH No Flora. No work at present.
H.23	WESTMEATH No Flora. No work at present.
H.24	LONGFORD No Flora. No work at present.
*H.25	ROSCOMMON No Flora. No work at present.
*H.26-27	MAYO No Flora. No work at present.
*H.28	SLIGO No Flora. No work at present.
*H.29	LEITRIM No Flora. No work at present.
H.30	CAVAN No Flora. No work at present.
H.31	LOUTH No Flora. No work at present.
H.32	MONAGHAN No Flora. No work at present.
*H.33	FERMANAGH No Flora. For the last 20 years R. D. Meikle has been collecting data for a Flora, and an ms. has now been prepared.
H.34-35	DONEGAL *Flora*: H. C. Hart, 1898. A comprehensive Flora adequate in its day, with a long and valuable introduction, and meteorological appendix. A modern supplement is now needed. No work at present.
H.36	TYRONE No Flora. No work at present.
H.37	ARMAGH No Flora. Members of the B.S.B.I., the Belfast Naturalists' Field Club and the Armagh Field Club have started collecting data for a Flora.
H.38	DOWN *Flora*, ed. 2 (with Antrim and Derry): R. Ll. Praeger and W. R. Megaw, 1938. An adequate account with independent treatment of casuals and aliens.
H.39	ANTRIM *Flora*, ed. 2 (with Down and Derry): R. Ll. Praeger and W. R. Megaw, 1938. See above.

*Localities for the less common species for these counties may be found in *A Tourist's Flora of the West of Ireland*: R. Ll. Praeger, 1909.

H.40 Londonderry *Flora*, ed. 2 (with Down and Antrim): R. Ll. Praeger and W. R. Megaw, 1938. See above.

Priorities for work on Local (County) Floras

Using the above list as a basis an attempt has been made to place each vice-county into one of five arbitrary categories from the highest to the lowest priority for the publication of a new Flora or Supplement.

Fundamentally the categories are as follows:

I. No Flora has ever been published.

II. The Flora published is either incomplete because it lacks localities and/or some species, or it was published before 1850.

III. The last Flora or Supplement was published between 1850 and 1899.

IV. The last Flora or Supplement was published between 1900 and 1929

V. The last Flora or Supplement was published from 1930 onwards.

A vice-county has been placed in a priority category one higher if its last Flora or Supplement was deficient in some way.

Priorities

I. 42, 43, 44, 47, 79, 86, 96a, 96b, 97, 98, 101, 106, 107, 108, H.6, 7, 10, 11, 12, 13, 14, 18, 19, 22, 23, 24, 30, 31, 32, 36, 37.

II. 1a, 31, 45, 53, 54, 66, 67, 68, 69b, 71, 73, 74, 76, 77, 78, 80, 81, 90, 91, 92, 99, 100, 103, 104, 109, 110, H.8, 9, 15, 16, 17, 25, 26, 27, 28, 29, 33.

III. 15, 16, 18, 19, 20, 21, 25, 26, 35, 36, 38, 39, 40, 41, 49, 50, 51, 52, 58, 61, 63, 64, 69b, 70, 72, 75, 87, 88, 89, 93, 94, H.3, 4, 5, 34, 35.

IV. S, 1, 2, 5, 6, 10, 11, 12, 17, 22, 23, 24, 27, 32, 37, 57, 60, 62, 65, 82, 83, 84, 95, 102, 105, 111, 112, H.1, 2.

V. 3, 4, 7, 8, 9, 13, 14, 28, 29, 30, 33, 34, 46, 48, 55, 56, 59, 69a, 85, H.20, 21, 38, 39, 40.

APPENDIX 2.

Major Sources of Records other than County Floras

(1) General Reference

British Herbaria. D. H. Kent, 1958.

A Bibliographical Index of the British Flora. N. D. Simpson, 1960. (Fuller citations to many of the works listed below will be found here).

(2) The British Isles

Topographical Botany, ed. 2. H. C. Watson, 1883. Details of most of the records can be obtained by reference to Watson's mss. and herbarium which are preserved at Kew.

Supplement to Topographical Botany, ed. 2. A. Bennett, 1906.

Second Supplement to Watson's Topographical Botany. A. Bennett, C. E. Salmon, and J. R. Matthews, 1929-30.

The Comital Flora of the British Isles. G. C. Druce, 1932.
Reports of Botanical Exchange Club, 1858-1948 (as Thirsk N.H.S., 1858-66; as London B.E.C., 1866-79; as B.E.C. of the British Isles, 1879-1909; as B.E.C. and Society of the British Isles, 1909-48).
Reports of Watson Botanical Exchange Club, 1884-1934.
Reports of Botanical Locality Record Club and Botanical Record Club, 1873-86.
Botanical Society of the British Isles *Year Books,* 1949-53.
Proceedings of the B.S.B.I., 1954→
Watsonia, 1949→
Journal of Botany, 1863-1942.
Journal of Ecology, 1913→
Phytologist, 1841-63.
Science Gossip, 1865-93.
British Association Handbooks.
Victoria County Histories.
First Records of British Flowering Plants, ed. 2. W. A. Clarke, 1900.
Altitudinal Range of British Plants, ed. 2. A. Wilson, 1956.
British Fern Gazette, 1909→ (especially the Census list prepared by A. C. Jermy, 1960, Supplement to vol. **9**).

(3) England

Naturalist (v.-cs. 53-71). 1837-9, 1851-8, 1864, 1867, 1873 (as *Yorkshire Naturalists' Recorder*), 1875→
North Western Naturalist, 1926-55.
Vasculum (and *Vasculum (Substitute)*) (v.-cs. 62, 66-8, and 70), 1915→
South-Eastern Naturalist, 1890→

(4) Scotland

Annals of Scottish Natural History, 1892-1911.
Scottish Naturalist, 1871-91, 1912→
Transactions and Proceedings of the Botanical Society of Edinburgh, 1840→
Transactions and Proceedings of the Natural History Society of Glasgow, 1869-1908.
Glasgow Naturalist, 1908→

(5) Ireland

Cybele Hibernica, ed. 2. N. Colgan and R. W. Scully, 1898.
Irish Topographical Botany. R. Ll. Praeger, 1901.
1st Supplement to Irish Topographical Botany, 1901-1905, R. Ll. Praeger. *Proc. Roy. Irish Acad.,* **24** B, 13, 1906.
2nd Supplement, 1906-1928. R. Ll. Praeger, *loc. cit.,* **39** B, 57, 1929
3rd Supplement, 1929-1933. R. Ll. Praeger, *loc. cit.,* **42** B, 55, 1934.
4th Supplement, 1934-1938. R. Ll. Praeger, *loc. cit.,* **45** B, 231, 1939.
5th Supplement, 1939-1945. R. Ll. Praeger, *loc. cit.,* **51** B, 27, 1946.
Irish Plant Records. D. A. Webb, *Watsonia,* **2**, 217, 1952.
The Botanist in Ireland. R. Ll. Praeger, 1934.
Irish Naturalist, 1892-1924.
Irish Naturalists' Journal, 1925→

(6) Wales

Welsh Flowering Plants, ed. 2. H. A. Hyde and A. E. Wade, 1957.
Welsh Ferns, ed. 4. H. A. Hyde and A. E. Wade, 1962.
Welsh Timber Trees, ed. 3. H. A. Hyde, 1961.
Nature in Wales, 1955→

(7) Monographs

The genus *Fumaria* in Britain. H. W. Pugsley. Supplement to *J. Bot.*, **50**, 1912. See also *J. Bot.*, **51**, 50, 1913.

Revision of the genera *Fumaria* and *Rupicapnos*. H. W. Pugsley. *J. Linn. Soc.*, **44**, 233, 1919; **47**, 427, 1927; **49**, 93, 1932; **49**, 517, 1934; **50**, 541, 1937.

Handbook of the Rubi of Great Britain and Ireland. W. C. R. Watson, 1958. In the European herbarium of the British Museum there are the ms. record books of W. Moyle Rogers, and a catalogue of the vast Barton collection.

A Revision of the British Roses. A. H. Wolley-Dod. Supplements to *J. Bot.*, **68**, 1930, and **69**, 1931.

A monograph of British Willows. E. F. Linton. Supplement to *J. Bot.*, **51**, 1913.

A revision of the British Euphrasiae. H. W. Pugsley. *J. Linn. Soc.*, **48**, 467, 1930.

A prodromus of the British Hieracia. H. W. Pugsley. *J. Linn. Soc.*, **54**, 1948. P. D. Sell maintains an Index of the genus at the Botany School, Cambridge, where it may be consulted by arrangement.

Studies of British Potamogetons. I-XVIII. J. E. Dandy and G. Taylor. *J. Bot.*, **76**, 1938-**80**, 1942. J. E. Dandy, British Museum (Natural History), Cromwell Road, London, S.W.7, maintains a card index of the genus.

VERONICA PEREGRINA L. IN THE BRITISH ISLES

By E. B. Bangerter

Introduction

The earliest records of *Veronica peregrina* L. in these Islands were usually accompanied by such amazement at its abundance and indestructibility and by such certainty as to its future spread that an investigation into its past history and present status seemed to offer an interesting, if not fascinating, study. Unlike *V. filiformis* Sm., whose remarkable spread from humble beginnings is described elsewhere by myself and D. H. Kent (1957, 1962), *V. peregrina* seems to have become an almost unknown plant except, perhaps, to a few keen recorders of aliens. Nevertheless it has been noted in over forty vice-counties, in many of which it still occurs, and it is being found in new ones to the present day. I am aware that this account of the history and distribution of this speedwell is by no means exhaustive, a shortcoming which, I am hopeful, will be rectified by further records to indicate a wider occurrence than known to me at present.

Description

V. peregrina, with its long, lax terminal raceme, has some affinity with our widespread, well-known thyme-leaved speedwell, *V. serpyllifolia,* from which it differs mainly in being annual, glabrous* and having erect, not creeping and rooting, stems. The very long upper bracts, much longer than the inconspicuous, whitish flowers, distinguish it from any of our native species having terminal racemes. The average height of specimens that I have seen is 15 cm. but one or two attained twice that height. It is usually branched. Its ovate or oblong leaves, entire or weakly toothed, narrowing to a short petiole, also serve to distinguish it from *V. serpyllifolia.* The calyx-lobes are lanceolate and well exceed the very short-stalked flowers and capsules. The capsules are rounded, scarcely notched, with a minute style and bear many seeds. As it is self-pollinated and fruits freely it appears equipped to persist, unlike *V. filiformis,* which fruits poorly and extremely rarely, is self-incompatible and could not have succeeded so well as an invader were it not able to reproduce vegetatively with re-

*The subspecies *xalapensis,* with short gland-tipped hairs, occurs in America (Pennell, 1935) but I have seen no British material answering to this description; some specimens bear at most a few scattered whitish hairs on the stem.

markable ease. The flowering period of *V. peregrina* is from April to July; good fruiting material may be found in August but it is in fruit as early as May. It is a weed of gardens, particularly fruit and nursery gardens.

Illustrations seem to have been unfortunate: J. E. Smith (1791) remarks that the figure 407 in *Flora Danica* "is one of the most wretched that can be conceived"; F. Hamilton Davey (1907) comments "Plate 977 in vol. 6 of *English Botany* is a very poor likeness of *V. peregrina*"; McClintock and Fitter (1956) do show the characteristic bracts but do not give an adequate picture of the plant's habit. The last named authors, incidentally, give the common name "American speedwell" for this *Veronica*. The only good black and white illustration of this plant that I have found in British literature is in Roles (1963).

Origin

Linnaeus (1753) says "Habitat in Europae hortis arvisque". "This species is a native of Sweden and Denmark" writes J. E. Smith (1791) and goes on to say that he possesses a wild specimen from Buenos Aires. J. G. Baker (1859) reports "this is a plant of France, and respecting its occurrence in the Channel Islands it may therefore be worth while to seek further information". It is not, in fact, a native of Europe, being introduced in the eighteenth century according to Hegi (1918) and since becoming widespread over the Continent; this author, by the way, does give a good illustration of the plant.

We learn, however, from William Aiton (1789) that it was cultivated in this country as early as 1680, this information being derived from Robert Morison (1680) who records its ready propagation in gardens but "ubi sponte oriatur ignoratur". Broadly, its indigenous distribution is from temperate North through Central to temperate South America as a plant of damp, open habitats and a weed of cultivated ground. It is known from China to Japan as a relatively recent introduction but it is of interest to note that Pennell (1935) suggests that the ancestors of this and other species of the predominantly palaearctic genus *Veronica* "may readily have entered during Pliocene or Miocene times from Asia".

History as an Adventive in the British Isles

1. Nineteenth Century

"This plant was first noticed in 1836 growing abundantly within the demesne of Barnescourt near Strabane". In this way Moore and More (1866) credit the first record in Ireland to Co. Tyrone, but draw attention to its naturalisation and increase in cultivated ground elsewhere, particularly in Belfast, Co. Antrim. The Rev. W. M. Hind (1857) gives an account of its discovery in 1856 in the fruit-garden of the Lodge, Belfast, "principally growing amongst Parsley" but as parsley is not brought from abroad he returns "a verdict of not proven in reference to the way in

which the stranger has made his appearance".

Up to the end of the century records abound from north and north-west Ireland: first vice-county records being in 1870 for E. Donegal, 1871 W. Donegal, 1872 Roscommon and Sligo, 1896 Londonderry, 1900 Monaghan and 1902 Fermanagh. A. G. More (1872) quotes *V. peregrina* as an example of the "extension and increase of alien weeds"; H. C. Hart (1879) describes it as "now the commonest weed in many kitchen gardens". Nearly twenty years later Hart (1898) admits that it is "as yet confined to gardens", but "Like many other garden annuals, this ripens and sows its seeds, which germinate and ripen successionally during the summer. But none of them seem enabled to produce grandchildren and with such rapidity as the present species". With such flourishes the Irish botanists heralded the appearance of the stranger in their island.

In the same year, 1856, as Hind discovered the plant in Belfast, J. Wolsey found it in Jersey and Alexander Irvine (1860), in reporting this discovery—"the second reported locality in the British dominions"—thanks Hind for communicating his Irish record to *The Phytologist,* with the comment "It is to be wished that Mr Wolsey and other discoverers of rare plants would imitate his example!" J. G. Baker (1859) exhibited to the Thirsk Natural History Society a specimen of *V. peregrina* cultivated at Camphill, N. Yorkshire, from seeds said to have come from Guernsey but later correctly identified as from "Mr. Wolsey's Sarnian station . . . . an apple-orchard at St. Sauveur's in Jersey". Probably spreading from an introduction into the nursery gardens close by, according to Lester-Garland (1903), it was known and recorded from the area up to the close of the century, as in Ireland, but with somewhat less acclaim. Dr. Bull's record for 1876, for instance, was not published until 1921. Voucher specimens from the Jersey localities for the years 1857, 1873, 1876, 1900 and 1903 are in one or other of the national herbaria at Kew, South Kensington, Cardiff and Edinburgh.

The history of *V. peregrina* in Ireland was summarised by R. Lloyd Praeger (1896), who finds its establishment in cultivated ground in the north-east interesting because "so far as I can find it is unknown in England, and in Scotland is recorded from Perth alone". It was, however, known in S. Lancaster before 1896; C. J. Ashfield (1865) recorded its discovery by Miss Becker at Altham "a few years ago . . . . it has now spread over the place and taken such possession of the ground that it comes up persistently in ever-increasing numbers year after year . . . ." Specimens dated 1873 and 1874 collected by E. F. Linton from Walton Nursery Gardens, v.c. 59, are in the British Museum Herbarium labelled "fairly established now amongst the cabbages and shrubs". Middlesex may also claim to have known the plant as J. C. Melvill (1864) observed its occurrence at Harrow and Pinner, although its origin was Hind's Belfast locality. "The plant was unknown to the British Flora a few years ago; it is now making

itself at home in all parts of the country" announces Melvill, with a somewhat exaggerated flourish. Hind (1876) himself edited the second edition of Melvill's *Flora of Harrow,* in which he repeats the comment, adding that he found it also at Pinner Hill in 1871. In the British Museum Herbarium there are two gatherings, made in 1872, by A. H. Scott-White from fields at Mill Hill, originally in the herbarium of A. W. Bennett, who writes on the label "said to be wild (? naturalised) in the neighbourhood". A further English locality pre-1896 is Knutsford Racecourse, Cheshire, where "only a plant or two" were known "for a couple of years" and "were still there, 1870", according to J. B. L. Warren (1871). The Yorkshire record from Sandal quarry tip, cited by F. Arnold Lees (1888) was later corrected by Cheetham and Sledge (1941) to *V. digitata.* Of these English records at least the Lancashire ones were announced with sufficient emphasis, one would think, to have been heard across the Irish Sea, but evidently no echo reached the ears of Lloyd Praeger.

It is not surprising, however, that Praeger learned of the Perth locality in Scotland as John Sim (1860) heralded the discovery of the plant in Mr. Turnbull's nursery near the Fair City with considerable enthusiasm. A friend directed him to the spot where he found the intruder "growing abundantly as a weed of cultivation—probably imported with seeds". He is at first confident that it may "become permanently and extensively dispersed in the British Isles". Later (1865) he is still certain that it will "probably in a few years considerably extend its boundaries" but is not so certain about its method of introduction. Gatherings made by Sim in 1860 are in the Edinburgh Herbarium, in 1862 and 1864 are in the British Museum Herbarium and later material from the locality gathered by R. H. Meldrum in 1886 and 1888 is in the Herbarium of the National Museum of Wales. Praeger, however, missed the other notable Scottish station, Newton Don, Berwickshire, referred to by C. Stuart (1876) in an address to the Berwickshire Naturalists' Club. A. Brotherston (1875), to whom Stuart refers as the collector, is told by the head gardener "that it had been there for a very long time and that he could not eradicate it". "I think it very probable" says Brotherston later (1876) "that this will soon get as plentiful as *Veronica buxbaumii*". The locality is represented in the British Museum Herbarium by specimens gathered in 1872 and 1875 by Brotherston, in 1876 by Wood, and in 1877 by E. Hutmacher. A reference by J. H. Rutherford (1880) to the plant's occurrence in cultivated land at Kelso was kindly confirmed for me by N. D. Simpson; this record places the plant in Roxburgh, just across the border from Newton Don in Berwickshire. Almost at the century's end, in 1896, the same year as Praeger's account was published, W. T. Miller collected the plant as a garden escape at Arisaig, West Inverness.

2. Twentieth Century

The advent of *V. peregrina* in Ireland, the Channel Islands,

England and Scotland was well publicised during the second half of the nineteenth century. One record only during the twentieth century, and that very early, was accompanied by great expectations for the future; this was by F. Hamilton Davey (1906). He found it at Killiow, near Truro, West Cornwall, where he saw "thousands of plants". They had invaded the flower, fruit and vegetable gardens and were abundant by the sides of paths and wherever there was a waste corner". Davey (1907) repeats the story and by 1909 confirms that "it has been in occupation several years". It was still recorded from near Truro in 1923 but I have no note of it since. As late as 1958, however, it was seen in three other Cornish localities, and F. Robinson, who found the plant with F. Rilstone at Killiow in 1919, discovered it in garden ground at Tideford, East Cornwall, in the same year.

Other occurrences of *V. peregrina* in England were reported more quietly. As early as 1902 it was found on a roadside near Wood's Nursery, Maresfield, in East Sussex, and recorded by C. E. Salmon (1906). A. B. Jackson collected material, which resides in the herbaria of the British Museum and Kew, from Borde Hill, East Sussex in 1936 (erroneously recorded by Wedgwood (1945) as from Bude Hill, Suffolk). Further records from East Sussex are in 1940, 1961, 1963 and from West Sussex in 1960 and 1964, indicating the continued if not spectacular appearance of the plant to the present day. A specimen from West Lancaster, 1909, is in the British Museum Herbarium, but from the original Walton locality in South Lancaster no later records have been traced. Yet the latter vice-county has produced four new stations: Farrington, 1933, Drindle, 1957, Accrington, 1959 and Hoghton, 1960, again indicating a continued occurrence in this vice-county. Other English vice-counties with early records are South Wiltshire, 1913 and Surrey, 1918. The latter is from Kew Gardens but the only other record I have from v.c. 17 is from Guildford in 1959. From 1928 to 1931 S. H. Bickham's garden at Ledbury, Hereford, produced both records and gatherings for the national herbaria, but later records in 1957, 1958 and 1964 are from other gardens in Hereford; Miss A. Powell kindly sent me fresh material from her garden in 1964 at Winforton, where she first noted it in 1958. This example of continued existence in one station in recent years is matched by that submitted *in litt.* to me by Mrs. B. H. S. Russell, who informs me that the plant has been known from Boothby in Cumberland since 1954; it may still be in the University Botanic Garden at Cambridge and in Mr. J. Raven's garden at Shepreth, Cambridge, both of which localities account for its post-1930 recording in Perring and Walters (1962). The sole Yorkshire "record", from Sandal tip, was disposed of by Cheetham and Sledge (1941), who replace it in this century by a general statement "beginning to appear as a weed in our fields". It is also recorded from Westmorland in 1956 and South Northumberland in 1958: whether it maintains its

occurrence in these northern counties will be a matter of interest in future recording.

In Ireland, before the end of the nineteenth century, Stewart and Corry (1888) were already reporting that in north-east Ireland *V. peregrina* "certainly has not spread here and is perhaps extinct about Belfast". Praeger (1934) in this century is still able to say that it is "thoroughly naturalised in Donegal, Derry and Tyrone. Rare and seemingly only sporadic elsewhere in the northern half of Ireland". Later still, D. A. Webb (1953) states "locally frequent in the north-west, unknown elsewhere". Finally, E. F. Warburg (1962) confirms this picture and gives the southern limits as Galway, Roscommon and Monaghan. It has certainly persisted in the north-west, being recorded from Sligo in 1935, East and West Donegal in 1937, Londonderry in 1938 and 1956, Tyrone in 1939 and 1957, Fermanagh in 1943 and has extended its range in 1935 to West Mayo. In the north-east, although possibly extinct in the Belfast area, it has been found near Portrush between 1941-1943 at Ballywinnin on the borders of Antrim and Londonderry; material collected by C. D. Chase from this locality is in the herbarium of N. D. Simpson, labelled v.c. H.40, Londonderry, although Portrush itself is in the opposite "corner" of Antrim to Belfast. Recorders for the Distribution Maps Scheme have noted a further southward extension to Armagh and Down since 1950. It would seem, therefore, that it is not quite unknown elsewhere than in the north-west and, indeed, its extensions of range may be in the eastern half of Ireland rather than the west as its records in Galway and Roscommon have not been confirmed in this century.

From the original Scottish locality at Newton Don there are no further records, nor from Sim's station at Perth. At Auchterarder, near Perth, however, Miss McCallum Webster found it in 1950 and a very recent find is from Crieff in 1963; Mid Perth thus still has the plant. Roxburgh, in addition to the early record in 1907 at Horsendean Burn, also still claims it at Kelso although I doubt Rutherford's "cultivated land" is the same as Mrs. Russell's "kitchen garden" in 1963. In addition, Scotland in this century has provided a number of sporadic records, none reported with any great acclaim: Colonsay in 1910, Selkirk in 1913, Edinburgh in 1927 and 1961, Lanark in 1932, Dumbarton in 1951, Angus in 1953, Dumfries in 1961 and 1963 and Ayr in 1964. The appearance in a gradually increasing number of vice-counties but without sufficient evidence yet to show how long it persists is my impression of its history in Scotland.

The reference to *Veronica peregrina* by Wade and Smith (1927) in their account of the alien flora of the Port of Cardiff is, so far as I know, unique for Wales.

Conclusion

The prophesies of leading botanists of the last century have not in the main been fulfilled; *V. peregrina,* however abundant in

its original localities, has not spread from them but has increased its range most probably through fresh introductions. Being most at home in the optimum soil conditions of nursery gardens, where the evidence shows it to persist longest, it presumably finds difficulty in surviving outside such conditions. Its habitat requirements are perhaps epitomised in a letter from Miss A .C. Powell, who writes: "It could have been introduced with flower seed as it came up in a bed where I usually grow annuals, and each year since I find a few plants occurring but it has not spread widely". The steady increase in the number of vice-counties in which it appears indicates an established status but it cannot be regarded as naturalised. Its disappearance from some vice-counties, on the other hand, may be only apparent, due to lack of recording; on this point further observations are most welcome.

British and Irish Records

Not all the numerous early Irish records are given in the following list but with this exception all records known to me are included. The abbreviations used for herbaria in which specimens exist are those given by Kent, Bangerter and Lousley (1958); D.M.S. indicates Distribution Maps Scheme, on which the Atlas of Perring and Walters (1962) was based and to which reference should be made for a distribution maps of the species. At the moment very few vice-comital additions to this map can be made and the preparation of another map is held over until a supplementary paper becomes appropriate.

Channel Islands

V.c. 0. Jersey: 1856, *J. Wolsey* (BM). St. Heliers, 1857, *J. Wolsey* (BM); 1873, *T. B. Blow* (E); 1906, *G. C. Druce* (K). St. Saviours, 1876, *Dr. Bull, Rep. Bot. Soc. & E.C.*, **6**, 138; garden and lane Alphington House, St. Vaviours, 1900, *Miss Higginson* (K). The School House, Victoria Colleges, 1903 (? coll.) (K). Weed in garden Samares Manor, 1958, *J. E. Lousley* (BM, K, *Hb. Lousley*). Quevai, "comm. P. Richards", no date, *G. C. Druce* (NMW).

V.c. 1. W. Cornwall: Killiow, near Truro, 1906, *F. H. Davey* (BM, K); 1919, *F. Rilstone & F. Robinson* (BM, E, K, NMW); *Mrs. M. L. Wedgwood* (Wedgwood, 1945). On the Fal, 1917, *Green, Rep. Bot. Soc. & E.C.*, **5**, 119. Abundant in grounds, Enys Mylor, 1917, *Mrs. & H. M. Perrycoste* (Thurston & Vigurs, 1922). St. Clement near Truro, 1923, *Miss Skinner* (K). Morrab Gardens, Penzance, 1958, *R. C. L. Howitt* (BM). Weed in kitchen garden, Penwarne House, Mawnan Smith near Falmouth; on introduced soil above Visick's, Devoran, 1958, *Mrs. R. Henning, Proc. B.S.B.I.*, **3**, 409.

V.c. 2. E. Cornwall: Garden ground, Tideford, 1919, *F. Robinson* (BM).

V.c. 8. S. Wilts: Wilton House, Salisbury, 1913, *Lady Muriel Herbert* (K).

V.c. 9. Dorset: Casual, Beaminster, 1937, *A. W. Graveson* (Good, 1945).

V.c. 13. W. Sussex: Garden weed, Horsham, 1960, *B. Hurst*, *Proc. B.S.B.I.*, **4**, 291. Garden weed, Wisborough Green, Petworth, 1964, *Mrs. M. Briggs* (BM).

V.c. 14. E. Sussex: Roadside near Wood's Nursery, Maresfield, 1902, *C. E. Salmon* (Salmon, 1906). Garden weed, Borde Hill, 1936, *A. B. Jackson* (BM, K). Garden weed, Mayfield, 1940, *A. H. Wolley-Dod* (BM). Uckfield, 1961, *Plant Protection Ltd.* (K). Weed in M. Cardwell's garden, Worth Priory, near Turner's Hill, 1963, *Mrs. B. H. S. Russell, in litt.*

V.c. 17. Surrey: Weed of cultivated ground, Kew Gardens, 1918, *W. C. Worsdell* (K). Sewage Works, Guildford, 1959, *Mrs. E. Hodgson, in litt.*

V.c. 21. Middlesex: Harrow, Pinner (ex Belfast), 1864; Pinner Hill, 1871, *W. M. Hind* (Melvill, 1864; Hind, 1876). Fields, Mill Hill, 1872, *A. H. Scott-White*, (BM).

V.c. 29. Cambridge: University Botanic Garden, post-1930 (D.M.S.) Garden, Shepreth, post-1930, *J. Raven* (D.M.S.).

V.c. 36. Hereford: Garden weed, Underdown, Ledbury, 1928, 1929, *S. H. Bickham* (BM, K, NMW); 1931, *T. J. Foggitt* (BM). Garden weed, Berdenham Road, Hereford, 1957, *Miss L. E. Whitehead* (K). Orchard Gate, Winforton, 1958, *Miss A. C. Powell* (K, NMW); 1964, *Miss A. C. Powell* (BM).

V.c. 41. Glamorgan: Splott, Grangetown, Cardiff, 1926, *A. E. Wade & R. L. Smith*, (Wade & Smith, 1927).

V.c. 58. Cheshire: Knutsford Racecourse, 1870, *J. B. L. Warren* (Warren, 1871).

V.c. 59. S. Lancaster: Altham, 1865, *Miss Becker* (Ashfield, 1865). Nursery gardens, Walton-le-Dale, 1873-1875, 1878, *E. F. Linton* (BM). Walled garden, Farington, 1933, *H. E. Bunker, Rep. Bot. Soc. & E.C.*, **10**, 535. Plantation Mill tip, Accrington, 1959, *A. Hitchon* (Savidge, Heywood & Gordon, 1963). Garden weed, Drindle, 1957, *Kew Botanic Gardens*, (D.M.S.). In cinders by roadside, Hoghton, 1960, *C. E. Shaw* (D.M.S.).

V.c. 60. W. Lancaster: Leagram Hall, 1909, *Miss F. Berkeley* (BM).

V.cc. 61-5 Yorks: "Beginning to appear as a weed in our fields" (Cheetham & Sledge, 1941).

V.c. 67. Northumberland S.: Matfew Gardens, 1958, *Mrs. B. H. S. Russell* (D.M.S.).

V.c. 69. Westmorland: Weed in Nursery, Grasmere, 1956, *Miss K. M. Hollick* (*Hb. Lousley*).

V.c. 70. Cumberland: Garden, Boothby, Brampton, 1954→, *Mrs. B. H. S. Russell, in litt.*; 1957, *Mrs. B. H. S. Russell* (CGE).

V.c. 72. Dumfries: Kinmount, 1961, 1963, *Mrs. P. Henderson* (D.M.S.).

V.c. 75. Ayr: weed in Culzean Garden, Mary Cole, 1964, *Mrs. J. Wilson*, teste *Miss E. I. Biggar, in litt.*

V.c. 77. Lanark: Weed, Biggar, 1932, *Miss Dunlop* (BM).

V.c. 79. Selkirk: Banks of the Gala, Galashiels, 1913, *I. Hayward* (Hayward & Druce, 1919).

V.c. 80. Roxburgh: On cultivated land, Kelso (Rutherford, 1880); sporadic in garden, Hassenden Burn, 1907, *W. E. Evans* (E). Kitchen garden, Sunlaws, Kelso, 1963, *Mrs. B. H. S. Russell, in litt.*

V.c 81. BERWICK: Garden, Newton Don, 1872, 1875, *A. Brotherston* (BM, E); 1876, *W. Wood* (BM); 1877, *E. Hutmacher* (BM, NMW).

V.c. 83. EDINBURGH: Very rare, Slateford, 1927, *I. H. Martin* (Martin, 1927). Fields, Craigmillar, 1961, *Miss E. P. Beattie* (D.M.S.).

V.c. 88. MID PERTH: near Perth, 1860, *J. Sim* (E); weed in cultivated ground, Perth, 1862, 1864, *J. Sim* (BM); Nursery, Perth, 1886, 1888, *A. H. Meldrum* (NMW). Garden weed at Gask House, Auchterarder, near Perth, 1950, *Miss M. McCallum Webster, Watsonia*, **2**, 203. Monzie, near Crieff, 1963, *Mrs. A. Paton* (DMS).

V.c. 90. FORFAR: weed in gravel path, Glamis Castle, 1953, *Miss U. K. Duncan, Proc. B.S.B.I.*, **1**, 176.

V.c. 97. WESTERNESS: Escape from garden, Arisaig, 1896, *W. T. Miller* (BM).

V.c 99. DUNBARTON: Garden weed, Kilcreggar, 1951, *H. K. Airy Shaw* (K).

V.c. 102. S. EBUDES: Colonsay, gravel walk, Kiloran, *M. McNeill* (McNeill, 1910).

V.c.H. 15. S.-E. GALWAY: Roxborough, 1873, *H. C. Hart;* garden weed, Chevy Chase, 1873, *H. C. Hart* (Hart, 1873).

V.c.H. 25. ROSCOMMON: Rockingham, 1872, *D. Moore* (More, 1872).

V.c.H. 27. W. MAYO: Garden, Westport House, 1935, *Mrs. Gough* (Praeger, 1939).

V.c.H. 28. SLIGO: Garden and demesne, Hazelwood, 1872, *D. Moore* (More, 1872). Tubberfeckin near Ballysadare, 1935, *Miss Crofton* (Praeger, 1939).

V.c.H. 32. MONAGHAN: Drumreaske, 1900, *C. H. Waddell* (BFT).

V.c.H. 33. FERMANAGH: Enniskillen, 1902, *J. A. Abraham* (DBN). Crom Castle, 1935, *R. L. Praeger* (Praeger, 1939). Lough Erne, 1943, *C. D. Chase* (*Hb. N. D. Simpson*).

V.c.H. 34. E. DONEGAL: Kilderry, Muff, 1870, *H. C. Hart* (More, 1872). Londonderry, 1896, *R. L. Praeger* (TCD); *Mrs. M. I. Leebody* (BM); 1937, *R. L. Praeger & H. W. Pugsley* (BM). Stranorlar, 1897, *Mrs. M. I. Leebody* (Praeger, 1901). Bogay, near Londonderry, 1898, *H. C. Hart* (Hart, 1898). Imlick, Carrigans, 1926-1927, *F. R. Browning* (Browning, 1928).

V.c.H. 35. W. DONEGAL: Gweedore, 1871, *W. M. Hind* (TCD). Salt Hill, Mount Charles, 1872, *A. G. More* (More, 1872). Glenalla, Horn Head, 1879, *H. C. Hart* (Hart, 1879). Garden, St. Helens, Ramelton, 1886, *Miss A. Kinahan* (BM). Killybegs, 1898, *H. C. Hart* (Hart, 1898). Letterkenny, 1927, *F. R. Browning, Rep. Bot. Soc. & E.C.*, **8**, 409. Shantallow, 1937, *R. L. Praeger* (BEL).

V.c.H. 36. TYRONE: Baronscourt near Strabane, 1836 (Moore & More, 1866); 1897, *Mrs. M. I. Leebody* (Praeger, 1901). Dungannon, 1895; Donoghmore, 1895-6; Favour Royal, 1896, *Mrs. M. I. Leebody* (Colgan & Scully, 1898). Clogher, 1905-7, *Miss C. L. Peck* (BM). Ballygawley, 1939, *Dr. Gillespie* (BFT); 1957, *Miss M. P. H. Kertland* (D.M.S.).

V.c.H. 37. ARMAGH: Killyleh area, 1956, *Miss M. P. H. Kertland* (D.M.S.).

V.c.H. 38 DOWN: "Irish Square 15/72", post-1950, *Miss M. P. H. Kertland* (D.M.S.).

V.c.H. 39. ANTRIM: The Lodge, Belfast, 1856, *W. M. Hind* (BM, K); 1862, *W. M. Hind* (BM).

V.c.H. 40. LONDONDERRY: Magilligan, 1897, *Mrs. M. I. Leebody* (Praeger, 1901); 1917, *R. L. Praeger* (Praeger, 1938). Drenagh, Limavady, *Miss A. Irvine* (Praeger, 1938). Garden, Ballywinnin, near Portrush, 1941-3, *C. D. Chase* (*Hb. N. D. Simpson*). Belmont area, 1956, *Miss M. N. Hamilton* (D.M.S.).

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*THE FLORA OF HANDA ISLAND (v.c. 108)

By B. S. Brookes, B.Sc.

General Description.

Handa is a small island of 766 acres. Roughly rectangular in shape, $1\frac{1}{2}$ miles by $1\frac{1}{4}$ miles, it lies $\frac{1}{4}$ mile off the west coast of West Sutherland (v.c. 108), some 18 miles SSW of Cape Wrath and 3 miles NW of Scourie. Geologically it is of Torridonian sandstone with a little conglomerate in the south. The sandstone strata slope gently from the dune systems of the south-east of the island to the superb cliffs in the north-west. These 350′ cliffs are the breeding site for many seabirds and for this reason the island has recently been established as a reserve by the Royal Society for the Protection of Birds.

Plant Communities.

For convenience of description the vascular vegetation can be classified into three community types.

1. Maritime. These are the communities occupying the cliff-faces and a narrow coastal strip around the island including sand-dunes and machair.
2. Bog and moor. Occupying the central region and varying from waterlogged *Sphagnum* bog to relatively well-drained moorland.
3. Aquatic. In the lochans and burns.

1. Maritime Communities.

The cliff flora varies considerably. In the north-west the environmental forces are severe, the plants having to tolerate exposure to very high winds and a lot of salt spray. Another important factor is the degree of "liming" from sea-bird guano. The plant communities of the more exposed cliff faces consist chiefly of *Rumex acetosa* and *Festuca rubra,* while the cliff tops bear rich *Festuca-Agrostis* pasture with patches of *Armeria maritima* in places. As one moves towards the south and east there is a gradual amelioration of environmental conditions and a decrease in the height of the cliffs, and the most important consideration as far as the plants are concerned becomes the amount of shelter which these low cliffs can afford. Many of the plants rare on Handa are to be found only on the low cliffs of the south and east. Some of these plants may well be the relics of a more

*This paper is based in part on the records of the Forest Hill School, London, Expedition to Handa in August 1962.

extensive distribution on the island, having been destroyed elsewhere by firing, drainage and grazing, both by sheep and rabbits. *Endymion, Daucus* and *Heracleum* are examples of plants which may have been affected in this way.

On the dunes the dominant plant is *Ammophila arenaria.* There are three areas of dunes very close together in the south-east of the island. In some places they are formed of shell-sand and in others of weathered sandstone. Of particular botanical interest is *Catabrosa aquatica* var. *littoralis* Parn. growing at the mouths of small burns, between the dunes and the sea. Also of interest is a colony of *Calamagrostis epigejos* (the most northerly station for this species in Britain) on the eastern edge of the dune systems where the low cliff faces are covered with sand. At one point the colonies of *Ammophila* and *Calamagrostis* overlap to some extent but although the hybrid × *Ammocalamagrostis baltica* has been recorded from this locality (Harrison, J. W. Heslop & Harrison, H. Heslop, 1938) none was found after exhaustive searching.

The region between the coastal dunes and the central moorland constitutes the machair. This is an area rich in plant species and subjected to considerable grazing pressure from sheep and rabbits. Typical machair species are *Lotus corniculatus, Prunella vulgaris, Taraxacum laevigatum, Geranium molle* and *Myosotis discolor.*

2. The Central Area

This constitutes a number of plant communities with complex distributions. The most important controlling factors here seem to be: —

a) degree of slope—this particularly affects the natural drainage and the depth of the soil.
b) aspect—the most important consideration being the amount of shelter from the severest gales; almost invariably these are from the west or north-west.
c) intensity of grazing.
d) frequency of firing—which gives a competitive advantage to some species.
e) amount of artificial drainage.

Although it is impossible to classify all groups of plants into recognisable communities the following classification was adopted for convenience.

i) *Scirpus cespitosus* dominant. This is far and away the most extensive moorland type and covers the bulk of the central region. The probable reason for its success is its ability to recover quickly from firing and its ability to withstand considerable exposure to wind.
ii) *Calluna vulgaris* dominant. Being slower to recover from firing than *Scirpus cespitosus* this is restricted as a dominant

to the shallower soils where the latter cannot grow, particularly on steep slopes and near rocky outcrops, but is also found as an extensive sub-dominant in the *S. cespitosus* communities. *Salix repens* and *Empetrum nigrum* are frequently sub-dominant in the *Calluna* communities.

iii) *Molinia caerulea* dominant. Found in two different growth forms in two distinct habitats. In the "tussocky" form below steep slopes and along the sides of burns, and in the "non-tussocky" form in the drier *Calluna* moorland and the grasslands receiving the run-off water from the centre of the island. In the latter situations it occasionally gives way to *Nardus* grassland, probably where there is an appreciable quantity of redistributed peat.

iv) *Eriophorum angustifolium* dominant. A very patchy distribution, restricted to pools in eroded peat, and other waterlogged localities.

v) *Juncus effusus* dominant. Only found in a few places where there is considerable moisture and some degree of protection from the wind.

vi) *Pteridium aquilinum* dominant. Very obviously restricted to sheltered situations. Almost without exception found on ground sheltered from the north-west. In places of extreme shelter it is replaced by *Salix aurita* scrub. The existence of the *Pteridium* gives rise to an interesting ground flora containing such species as *Trientalis europaea, Scutellaria galericulata* and *Galium palustre.*

3. Aquatic Communities

In addition to numerous small areas of standing water there are five lochans of substantial size on the island. *Eleocharis* spp., *Juncus bulbosus, Menyanthes trifoliata* and *Potamogeton polygonifolius* are common in these situations. Of particular interest is the presence of *Nymphaea occidentalis* and *Potamogeton natans* in one lochan, the latter also growing in one other lochan. Three plants of *Osmunda regalis* growing beside one of the burns are also worthy of note.

Method of Mapping

For the purposes of mapping the distribution of each plant species a grid system was used and the procedure was similar to that used by the Botanical Society of the British Isles in the production of the *Atlas of the British Flora.* For the purposes of this survey 200 metre squares were used, being regarded as small enough to produce useful maps and large enough to make the marking out of squares and the recording of species possible in a short time. Because of the uniform character of the terrain the squares had to be marked on the ground in some way. This was done by placing wooden posts at the grid intersections. Having fixed one intersection by compass bearings and reference to prominent features on the ground, a combination of actual

measurement with a surveyor's tape and trigonometrical methods using two theodolites was used to fix the other points. Several of these were checked by direct compass bearings and reference to a map. By this method the limits of 98 squares or part squares were marked out on the island.

A search was then made in each square and species names were crossed off a duplicated list as they were found. These data were later transferred to printed maps showing the distribution of individual species. Using the same grid system a sketch map was made of the distribution of the major plant communities in each square and these were transferred to a large scale map of the island to give an overall picture of the vegetation.

Annotated List of Vascular Species Found

Nomenclature and order of species are based on Dandy (1958). Plants which are not native in the island are prefixed by a dagger. The number of survey squares (maximum 98) in which a plant was found is indicated after the note on each species.

THE FLORA

Selaginella selaginoides (L.) Link. Fairly common in boggy areas. 17.

Equisetum palustre L. Common near old cultivation strips. 7.

Osmunda regalis L. On the peaty sides of a burn. Three plants only. 3.

Pteridium aquilinum (L.) Kuhn. Widespread. Dominant in sheltered areas only. Absent from north-west. 56.

Blechnum spicant (L.) Roth. Widespread on peat. Absent in south-east and extreme west. 64.

Asplenium adiantum-nigrum L. Uncommon. In caves and damp rock-clefts in the east. 7.

Asplenium marinum L. Scattered in damp rock-clefts in the south and east. Coastal. 12.

Athyrium filix-femina (L.) Roth. Scattered, between rocks, mostly in the centre of the island. 30.

Dryopteris filix-mas (L.) Schott. Rather uncommon. Only in the most sheltered places. 14.

Dryopteris dilatata (Hoffm.) A. Gray. Mostly with *A. filix-femina*, but a little more common. 39.

Polypodium vulgare L. Uncommon. In cracks in rocks. Small plants. 13.

†Picea abies (L.) Karst. Three young specimens recently planted behind bothy, one dead. 1.

Juniperus communis subsp. nana Syme. Damp sheltered edges of low cliffs, not more than six plants. 3.

Caltha palustris L. Plentiful near burns and damp places in the south-east. 9.

Ranunculus acris L. Common in machair in the south-east. Scattered records in grassy places in north and east. 25.

Ranunculus repens L. Fairly common in short turf all round the island. 34.

Ranunculus flammula L. Common especially in peaty pools. 51.

Ranunculus ficaria L. Uncommon. Only in damp sheltered gullies in cliffs in the south. 7.
Thalictrum minus subsp. arenarium (Butcher) Clapham. Local. Sandy patches on cliffs adjoining the dunes in the south-east. 3.
Nymphaea occidentalis (Ostenf.) Moss. One lochan only. 1.
Cakile maritima Scop. One plant on the dunes. 1.
Cochlearia officinalis L. Common on the high cliffs in the north and west. 18.
Cochlearia scotica Druce. Distinctly uncommon. Cliffs in the north-east. 2.
Cardamine pratensis L. Wet sheltered places near old cultivation strips. 6.
Cardamine flexuosa With. Rare. Near the bothy and on a damp cliff in the south-east. 2.
Viola riviniana Reichb. Scattered in grassy places and under bracken. 28.
Viola canina L. subsp. canina. Only in the machair. 5.
Viola palustris L. Widespread. In wet grassy areas. 64.

Polygala vulgaris L.
Polygala serpyllifolia Hose.
} Distribution of species not determined. As a genus; widespread in boggy areas. 55 (for genus).

Hypericum pulchrum L. Not common. Drier sheltered places. 15.
Silene maritima With. Not common. Cliff-tops. 15.
Silene dioica (L.) Clairv. Rare. Only four plants seen. On wet sheltered cliffs. 4.
Lychnis flos-cuculi L. Uncommon. Wet places in the south-east. 4.
Cerastium holosteoides Fr. Common in grassy places. 65.
Cerastium diffusum Pers. (*C. atrovirens* Bab.). Uncommon. Dunes and low cliffs. 4.
Stellaria media (L.) Vill. Uncommon. Wet bare soil and 'sheep-rubs'. 20.
Stellaria alsine Grimm. Rare. Disturbed ground near the bothy. 1.
Sagina procumbens L. Widespread. On rocks and bare peat. 57.
Montia fontana L. Small burns in the north and west. 25.

Atriplex patula L.
Atriplex glabriuscula Edmondst.
} Distribution of species not determined. As a genus; coastal, on shingle and sand, frequent. 20 (for genus).

Linum catharticum L. Not common. Restricted to dunes, machair and sandy places in the south-east. 14.
Geranium molle L. Very local. In machair. 6.
Oxalis acetosella L. Distinctly uncommon. Under bracken. 4.
Trifolium pratense L. Cliffs and small stacks in the south-east. 5.
Trifolium repens L. Common in all grassy places. 62.
Anthyllis vulneraria L. Common on the cliffs. 26.
Lotus corniculatus L. Common in dry places. 60.
Lotus pedunculatus Cav. Rare. By a burn in the south. 1.
Vicia cracca L. Damp sheltered places in the south-east. 10.
Vicia sepium L. Not common. Sheltered cliff gullies. 6.
Lathyrus pratensis L. Uncommon. Grassy places in the south-east. 5.
Lathyrus montanus (L.) Bernh. Scattered in dry moorland. 17.

Filipendula ulmaria (L.) Maxim. Restricted to wet places in the south-east. 17.

Potentilla palustris (L.) Scop. Rare. In *Juncus* near the path to the bothy. 1.

Potentilla anserina L. Restricted to sandy areas in the south-east. 23.

Potentilla erecta (L.) Räusch. Very common and widespread. 86.

Geum rivale L. Rare. Wet places in the south-east. 2.

Rosa pimpinellifolia L. Uncommon. On cliffs. Six plants only. 5.

Rosa sherardii Davies. One plant on a stack in the south-east. 1.

Sedum rosea (L.) Scop. Common on cliffs all round the island. 28.

Sedum anglicum Huds. Uncommon. On rocks in the south-east. 9.

Sedum acre L. With above but more common. Also on the dunes. 7.

Drosera rotundifolia L. Common in boggy places. 68.

Drosera anglica Huds. Frequent in very wet areas. 27.

Drosera intermedia Hayne. Less frequent with above. 21.

Epilobium montanum L. Uncommon. Wet sheltered cliff flushes in the south-east. 5.

Epilobium palustre L. Local. Wet grassy places in the south-east. 13.

Callitriche stagnalis Scop. Rare. Some pools and ditches. 6.

Hedera helix L. Very rare. On a cliff in the east. 1.

Hydrocotyle vulgaris L. Only in a few wet grassy places in the south-west but there common. 9.

Ligusticum scoticum L. Cliffs in the north and west. 11.

Angelica sylvestris L. Not common. Damp cliffs and by one of the lochans. 18.

Heracleum sphondylium L. Rare. Cliffs in the south-east. 2.

Daucus carota L. Very rare. Cliffs in the south-east. 3.

Rumex acetosella L. Uncommon. Dry moorland. 10.

Rumex acetosa L. Common and widespread, especially under bracken. Most luxuriant on the high cliffs in the north and west. 76.

Rumex crispus L. Shingle and disturbed ground. 28.

Urtica dioica L. Local. Dunes and machair near old crofts. 17.

Myrica gale L. Distinctly local. One colony near south-west coast. 1.

Populus tremula L. Rare. Cliffs in the south-east. 3.

Salix cinerea L. Rare. In dry sheltered places. 10.

Salix aurita L. In similar situations to *S. cinerea* but more common. 52.

Salix repens L. Common and widespread. Dominant in the drier wind-swept areas. 85.

Arctostaphylos uva-ursi (L.) Spreng. Restricted to dry peat near rocky outcrops in the west, away from the cliffs. 44.

Calluna vulgaris (L.) Hull. Very common. Dominant in many areas, but absent from the dunes and machair. 91.

Erica tetralix L. Frequent in wet areas. Absent from the south-east. 82.

Erica cinerea L. Scattered in drier places. Absent from the south-east. 76.

Vaccinium myrtillus L. Very rare. Two or three plants in moorland. 2.

Empetrum nigrum L. Abundant. With *Salix repens*. 83.

Armeria maritima (Mill.) Willd. Common on the coast. Commoner in north-west than in south-east. 53.

Primula vulgaris Huds. Uncommon. Sheltered cliff ledges in the south-east. 21.

Lysimachia nemorum L. Very rare. One colony near burn by old crofts. 1.
Trientalis europaea L. Distinctly rare. In a few places under bracken. 4.
Anagallis tenella (L.) Murr. Uncommon. Near burns in the south-east. 5.
Glaux maritima L. Very uncommon. Rocky promontories in the south-east. 2.
Gentianella campestris (L.) Börner. Not common. Grassy places in the south-east. 6.
Menyanthes trifoliata L. In all major lochans and most boggy places. 10.
Myosotis caespitosa K. F. Schultz. Rare. Extreme south-east. 1.
Myosotis arvensis (L.) Hill. Uncommon. Dunes and machair. 2.
Myosotis discolor Pers. More common. Machair. 2.
†Solanum tuberosum L. Very rare. Two plants in the south. 2.
Scrophularia nodosa L. Rare. By a burn in the south. 2.
Digitalis purpurea L. Uncommon. Among rocks inland and on a cliff in the east. 4.
Veronica scutellata L. Very rare. In one drainage cutting near the old crofts. 1.
Pedicularis sylvatica L. Widely distributed except in the extreme north-west and south-east. 56.

Euphrasia micrantha Reichb.
Euphrasia foulaensis Townsend ex Wettst.
Euphrasia brevipila Burnat & Gremli.
} Distribution of species not determined, except *E. brevipila* which is widespread. 65 (for genus).

Odontites verna (Bellardi) Dumort. subsp. verna. Very rare. One patch behind the dunes. 1.
Pinguicula lusitanica L. Local. On wet peat. 20.
Pinguicula vulgaris L. Much more common, in wet places. 64.
Utricularia minor L. One lochan. 1.
Mentha sp. Only a few patches by a burn in the south. 3.
Thymus drucei Ronn. Not common. Only in better drained places. 33.
Prunella vulgaris L. Common in the less wet and exposed areas, in the south. 48.
Scutellaria galericulata L. Rare. Under bracken in two localities. 2.
Teucrium scorodonia L. Occasional among rocks in sheltered places. 9.
Ajuga pyramidalis L. Very rare. On a cliff in the south and between rocks in the centre of the island. 2.
Plantago major L. Not at all common. A few plants in grassland around the coast. 9.
Plantago lanceolata L. More common. In grassland. 47.
Plantago maritima L. Plentiful on cliffs and inland rocks. 47.
Plantago coronopus L. Very common all round the coast on rocks and bare ground. Very variable. 43.
Galium verum L. Only in the south-east. 15.
Galium saxatile L. Scattered on the moors, not common. 24.
Galium palustre L. Uncommon. Mostly in damp grassland in the south-east. 16.
Galium aparine L. Uncommon. Under bracken and on shingle. 13.
Lonicera periclymenum L. Rare. On a cliff in the south, a stack in the east and between rocks in the centre of the island. 5.

Succisa pratensis Moench. Very common on the moors. 65.

Senecio jacobaea L. Common in the south-east. 23.

Antennaria dioica (L.) Gaertn. Rare. In turf in the south-east. 1.

Solidago virgaurea L. Not common. Cliff edges and rocks. 4.

Bellis perennis L. Uncommon. Only in the south-east. 22.

Achillea millefolium L. Locally common in south-east. 14.

Achillea ptarmica L. Rare. One locality on an eastern cliff. 1.

Tripleurospermum maritimum (L.) Koch subsp. maritimum. On cliffs in the north and west. 12.

Arctium minus Bernh. Uncommon. South-east only. 9.

Cirsium vulgare (Savi) Ten. Dunes and machair. 20.

Cirsium palustre (L.) Scop. Uncommon. Mostly in the south-east. 12.

Cirsium arvense (L.) Scop. Uncommon. Also in the south-east. 10.

†Centaurea cyanus L. Few plants in front of the bothy. 1.

Centaurea nigra L. Rare. In the south-east and on south-eastern stacks. 4.

Hypochaeris radicata L. Rare. Cliffs in the south. 1.

Leontodon autumnalis L. Locally common on cliffs and in grassland. 35.

Sonchus oleraceus L. Dunes and machair. 2.

Sonchus asper (L.) Hill. Dunes and machair. 8.

Hieracium sp. Not common. On cliffs. 32.

Taraxacum laevigatum (Willd.) DC. Uncommon. In south-east. 13.

Triglochin palustris L. Occasional in wet grassy places. 13.

Potamogeton natans L. In two lochans. 2.

Potamogeton polygonifolius Pourr. Peaty pools and drainage channels. 25.

Narthecium ossifragum (L.) Huds. Plentiful, but absent from the south-east and the extreme north-west. 68.

Endymion non-scriptus (L.) Garcke. On cliffs and a stack in the east. Rare. 2.

†Allium cepa L. Rare. Three plants near the bothy. 1.

Juncus squarrosus L. Scattered on the moors. 33.

Juncus bufonius L. Occasional on bare peat. 13.

Juncus effusus L. By burns. Not common except near the bothy. 56.

Juncus conglomeratus L. As above, but less common. 40.

Juncus articulatus L. Scattered in wet places. 54.

Juncus bulbosus L. Common in peaty pools. 35.

Luzula campestris (L.) DC. Uncommon. In grassland in the south-east. 1.

Luzula multiflora (Retz.) Lej. Common on the moors. 68.

Iris pseudacorus L. Only in the south-east. 8.

Dactylorchis maculata subsp. ericetorum (E. F. Linton) Vermeul. Common on the moors. 69.

Dactylorchis purpurella (T. & T. A. Stephenson) Vermeul. Very rare. Near a burn in the south. 1.

Sparganium angustifolium Michx. In lochans. 6.

Eriophorum angustifolium Honck. In wet bog. Common and widespread. 78.

Eriophorum vaginatum L. With the preceding species but less common. 38

Scirpus cespitosus L. Dominant on the windswept moors. 74.

ELEOCHARIS PAUCIFLORA (Lightf.) Link.
ELEOCHARIS MULTICAULIS (Sm.) Sm.
ELEOCHARIS PALUSTRIS (L.) R.Br.
Distribution of species not determined. As a genus; uncommon, in wet places on the moors. 11 (for genus).

SCHOENUS NIGRICANS L. Local. Damp grassland in the south. 20.

RHYNCHOSPORA ALBA (L.) Vahl. Very rare. On disturbed peat in the east. 3.

CAREX BINERVIS Sm. Common on the moors. 63.

CAREX FLAVA L. agg. Frequent on bare wet peat. 23.

CAREX PANICEA L. Occasionally on the moors. 44.

CAREX FLACCA Schreb. Uncommon, on the moors. 10.

CAREX PILULIFERA L. Very uncommon, on the moors. 6.

CAREX NIGRA (L.) Reichard. Grassy places. 49.

CAREX PANICULATA L. Rare. On small islands in one lochan. 1.

CAREX ARENARIA L. Common on the dunes only. 8.

CAREX ECHINATA Murr. Common in some grassland. 46.

CAREX OVALIS Good. Only occasionally, near the old crofts and the bothy. 5.

CAREX PULICARIS L. Grassland in the south. 9.

CAREX DIOICA L. Very rare. One locality found in the centre of the island. 1.

PHRAGMITES COMMUNIS Trin. Rare. On cliffs near the dunes in the east and on shingle in the south-west. 2.

MOLINIA CAERULEA (L.) Moench. Abundant and widespread. Dominant in wet sheltered places. 85.

SIEGLINGIA DECUMBENS (L.) Bernh. Well distributed in grassland. 52.

FESTUCA RUBRA L. Widespread and common. 87.

FESTUCA OVINA L. As above. 92.

FESTUCA VIVIPARA (L.) Sm. Uncommon. 6.

LOLIUM PERENNE L. Uncommon. Only in the south-east. 11.

POA ANNUA L. Frequent in grassland in the west and south-east. 29.

POA PRATENSIS L. Occasional in the south-east. 13.

CATABROSA AQUATICA var. LITTORALIS Parn. Rare. Between dunes and the sea. 3.

DACTYLIS GLOMERATA L. Uncommon. In south-east only. 10.

CYNOSURUS CRISTATUS L. Common, but only in the south-east. 14.

BRACHYPODIUM SYLVATICUM (Huds.) Beauv. Very rare. Only one plant on cliff near the dunes in the east. 1.

AGROPYRON JUNCEIFORME (A. & D. Löve) A. & D. Löve. Uncommon. On the dunes. 4.

HELICTOTRICHON PUBESCENS (Huds.) Pilger. Rare. Grassy cliff-top in the east. 1.

ARRHENATHERUM ELATIUS (L.) J. & C. Presl. Uncommon. Cliff flush in the east and by burns. 4.

HOLCUS LANATUS L. Widespread and common in wet places. 89.

DESCHAMPSIA CESPITOSA (L.) Beauv. Not at all common. 16.

DESCHAMPSIA FLEXUOSA (L.) Trin. Abundant on the moors. 71.

AIRA PRAECOX L. Frequent on rocks. 24.

AMMOPHILA ARENARIA (L.) Link. Dominant on the dunes. 12.

Calamagrostis epigejos (L.) Roth. Rare. Only on sand on the eastern cliffs. 1.
Agrostis canina L. Widespread and common. 61.
Agrostis tenuis Sibth. More widespread but not so common as the above species. 73.
Agrostis stolonifera L. Widespread and abundant. 88.
Alopecurus geniculatus L. Very rare. On a cliff in the north-east. 1.
Anthoxanthum odoratum L. Very common, especially in wet places. 82.
Phalaris arundinacea L. Rare. By burns in the east and south. 3.
Nardus stricta L. Very common on disturbed peat. 80.

A Comparison With a Similar List Published in 1938.

The number of species found in the current survey was 216. Of these, 153 species occurred in a list published in 1938 (Harrison, J. W. Heslop & Harrison, H. Heslop) which also contained the following 23 species.

Cerastium glomeratum Thuill, *Callitriche intermedia* Hoffm., *Epilobium obscurum* Schreb., *Senecio aquaticus* Hill, *Crepis capillaris* (L.) Wallr., *Hieracium crocatum* Fr., *Taraxacum spectabile* Dahlst., *Sonchus arvensis* L., *Euphrasia borealis* Wettst., *Euphrasia scottica* Wettst., *Pedicularis palustris* L., *Ajuga reptans* L., *Litorella uniflora* (L.) Aschers., *Rumex obtusifolius* L., *Juncus acutiflorus* Hoffm., *Carex caryophyllea* Latourr., × *Ammocalamagrostis baltica* (Fluegge) P. Fourn., *Holcus mollis* L., *Glyceria declinata* Bréb., *Festuca tenuifolia* Sibth., *Thelypteris phegopteris* (L.) Slosson, *Equisetum arvense* L. and *Equisetum fluviatile* L.

These were not found or not confirmed.

The following 62 species are additions to the 1938 list.

Osmunda regalis L., *Asplenium marinum* L., *Athyrium filix-femina* (L.) Roth, *Dryopteris dilatata* (Hoffm.) A. Gray, *Polypodium vulgare* L., *Picea abies* (L.) Karst., *Ranunculus ficaria* L., *Nymphaea occidentalis* (Ostenf.) Moss, *Cakile maritima* Scop., *Cardamine pratensis* L., *Cardamine flexuosa* With., *Polygala vulgaris* L., *Cerastium diffusum* Pers., *Stellaria alsine* Grimm, *Oxalis acetosella* L., *Anthyllis vulneraria* L., *Lathyrus pratensis* L., *Lathyrus montanus* (L.) Bernh., *Potentilla palustris* (L.) Scop., *Geum rivale* L., *Rosa sherardii* Davies, *Sedum anglicum* Huds., *Hedera helix* L., *Hydrocotyle vulgaris* L., *Myrica gale* L., *Arctostaphylos uva-ursi* (L.) Spreng., *Trientalis europaea* L., *Glaux maritima* L., *Solanum tuberosum* L., *Scrophularia nodosa* L., *Digitalis purpurea* L., *Veronica scutellata* L., *Odontites verna* (Bellardi) Dumort. subsp. *verna*, *Utricularia minor* L., *Scutellaria galericulata* L., *Teucrium scorodonia* L., *Ajuga pyramidalis* L., *Lonicera periclymenum* L., *Antennaria dioica* (L.) Gaertn., *Arctium minus* (Hill) Bernh., *Centaurea cyanus* L., *Triglochin palustris* L., *Endymion non-scriptus* (L.) Garcke, *Allium cepa* L., *Juncus effusus* L., *Luzula campestris* (L.) DC., *Luzula multiflora* (Retz.) Lej., *Eriophorum angustifolium* Honck., *Eriophorum vaginatum* L., *Eleocharis palustris* (L.) R.Br., *Rhynchospora alba* (L.) Vahl, *Carex panicea* L., *Carex paniculata* L., *Carex flacca* Schreb., *Carex pulicaris* L., *Carex dioica* L., *Phragmites communis* Trin., *Dactylis glomerata* L., *Brachypodium sylvaticum* (Huds.) Beauv., *Deschampsia cespitosa* (L.) Beauv., *Alopecurus geniculatus* L. and *Phalaris arundinacea* L.

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NOTES ON BRITISH CREPIS—
2, VARIANTS OF CREPIS CAPILLARIS (L.) WALLR.†

By J. B. Marshall

In Notes on British Crepis, 1 (Marshall, 1962), it was stated in the introduction that further notes would be concerned with distribution, early and noteworthy records, etc. In this connection many large herbaria and small private collections are being examined. Among those examined so far has been the Oxford University herbarium containing the collections of G. C. Druce. It was hoped that here would be found not only the original material of *Crepis capillaris* var. *glandulosa* Druce but also voucher specimens to confirm the many records published by Druce in the *Reports of the Botanical Society and Exchange Club*. Most of the Druce specimens are, however, unsatisfactory and disappointing by being so very scrappy or incomplete, and few have anything more than a single word for locality and just the year of collection.

It was pointed out by Wilmott (1938) that the varietal name *C. capillaris* var. *glandulosa* Druce takes precedence over *C. capillaris* var. *anglica* Druce and Thellung. This latter name has for many years appeared in British Floras, County Floras, etc.; many records have been published, and specimens so named, but of very diverse appearance, are in most collections. The original manuscript description in Latin by Dr. A. Thellung of Zurich, dated January 1922, is attached to a herbarium sheet with two mounted specimens—the specimens from Orkney that Druce was

†The following terms used throughout these notes are defined as follows.

Stems slender.	1 - 3 mm.	(Measurements are of diameter at
Stems semi-robust.	3½- 4½ mm.	2 cm. from caudex for main stem
Stems robust.	5 -10 mm.	and 2 cm. from axils for branches.)

Heads few.	From one to about twenty.
Heads many.	More than twenty. Some many-headed individuals have inflorescences with well over a hundred heads.

Heads very small.	Less then 1 cm. in diam.
Heads small.	1 -1½ cm. in diam.
Heads medium.	1½-2 cm. in diam.
Heads large.	2 -2½ cm. in diam.
Heads very large.	2½-3½ cm. in diam.

It should be realised that these terms are all merely terms of convenience and are quite arbitrary.

sceptical of as being *C. nicaeensis* and which were sent to Thellung for confirmation (Druce, 1923). The specimens are labelled "Crepis nicaeensis of the Orkney botanists. Grassy bank of Reservoir, Kirkwall, Orkney, Aug. 1920*, G. C. Druce & H. H. Johnston". Thellung's attached manuscript reads, "certe non *Crepis nicaeensis* Balbis ob receptaculum mamillatum glabrum! (In *C. nicaeensi* receptaculum profunde favosum fovearum marginibus elevatis fimbriato-ciliatis.) Videtur mihi varietas *Crepis capillaris* (L.) Wallr. insignis capitulis majusculis breviter et crasse pedunculatis, involucro atrato, habiter accedens ad nonnullas formas *C. nicaeensis*—forsan var. *anglica* nominanda". Only one of the specimens agrees with this description. When Druce published this description (Druce, 1923) he did not do so in Latin and did not mention the thickened peduncles mentioned by Thellung but mentioned an additional character, that of glandular phyllaries, and called the variety *glandulosa*. Thellung in a footnote to his manuscript description adds, "Venit etiam in ditione Cornwall; Ponsanooth, 1905. leg. F. Ham. Davey". Druce in his published description also mentioned this gathering, but a specimen with the same information and presumably of the same gathering is in the British Museum herbarium and is of vastly different appearance.

A muddling situation arises with two further sheets, both of Druce's collecting, from Lichfield, Stafford, 1921, both good material and practically identical in appearance. On sheet one is pinned a manuscript Latin description by Thellung dated May 1923. It is an emended description of var. *glandulosa* this time using the epithet *anglica*. This description was published later (Druce, 1924) and a copy of it cut from the pages of the Botanical Society Report is pasted beside Thellung's manuscript. Remarks following the Latin description explain that the epithet *glandulosa* was "withdrawn since there are other forms of *C. capillaris* which are also glandular". Fourteen years later, however, Wilmott (1938) pointed out that the epithet *glandulosa* although without Latin definition was nevertheless valid in accordance with the decisions of the 1930 International Congress. The description says of var. *anglica* "pilis nigris elongatis glandulifers ± abundanter vestitis". The very misleading and ambiguous ± sign used by Thellung has been interpreted by Druce as well as other British botanists as being applicable to plants that have phyllaries and peduncles with only a few glandular hairs as well as those with an abundance. There are just a few black glandular hairs on the phyllaries and peduncles of the Lichfield specimen that accompanies the original description. There are indeed some plants of *C. capillaris* that have a great abundance of black glandular hairs; such a plant is one of Druce's gathering from Elgin, 1896, where the phyllaries, peduncles, branchlets and branches are all conspicuously covered. Druce has mis-named this sheet as *C. setosa*

*The date 1921 given in the published description seems to be an error.

Haller f. but a record does not appear to have been published. Several localities are mentioned after the varietal description but the two specimens from Lichfield are the only ones present in the Druce collection. Many of his specimens and fragments have been labelled as *C. capillaris* var. *anglica,* some being eglandular, some glandular; a few only can be considered voucher specimens for records that have been published in the *Reports of the Botanical Society and Exchange Club.*

The second sheet of the Lichfield gathering has pasted on it the short Latin manuscript description of *C. capillaris* var. *anglica* forma *griseola* Thell. that was published at the same time as the variety. There is also a cutting from the Report. The description of this form reads, "Differt a typo varietatis involucro minus nigricante, indumento griseo copiosiore". There is a certain amount of indumentum present but certainly not copious and the involucre does not appear to be more or less dark on one or the other of the Lichfield plants. In 1928, in the second edition of the *British Plant List,* the epithet *griseola* appears as that of a variety.

One further complication exists; the second sheet of Druce's Lichfield material (with the description of forma *griseola* attached as mentioned above) has an additional small annotation label. On this Babcock has written "*Crepis capillaris* (L.) Wallr. Form 9." Babcock (1947) in his treatment of the many polymorphic species of the genus gives numbers to those forms which deviate from the type and lists them under headings of "minor variants". It would seem that he did not have much British material of *C. capillaris* to examine. Of Druce's material only three sheets are labelled, one from Glamorgan, one from Forfar and only the second sheet of material of the Lichfield gathering. It seems likely that these were sent on loan to him. He apparently did not see the Orkney gathering. Quite a few sheets are annotated in the Kew Herbarium but none at the British Museum. Minor variant 9 is described by Babcock (1947) as "Plant very robust, upper cauline leaves 17-27 cm. long; involucre 1 cm. broad in pressed condition; achenes large. Possibly a polyploid form". It will be noticed that Babcock completely disregards varietal characters given by Thellung. The Lichfield plant is not cited by him (nor the ones from Glamorgan and Forfar) but instead for some unknown reason he gives "Harnaman 1497* (Oxford, Druce), Corwen, Derwen, England". This is a mystery because the only sheet from Corwen (Denbigh) in Druce's herbarium is one presumably of his own gathering†. This sheet has not been annotated by Babcock and does not agree with his description of m.v. 9 whereas the Lichfield plant with his annotation label does exactly! Further confusion is created by Druce who also cites this Corwen plant, not as var.

*Babcock apparently understood No. 1497 as being a collectors number. It is the No. of *Crepis capillaris* in *List of British Plants,* 1908.

†The bottom half of the Druce label which may have had the collector's name has been cut off! The name "Harnaman" has not been traced.

anglica but as "var. *dentata* (Bisch.) Druce, teste Thellung" (Druce, 1926). A manuscript note on the sheet in fact reads "*Crepis capillaris* (L.) Wallr. cf. var. *agrestis* (W. K.) [quoad formam foliorum; var. *dentata* (Bischoff)".] The reason for there being two suggestions is that two large caudical leaves are mounted separately from a broken inflorescence without main stem.

These two leaves may or may not have belonged to the same plant. From the foregoing account of the confusion associated with var. *glandulosa* it may be realised that any attempt to try to retain this variety and to clarify the characters would be very difficult; to do so would also be rather pointless as Babcock (1947) in his discourse says, "apparently distinct forms are all connected by intergrading variants representing either different genetic combinations or ecological modifications". In the second edition of *British Plant List,* Druce (1928) mentions eight varieties of *Crepis capillaris,* four of which are based on degree of dissection of the leaves. Such differences are very inconstant and in the opinion of Babcock not worthy of recognition. While proposing the following treatment of the range of variation encountered in the British material I must point out that the groupings should not be considered as representing subspecies. I adopt the term minor variant used by Babcock for want of a more suitable one to describe the many diversified states or facets of this very polymorphic species. In the following arrangement, which only deals with British material, minor variant 1 agrees in part with Babcock's minor variant 1, but as he deals with world-wide variation, m.v.2 and m.v.3 cannot be equated in like fashion.

KEY TO THE MINOR VARIANTS OF *CREPIS CAPILLARIS*

1. No main stem apparent; few or many semi-procumbent, decumbent or erect stems of approximately same length arising from caudex ..... MINOR VARIANT 1

   Main stem apparent, with or without secondary stems arising from caudex 2

2. Main stem without secondary stems arising from caudex ..... MINOR VARIANT 2

   Main stem with few or many shorter, less robust stems arising from caudex ..... MINOR VARIANT 3

MINOR VARIANT 1

Rootstock not branched; caudex not proliferated ..... Minor Variant 1 A

Rootstock slightly or much branched; caudex proliferated (many-crowned) or with secondary stems resulting from possible mutilation ..... Minor Variant 1 B

Minor Variant 1 A

[i] Slender. Stems (3-12), slender, arcuate to stiffly erect, up to 30 cm.; caudical leaves up to 10 cm.; inflorescence few- or many-headed, paniculate, corymbiform; heads small to large.

[ii] Semi-robust. Stems (2-4), semi-robust, arcuate or erect, up to 50 cm.; caudical leaves 10-20 cm.; inflorescence many-headed, cymose-paniculate; heads medium to large.

Representative Material. [i] Slender. *Channel Islands*: Guernsey, St Peter Port, 1912, *W. C. Barton* (BM, OXF). *Outer Hebrides*: Harris, Luskentyre, 1939, *A. J. Wilmott & M. S. Campbell* (BM); Northtown, 1951, *K. J. F. Park* (BM). [ii] Semi-robust. *S. Somerset*: Selworthy, near cottages at Tivington, 1963, *J. B. Marshall, 1724* (BM). *Brecon*: Ystradfellte, roadside at Porth-yr-Ogof, 1963, *P. A. Sims, 243* (BM). *Selkirk*: Waste ground, Selkirk, 1961, *E. P. Beattie* (BM).

Minor Variant 1 B

[i] Slender. (a) Stems semi-procumbent or decumbent. (*Crepis capillaris* (L.) Wallr. sensu strict., *Crepis capillaris* var. *diffusa* (DC.) Druce).
(b) Stems arcuate or stiffly erect.
(c) Stems producing one to several very long peduncles each bearing a single large or very large head.

(a) Stems slender, semi-procumbent or decumbent, diffusely branched, up to 20 cm.; caudex usually a stunted growth of closely packed leafy crowns; caudical leaves usually numerous; inflorescence few- or many-headed, or (in small or very small plants) single-headed peduncles arising close to caudex; heads very small, small or medium.

This is probably the most widely distributed and perhaps most frequent state of the species. It is a common plant of grassy places, particularly roadside verges, playing fields, lawns, etc. It produces its flower heads mainly in late summer and autumn, but some may appear sparingly even during the winter months. It has been recorded as flowering during the months of January and February. Many authors have suggested that low-growing diffuse plants, lacking in vigour and with small or very small heads, are probably the result of mutilation or poor growing conditions. This view is supported by Babcock (1947) but he also stated that the genetic nature of these plants still remains unknown. Breeding experiments and genetical investigations of *C. capillaris* were carried out in California by Collins (1920) and Venkata Rau (1923). Both of these investigators worked in collaboration with Babcock and they showed that several generations of inbreeding can produce plants of this nature. James Lloyd (1876) stated that seed from these low-growing diffuse plants produced plants with erect stems 60-90 cm. and this statement is quoted by G. C. Druce in his *Flora of Berkshire*. It is to be presumed that he meant in the first generation. Whether the parent plant or plants were self-pollinated or cross-pollinated by individuals of erect habit would of course not be known. If his experiment was carried out under garden conditions it is to be expected that favourable growing conditions such as fertile soil and adequate water supply were contributory factors. Whether mutilation and adverse growing conditions such as poor dry soil and exposed situation

are merely contributory factors apparently remains still to be proved and the question demands a critical re-investigation using modern cultural and genetical methods.

(b) Stems arcuate or erect, up to 45 cm.; rootstock branched or unbranched; caudex many-crowned or with secondary growth stems resulting from mutilation; caudical leaves less numerous than in (a); inflorescence few- or many-headed, cymose-paniculate; heads small to large.

(c) Stems usually all very short (1-5 cm.), producing one to several very long peduncles (10-30 cm.) sometimes accompanied by longer normal branching stems; rootstock branched; caudex proliferated but not stunted and closely packed as in (a); heads large or very large, sometimes quite normal, sometimes malformed and teratological in nature.

[ii] Robust. Stems (2) robust, erect and very much branched, up to 55 cm.; rootstock divided into separate caudices; inflorescence very broadly paniculate-corymbiform with very numerous heads (approx. 200); heads medium.

Representative Material. [i] Slender (a). *E. Kent*: New Romney, maritime form (?) in sandy field, 1878, *F. J. Hanbury* (BM). *Oxford*: Stow Wood, 1912, *G. C. Druce* (BM, CGE, OXF). *Worcester*: Malvern, 1913, *A. J. Crosfield* (BM, SLBI). *Westerness*: Ardnamurchan, among pasture grass, Moidart, 1896, *S. M. Macvicar* (BM). Slender (b). *Surrey*: Redhill, Redstone, 1857, *J. Linnell* (BM). *Durham*: Elwick, 1894, *R. Morton Middleton* (BM). *Mid Perth*: Perth, 1926, *G. C. Druce* (BM). Slender (c). *Dorset*: Stone quarry near Kingston, 1882, *H. N. Ridley & W. Fawcett* (BM). *Oxford*: Goring, 1885, *F. J. Hanbury* (BM). *Fife*: Balmuto, 1872, *Bayley Balfour* (OXF). *Elgin*: Longmorn, 1927, *K. D. & J. E. Little* (BM). [ii] Robust. *Pembroke*: St. Ishmaels, roadside hedgebank, the common habit form of the district, 1961, *T. A. W. Davis, 61/449* (BM). Branching rootstocks, proliferated caudices and secondary growth stems seem to indicate a possibility of many of the plants included in m.v. 1 B being short lived perennials.

MINOR VARIANT 2

Plants with apparent normal development ..... Minor Variant 2 A
Malformed plants resulting possibly from mutilation but not noticeably teratological in nature ..... Minor Variant 2 B
'Leggy' attenuated plants resulting from overcrowding, shade, etc. .... Minor Variant 2 C

Minor Variant 2 A

[i] Slender. Main stem slender, arcuate or stiffly erect, up to 40 cm.; branches slender, sometimes at lower or middle parts of main stem, sometimes all in the upper with or without reduced branches below; caudical leaves up to 15 cm.; inflorescence few- or many-headed, cymose-corymbiform or paniculate-corymbiform; heads medium to large, isolated or somewhat crowded according to the length and divergence of peduncles.

[ii] Semi-robust. Main stem semi-robust, up to 70 cm.; branches slender, less frequent in lower parts of stem than in slender-stemmed plants; caudical leaves up to 20 cm.; inflorescence few- or many-headed, cymose-corymbiform or paniculate-corymbiform; heads small to large.

[iii] Robust. Main stem robust, up to 70 cm.; branches slender or semi-robust, usually in upper part of main stem; caudical leaves up to 32 cm.; inflorescence many-headed, simple or compound-corymbiform; heads medium to large or very large.

Representative Material. [i] Slender. *S. Somerset*: Selworthy, cottage garden, Tivington, 1961, *J. B. Marshall, 1702* (BM). *Dorset*: Corfe Castle, 1928, *G. C. Druce* (OXF). *W. Sussex*: Selham, 1907, *C. C. Lacaita, 9834* (BM). *Berwick*: Coldingham, disused quarry at Granthouse, 1960, *E. B. Bangerter, 906* (BM). *Wicklow*: Magherabeg, dry sand-dunes just south of Ardmore Point, 1962, *A. C. Jermy, 1449* (BM). *Sligo*: Strandhill, shallow dunes W. of Sligo, 1962, *A. C. Jermy, 1494* (BM). *Down*: Newcastle, sand-hills on S. side of Dundrum Bay, 1962, *A. C. Jermy, 1739* (BM). [ii] Semi-robust. *W. Cornwall*: Coverack (no date), *H. E. Fox* (OXF). *N. Devon*: Welcombe, near the sea, 1962, *T. Wooddisse, 33* (BM). *S. Hants*: Hayling Island, 1922, *G. C. Druce* (OXF). *N. Wiltshire*: Bremhill, roadside near River Marden, 1962, *F. L. Balfour Browne, 671* (BM). *Mid-west Yorkshire*: Leeds, clover field, Alwoodley Lane, 1911, *A. E. Bradley* (BM). *Elgin*: Railway side, Elgin, 1896, *G. C. Druce* (OXF). [iii] Robust. *W. Cornwall*: in a field of long grass at top of cliffs, Kennack Sands, near Lizard, 1961, *P. A. Sims, 157* (BM); Ponsanooth, 1901, *F. H. Davey* (BM, CGE, SLBI). *Pembroke*: St. Ishmaels, stony ground at roadside, 1961, *T. A. W. Davis, 61/416* (BM); Trevine, dry waste ground at roadside, 1962, *T. A. W. Davis, 62/557* (BM). *Merioneth*: roadside near Trawsfynydd, 1961, *J. F. & P. C. Hall, 4/61* (BM). *Haddington*: Prestonpans, 1872, *Bayley Balfour* (OXF).

Minor Variant 2 B

Main stem terminating abruptly a few cm. from caudex; branches developing normally, ascending and therefore much exceeding main stem, or remaining stunted and patently spreading; inflorescence usually few-headed; heads medium to large.

This condition, which is not infrequent, may be due to damage of the growing point or to adverse growing conditions.

Representative Material. *Dublin*: Tops of walls, Vernon Avenue, Clontarf, 1895, *R. M. Barrington* (DBN). *Down*: Newcastle, sand-hills on S. side of Dundrum Bay, 1962, *A. C. Jermy, 1744* (BM).

Minor Variant 2 C

Stems slender, up to 60 cm.; caudical and cauline leaves usually few; inflorescence cymose-paniculate or corymbiform; heads few, medium to large.

This is a condition undoubtedly induced by competitive growing conditions such as close-growing meadow grass, shady margins of woods, etc.

The main stem remains very slender in proportion to its height and sometimes sags or distorts from weakness.

Representative Material. *N. Hants*: Upton Grey, grassy hedgerow by side of lane, 1942, *J. B. Marshall, 1404* (hb. JBM). *Derby*: Bradley, 1889, *W. R. Linton* (BM). *N.-E. York*: Egton Bridge, Egton (no date), *R. J. Flintoff* (BM). *E. Ross*: Kincardine, wooded slopes just north of Culrain, 1958, *E. W. Groves, 2741* (BM).

MINOR VARIANT 3

Main stem slender, semi-robust or robust, 35-75 cm.; secondary stems (3-15) erect, slender or semi-robust, at least half height of main stem, sometimes equalling; caudical and lower cauline leaves large, 15-35 cm.; inflorescence many-headed, simple or compound-corymbiform; heads small to large.

Representative Material. [i] Slender. *Outer Hebrides*: Barra, near Kentangaval, 1938, *A. J. Wilmott* (BM). [ii] Semi-robust. *E. Perth*: Pitlochry, grass verge at side of road to Baledmund, 1962, *M. McCallum Webster* (BM). *Westerness*: dry bank by roadside, Oinch, 1962, *M. McCallum Webster* (BM). [iii] Robust. *Westmorland*: roadside 1 mile north-west of Kendal, 1961, *P. H. Raven* (BM). *Leitrim*: dry roadside bank with other vegetation, Ballinagleragh, 1962, *A. C. Jermy, 1654* (BM).

Not more than one of the above-mentioned minor variants has been observed within a single community by the author of these notes. Variation of vigour of neighbouring plants is quite usual and sometimes very noticeable. Plants ranging from a few inches to well over two feet with corresponding robustness of stem can often be seen growing together.

It is quite impossible to recognise minor variants from poorly collected material mounted on herbarium sheets; complete plants are absolutely necessary. Main stems only, or secondary stems broken away from a caudex are worthless. In some herbaria the material consists sometimes of branchlets, branches, or terminal inflorescences only. A poor gathering made by Druce at Frilford, Berks., July 1923, is nevertheless of particular interest. The material was subsequently named *Crepis druceana* Murr ex Druce (1926b). There are sheets of this gathering in the herbaria at BM, CGE, MANCH, OXF, and SLBI. Unfortunately, there is not a complete plant among them. The material consists of stems and pieces apparently broken away from a many-stemmed caudex. The manuscript Latin description drawn up by Joseph Murr (Innsbruck) in 1923 is attached to the Oxford sheet and is the one published by Druce in 1926; it begins, 'Verosimiliter *C. biennis* × *capillaris*. Ramificatio et folia ut in *C. capillaris*'. This is a very unlikely hybrid and the branching of *C. capillaris* can be very diverse as mentioned above; likewise can the leaves. The long, narrow, deeply runcinate-toothed leaves can be matched in the three variants of the species mentioned above. The branching, however, is very unusual. The stiffly erect semi-robust stems,

40-50 cm., divide into two or three stiffly erect peduncles each bearing a single very large head which Murr described as 'capitula triplo majora'. It was suggested by Babcock (1947) that this plant was probably polyploid. The sheets have not been annotated by Babcock and it is assumed that his observation was made from description only.

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NOTES ON THE FLORA OF SULE SKERRY, ORKNEY

By E. R. Bullard

Although included in V.c. 111, Sule Skerry lies more than thirty miles W. of Birsay in Orkney and about the same distance N. of Whiten Head, Sutherland. Apart from the Lighthouse, completed in 1895, the island is uninhabited and is slightly under half a mile in length.

The vegetation never seems to have been thoroughly examined: Harvie-Brown, who visited the Skerry on 18th June 1887, wrote "The most of the island is covered with *Cochlearia officinalis,* fennel, chickweed, and a dark green, luxuriant grass, the latter here and there in patches, fennel and chickweed most abundantly. I saw no appearance of sea-pink. . . . In some places the forests of fennel, which, when bruised, gives forth a strong aromatic scent, predominated over the *Cochlearia* and in others the order was reversed. The fennel seemed to choose the deeper soil of the Puffins' ground, the *Cochlearia* preferring the stonier and thinner soil. The dark green grass before mentioned, occurred in patches in the deeper soil in the hollows, and seems to have been principally encouraged by the droppings of gulls and Eider Ducks, nests of which were often placed in the thicker tufts".

In October 1962 and again at the end of May 1963, Mr. E. Balfour, local representative of the Royal Society for the Protection of Birds, was able to visit Sule Skerry and kindly brought me specimens of plants growing there. The dates were not ideal; most of the plants collected in May 1963 had to be grown on in pots until flowering, the grasses being sent to Dr. C. E. Hubbard at Kew.

The plants for which satisfactory determinations have been made are: *Ophioglossum vulgatum* subsp. *ambiguum* (Coss. & Germ.) E. F. Warb., *Cochlearia officinalis* L., *Silene dioica* subsp. *zetlandica* (Compton) Clapham ♀, *Cerastium holosteoides* Fr., *Sagina procumbens* L., *Atriplex glabriuscula* Edmondst., *Rumex crispus* L., *Tripleurospermum maritimum* (L.) Koch, *Juncus bufonius* L., *Poa annua* L., *Festuca rubra* L., subsp. *rubra* and *Agrostis stolonifera* L. var. *stolonifera.*

On both visits specimens of *Spergularia* were collected. The first had one ripe capsule in which all the seeds were broadly winged. The one specimen brought back in May only produced one capsule in cultivation and all the seeds in it were unwinged. Both were miserable specimens and it would seem that further material is required before it could be decided that both *S. media* and *S. marina* occur on Sule Skerry. A specimen of *Rumex* has

still to flower in cultivation but it appears to be a form of *R. crispus*. A *Puccinellia* collected on Sule Skerry, and subsequently from other parts of Orkney, awaits further investigation.

In June 1963 a party of sightseers landed on Sule Skerry and apparently collected plants, some of which were sent to the Royal Botanic Garden, Edinburgh. I understand from Miss C. W. Muirhead that most of the specimens were in a juvenile state but that they included *Sagina maritima*.

Only two mosses and three lichens were collected and further material is required before they can be published.

Sule Skerry supports large numbers of breeding seabirds. Colour photographs taken by Mr. Balfour in May show the interior dark green with the foliage of *Tripleurospermum* (Harvie-Brown's "fennel"?) and a broad fringe of the white-flowering *Cochlearia*. In autumn the picture is reversed; these two plants are co-dominant. The small amounts of soil in the crevices of the rock and near the Lighthouse has a peaty appearance and is probably composed of plant and seaweed debris, bird droppings, coal ash, and possibly some shells. Specimens of rock brought back by Mr. Balfour have been examined and are described as "dominantly of plagioclase with subordinate hornblende and minor quartz, the product of metamorphis of, presumably, gabbro or diorite".

At various times, mammals may have had some effect on the vegetation. Until the latter part of the nineteenth century, Grey Seals bred there in some numbers: a Grey Seal nursery often supports a luxuriant vegetation. The Grey Seals were driven off, either by hunting or by the erection of the Lighthouse. J. Tomison writes that there were goats and rabbits on the Skerry c. 1909; these may have died out but again around 1919/20 two of the Lightkeepers released domesticated rabbits and these were augmented the following year by wild rabbits taken from Auskerry. Apparently the rabbit population was considerable for a number of years, but there are now no mammals on the island.

I am grateful to Dr. C. E. Hubbard, Dr. F. H. Perring and Dr. C. Gimingham for assistance with determinations, to the Northern Lighthouse Board for information on the release of rabbits and to Mr. E. Kellock for geological information.

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PLANT NOTES

8/P. **Pteris vittata** L., 1753, *Sp. Plant.*, 1074; *P. longifolia* auctorum europaeorum, non L. V.-c. 34, W. Gloucester, on a disused tip, Princess Royal Colliery, Bream, National Grid SO/61/06, March 1964, Miss Anne Beaufoy, det. at Kew, *Herb. Kew, Herb. Mus. Brit., Herb. Mus. Wales (Herb. Lousley).*

Rhizome short and stout; fronds arising in close proximity, petioles 5-10 cm., clothed with elongated, narrow, pale brown scales; blades 40-70 cm. long, 5-8 cm. wide, oblong-oblanceolate, attenuate below, pinnate with a single terminal pinna; pinnae subcoriaceous, about 15-30 pairs, sessile, linear or linear-lanceolate, finely serrate, attenuate and acute at apex, truncate cordate or auricled at the base, lower pinnae becoming more rounded at the apex and more abruptly auricled at the base; veins close and fine, usually much branched, all free; sori extending along almost the whole edge of the pinnae except at apex, with paraphyses amongst the sporangia; indusium inconspicuous when mature. Widespread through the warmer parts of Africa and Asia; Australia and Polynesia. Occurs in the Atlantic Isles and in Europe in the Balearic Isles, Crete, Cyprus, the islands of the Aegean, southern Spain (Málaga and Granada), southern Italy and Sicily.

The description above is taken from herbarium specimens as the over-winter plants supplied by Miss Beaufoy were small. Those received by the writer had petioles only 2-3 cm. with very pale, almost whitish, scales, and blades about 10-12 cm. long and 3-4 cm. wide with 9-13 pairs of pinnae.

The habitat is no ordinary one. The fern grows on a slag heap from one of the National Coal Board mines which was last used in 1945. It has been on fire from an even earlier date, since it was necessary to drench it with water during the war to prevent the glare acting as a guide to enemy aircraft. *Pteris vittata* grows in a large patch extending over 20 square yards at the top of the heap near a jet of steam, where it is damp and hot from the fumes from the internal combustion. The plants are at all stages from the prothallus, and fronds of last year's growth had the remains of sori along the edges. In order to spread to this extent the fern must have been there for several generations and it seems likely that it started from a spore arriving soon after the heap was last used in 1945. On the island of Ischia, near Naples, it grows on hot tufaceous rock (*Herb. Mus. Brit.*) under conditions somewhat similar to those of the Forest of Dean slag heap. It is of interest that on the latter some of the fronds of *Pteridium aquilinum* growing near *Pteris vittata* also remained green throughout the winter of 1963-64.

Pteris vittata belongs to a critical complex widespread throughout the Tropics. It is closely allied to *P. longifolia* which Linnaeus described on material from the New World, and his description of *P. vittata* was printed next with the comment "Praecedenti valde similis" and based on Osbeck's

plant from China.

Hieronymus (1914) urged that the New and Old World plants should be accepted as different species, and this view is supported by Holttum (1955), but the characters by which they are separated are not at all easy to apply. *P. longifolia* L. sensu stricto, which grows in Tropical America and Florida, tends to be less scaly, and not so attenuate at the base of the lamina, and the pinnae have an articulation at the base so that they spread horizontally, with a crenate margin. *P. longifolia* was first introduced into English greenhouses from the West Indies in 1720, it grows freely and the spores are developed in such abundance that the plant is sometimes a pest in hothouses. Since its distribution in the New World is restricted to hot climates, it is less likely to persist in the open in Britain than *P. vittata* which occurs in southern Europe.

P. longifolia is included in the second edition of Druce's *British Plant List* and this appears to be based on the record "On the Conservatory wall, Botanic Garden, Oxford, self-sown and there for some years. September 1924. G. C. Druce" (Rep. Bot., Soc. & E.C., **7**, 458, 1925). It is hard to justify the inclusion of a species in a list of British plants on such evidence*

I am most grateful to Miss Anne Beaufoy for supplying me with specimens and notes on the habitat, to Clive Jermy for assistance with the taxonomy and description, and to Dr. Frances M. Jarrett who identified the material sent to Kew.

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—J. E. LOUSLEY.

8/P. PTERIS VITTATA L. Using Miss Beaufoy's original letter to me of the 1st March, I visited the locality near Bream on the 11th August 1964, when there was no jet of steam. But the area, on a steep south-facing slope 20′ below the summit, was uncomfortably hot to stand on and much hotter below the crust. It was only in this hot area of red slag that *Pteris vittata* grew, with otherwise a very sparse flora. It's chief companion was *Conyza canadensis*, while little *Epilobium obscurum* and *Vulpia myuros* and the mosses *Polytrichum juniperinum* and *Ceratodon purpureus* also occurred. There were in addition isolated plants of *Rumex acctosella, Verbascum thapsus, Juncus effusus, Carex pilulifera* and *Festuca ovina,* and two oak seedlings. It was noticeable how the *Betula* scrub and *Pteridium* stopped short of the area, *Pteridium* once only growing adjacent to a tuft of the *Pteris.*

*It is still on the Conservatory wall in Oxford Botanic Garden and there were plants there at all stages from sporelings to others with spore-bearing fronds in May 1964. Hot water pipes run along the other side of the wall, and the conservatory is maintained at a high temperature. In spite of persistence for 40 years these conditions are too artificial for the ferns serious consideration as an established plant.—J. E. L.

The *Pteris* fronds were mostly five to ten centimetres long, but some were twice that length. I attempted to count the plants, but accuracy was impossible with so many growing in groups or vertical lines. There seemed, however, to be something of the order of 500 distinct tufts of all ages and sizes.

Shortly afterwards I revisited the Oxford plant and found their fronds had, not surprisingly, grown and a few were indeed also nearly twenty centimetres long.—D. McCLINTOCK.

148/2b. **Scleranthus perennis** subsp. **prostratus** P. D. Sell, 1963, *Fedde. Rep.* **68**, 168. V.c. 26, W. Suffolk; sandy grassy track on High Lodge Hill, Mildenhall, 1957, M. SOUTHWELL (*Hb. Cantab.*).

Stems long, procumbent. Leaves 3-5 (-7) mm. long, linear, acute, glabrous or lightly ciliate. Internodes 2-3 (-10) mm. long. Fruit 2-3 (-3·5) mm. long. Sepals erect or lightly incurved. Known also from Norfolk. It occurs in disturbed grassy places, usually within a pH range of 5·1-6·8, on the sandy heaths of Breckland.—D. H. KENT.

227/d. **Cotoneaster dielsianus** Pritzel, 1900, *Engl. Bot. Jahrb.* **29**, 385. V.-c. 3, S. Devon, Wall's Hill Down, Babbacombe, Nov. 15, 1962 and July 8, 1963, M. C. HOCKADAY (*Herb. Lousley*), conf. P. BRANDER.

A shrub c. 0·5 metres tall, with spreading branches, young branches with dense white pubescence; leaves ovate, subacute, broad-cuneate at the base, (1-) 1·5-2 cm. long, 0·5-1 cm. broad, dark green and slightly pubescent above, with dense greyish-white tomentum below. Flowers pinkish, in short 3-7 (-11) flowered pubescent cymes, calyx pubescent, sepals triangular, petals white flushed with pink. Fruits subglobose, about 6-7 mm. across, scarlet. Native of central and western China.

Two bushes were found growing near *C. microphyllus* in abundance and *C. simonsii*, which was scarcer. *C. dielsianus* flowers later than either of these species. The berries are eaten by birds. I am grateful to Mrs. M. C. Hockaday for collecting the material and supplying notes on it, and to D. McClintock and Dr. Paul Brander for their help.—J. E. LOUSLEY.

438/C. CALCEOLARIA CHELIDONIOIDES Humboldt, Bonpland & Kunth, 1818, *Nov. Gen. & Spec. Plant.*, **2**, 378-9. An annual herb, erect or ascending, 2-4 dm. tall, laxly branched, glandularly villose-pubescent. Leaves with broad-lanceolate terminal leaflet, and 1-2 pairs of semi-stiped pinnae, sharply doubly denticulate, pilose on both surfaces, paler green below; petioles 1-2 cm. long, the lower slightly connate round the nodes. Inflorescence of lax, few-flowered cymes, the pedicels mostly 1-2 cm. long, appearing axillary. Sepals 5-6 mm. long, ovate, acuminate, entire, or with a few marginal teeth. Corolla bright yellow, 10-14 mm. long, its upper lip less than 2 mm. long, its lower lip strongly incurved. Capsule 5-6 mm. long, ovoid, glandular-pubescent. Native through the Andes of Ecuador, Colombia, and Venezuela, and northwards through Central America to southern Mexico. An aggressive weed in the Canary Isles, and in India about Darjeeling and in the Nilgiri Hills and about Madurai, Madras. Also known from Ceylon, Java, Australia and South Africa.

There are many records of annual Calceolarias from Britain and these are summarised below. Most of them are as garden weeds, and as such

they can persist for long periods in spite of the efforts of gardeners to eradicate them, and in some areas, as for example round Norwich, they appear to be well established. Other occurrences are on refuse tips and waste places and a few from arable fields. These plants have been recorded as *C. mexicana* Benth., *C. glutinosa* Heer & Regel, *C. pinnata* L., *C. gracilis* H.B.K., *C. scabiosifolia* Sims, *C. scabiosifolia* Roem. & Schult. and *C. tripartita* Ruiz & Pavón, but all the specimens seen appear to belong to the same species, and it is likely that we have only one annual *Calceolaria* as a basis for the records concerned.

This belongs to a group of critical species centred on the Andes which has been revised by Pennell (1945, 1951), who knew the plants in the field and paid considerable attention to the typification, but he changed his views as the work progressed and the group still remains a very difficult one. British material is a good match for specimens named as *C. chelidonioides* H.B.K. by Pennell who states that the type from Quito, *Ecuador*, at Berlin had leaflets characteristically stiped, and the corollas about 15 mm. long. He also saw the isotype at Paris. Since *C. tripartita* Ruiz & Pavón has also been suggested recently for the British plants it may be helpful to set out the characters used to distinguish them in Pennell's key (1951, p. 187):—

C Corolla 12-15 mm. long; lower anther-cell flattened, ribbon-like, concealed; capsule conic, about as wide as long; segments of leaf-blades so narrowed proximally as to be often semi-stiped ..... 79. *C. chelidonioides*

CC Corolla 15-25 mm. long; lower anther-cell knob-like, exposed against neck of sac; capsule globose-ovoid, somewhat depressed and wider than long; segments of leaf blades with 1 or two pairs of more widely based lobes ..... 80. *C. tripartita*

British plants have the smaller corollas, conical capsules, and semi-stiped leaf segments of *C. chelidonioides*, and D. R. Hunt has re-examined the British material at Kew and agrees that it is this species. It has been found as follows:—

V.-c. 2, E. CORNWALL. Parrot food thrown to fowls in the mowhay, Calle Beacon, Lostwithiel, 1929 HARRISON, comm. E. THURSTON, as *C. chelidonioides* H.B.K., det. J. FRASER (*Hb. Oxon.*); *Rep. Bot. Soc. & E.C.*, **9**, 363, 1931; THURSTON in *J. Roy. Inst. Cornw.*, **24**, 31, 1936.

V.-c. 4, N. DEVON. Rubbish tip near Bideford, 1931, G. C. DRUCE, det. as *C. scabiosifolia* Sims in Thellung's handwriting (*Hb. Oxon.*); *Rep. Bot. Soc. & E.C.*, **9**, 568, 1932, where the same determination is attributed to J. FRASER.

V.c. 9, DORSET. Bradford Abbas, ex herb. J. BUCKMAN, as *C. mexicana* Benth. "See *J. Bot.* (*N.S*), **1**, 268, 1872 (Jas. Britten). First observed in Sept. 1867 occupying a space of about 5 acres in a barley field about ½ mile from Bradford Abbas on a light sandy soil. Ripened seed and flowered freely during mild spring of 1868. Observed again Oct. 1871 dotting the side of the field in the oat stubble of the same field. See *Science Gossip for 1868*, p. 19 by J. C. Hudson and *Science Gossip* for Dec. 1871 by Prof. Buckman" (*Hb. Mus. Brit.*), *Rep. Bot. Soc. & E.C.*, **4**, 423, 1917: Lewell Lodges, Dorchester, 1928, E. R. SYKES ex J. COSMO MELVILL (*Hb. Mus. Brit.*): Longthorns, R. GOOD, in *Geogr. Handbook Dorset Flora*, 195, 1948.

V.-c. 11, S. HANTS. Garden weed, Sway, 1963, Miss S. MOLD, comm. D. MCCLINTOCK (*Hb. Lousley*).

V.-c. 12, N. HANTS. Lyss, seed from Vernham, 1918, J. S. GAMBLE (*Hb. Kew*)—this may be merely a cultivated specimen.

V.-c. 15, E. KENT. Near Sandling, where it has come up in garden ground for the last 10 years, 1907. LADY DAVY. "Probab. *C. gracilis* H.B.K. (=*C. glutinosa* Heer & Regel). Am. austr. THELLUNG. v. 1917". (*Hb. Oxon.*).

V.-c. 17, SURREY. Waste ground near Herbarium, Kew, 1922, as *C. glutinosa*, W. B. TURRILL (*Hb. Kew*); Buckland, persistent weed in garden, 1963, introduced from seed brought by Major Tristram from Himalayas, Miss B. M. C. MORGAN, comm. D. MCCLINTOCK.

[V.-c. 21, MIDDLESEX? "Garden ground London" in writing of G. C. Druce. "*Calceolaria spec.* cf. *C. chelidonioides* H.B.K. vel. *C. scabiosifolia* Sims. IV. 1917. det. A. THELLUNG" (*Hb. Oxon.*)]

V.-c. 23, OXFORD. Weed in Botanic Garden, Oxford, 1915. G. C. DRUCE, as *C. chelidonioides*, det. A. THELLUNG, 1915 (*Hb. Oxon.*); *Rep. Bot. Soc. & E.C.*, **4**, 204, 1916 : Marston Brickyards, G. C. DRUCE, *Rep. Bot. Soc. & E.C.*, **4**, 204, 1916 : Bullingdon Bog, doubtless conveyed there with garden rubbish, Druce. *Fl. Oxon.*, ed. 2., 307, 1927, as *C. glutinosa* Heer & Regel.

V.-c. 27, E. NORFOLK. Coming up itself in a garden at Heigham, near Norwich, 1879, E. F. LINTON (*Hb. Kew*), "has been recorded as growing spontaneously in a garden at Norwich, Dunn, S. T., *Alien Fl.*, 142, 1905—both as *C. glutinosa* Heer & Regel : Horstead, as weed in vegetable garden for at least 10 years, Nat. Grid. 63/21, C. THACKER, det. at KEW as *C. tripartita* Ruiz & Pavón: Cromer, weed in garden, 1957-1963, W. BAKER: Norwich, weed in gardens, JOHN SILVERWOOD, 1963, det. at KEW as *C. tripartita* Ruiz & Pavón, all comm. A. E. ELLIS, March 1964.—See also *Trans. Suffolk Nat. Soc.*, **12**, 387, 1964.

V.-c. 49, CAERNARVON. Beddgelert, 1917, G. C. DRUCE. "*Calceolaria* (cf) *gracilis* H.B.K. (=*C. glutinosa* Regel) . . . det. A. THELLUNG, 1918" (*Hb. Oxon.*), *Rep. Bot. Soc & E.C.*, **5**, 389, 1919.

V.-c. 59, S. LANCS. Prestwick, Sedgeley Park, 1898, *J. Cosmo Melvill*, as *C. pinnata* L., Savidge, J. P., etc., *Travis' Fl. S. Lancs.*, 341, 1963.

V.-c. 62, N.-E. YORK. Thirsk, persistent weed in the garden of Catton Hall, 1963, C. M. ROB, comm. D. MCCLINTOCK (*Hb. Lousley*).

V.c. 63, S.-W. YORK. Kirkheaton, Jarmain's Mill shoddy heap, 1958, grown on 1959, M. MCCALLUM WEBSTER, as "*C. tripartita* R. & P. sensu Pennell (i.e. including *scabiosaefolia* and *gracilis*)", C. C. TOWNSEND, 1959 (*Hb. Kew*), *Proc. B.S.B.I.*, **4**, 237, 1961.

V.-c. 64, MID-WEST YORK. Otley, in a garden bed sown with carrots, 1960, MRS. F. HOUSEMAN, as *C. tripartita* R. & P., (*Hb. Houseman*).

V.-c. 79, SELKIRK. Galashiels, on shingle in the bed of the Gala, 1914, I. M. HAYWARD (*Hb. Hayward, Edinburgh*), Druce & Hayward, *Adv. Fl. Tweedside*, 170, 1919: *Galashiels*, 1915, I. M. HAYWARD, *Rep. Bot. Soc. & E.C.*, **4**, 423, 1917—all as *C. mexicana* Benth.

V.-c. 80, ROXBURGH. Galashiels, E. P. BEATTIE (*Hb. Beattie*), *Proc. B.S.B.I.*, **4**, 237, 1961, as *C. mexicana* Benth.

H.21, DUBLIN. Belvoir Park, 1931, G. LISTER, as *C. mexicana* Benth. (*Hb. Mus. Brit.*).

As a weed in gardens in Britain *C. chelidonioides* germinates in July, grows extremely rapidly and comes into flower shortly after the first leaves appear. It continues flowering throughout the summer and autumn but is killed immediately by even a slight frost. The seeds in the soil survive even exceptionally severe winters like that of 1962/63 which was followed at Horstead by abundant germination.

Mention must also be made here of the plant recorded by F. A. Lees as *Calceolaria sinclairii* Hook. This was "once seen as a weed among potatoes at Kirby Malzeard, Yorks." (Lees, F. A. & al., *Suppl. Yorks. Floras*, 80, c. 1941, and Lees in annotated copy of Druce, *List of British Plants*, ed. 1, 1908, in my possession. Also *Rep. Bot. Soc. & E.C.*, **9**, 276, 1931). This greenhouse plant from New Zealand is not closely related to the annual weedy species which are the main subject of this note, and it is now known as *Jovellana sinclairii* (Hook.) Kränzl. It is unlikely to become established in Britain.

I am grateful to D. McClintock for drawing my attention to our weedy

Calceolarias and for help with specimens and information, to A. E. Ellis for full notes on recent occurrences in Norfolk, and to Mrs. F. Houseman and others who supplied records. D. R. Hunt of Kew gave most valuable help with the identification.

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—J. E. LOUSLEY.

379/2b. **Vinca major** subsp. **hirsuta** (Boiss.) Stearn, 1932, *Suppl. J. Bot.*, **70**, 27: *V. pubescens* D'Urville, 1822, *Enum. Pl. Insul. Arch. Pont Euxini* 26, in *Mém. Soc. Linn. Paris*, **1**, 282: *V. major* var. *hirsuta* Boiss. ex Tchihatch, 1866, *Asie Mineure*, **3**, Bot. **2**, 67: *V. major* var. *pubescens* (D'Urville) Boiss., 1879, *Fl. Orient.* **4**, 45: *V. major* var. *oxyloba* Stearn, 1930, *Gard. Chron.*, Ser. 3, **88**, 516: *V. herbacea* auct. angl., non Waldst. & Kit. V.c. 3, S. Devon; naturalised in grounds of Blackpool House, near Dartmouth, D. MCCLINTOCK. V.c. 15, E. Kent; hedgebank near Appledore, 1962. D. H. KENT. V.c. 18, S. Essex; naturalised at Warley Place, J. E. LOUSLEY. V.c. 41, Glamorgan; well naturalised in a wood on the Dunraven Castle Estate, 1955, B. Miles (as *V. herbacea*), *Proc. B.S.B.I.*, **2**, 35.

In 1955 B. A. Miles discovered a periwinkle with deep violet narrow-lobed flowers well naturalised in a wood in the grounds of Dunraven Castle, Glamorgan, South Wales. It was identified for him as *Vinca herbacea* Waldst. & Kit. This had earlier been listed as a casual British species by Druce (1928), no doubt on the strength of the records, viz., 9, Dorset; Bourton, 1914, W. Herridge, ex W. H. Griffin, and 14, E. Sussex; East Grinstead, 1913, Miss P. Stockdale, published in *Rep. Bot. Soc. & E.C.*, **4**, 17 (1915), though no specimens in support of the records are to be found in Herb. Druce at Oxford, in Herb. Mus. Brit., in Herb. Bexhill Museum or Herb. South London Botanical Institute. Mr. Miles' apparent confirmation of Druce's records led to the inclusion of *V. herbacea* in Dandy (1958). The identifier of the Welsh specimen subsequently said that he named the plant by elimination; it was neither *V. major* nor *V. minor*, therefore he concluded it must be the third species listed in the book that he was using, i.e. *V. herbacea*. The last-named is a low-growing species, dying back to ground level every winter and without the differentiation of arching or procumbent rooting shoots and ascending flower shoots which characterises *V. major* and *V. minor*. When I saw the plant at Dunraven in 1958, I questioned its identification with *V. herbacea* and took a piece home to grow. It was clearly not herbaceous, and differed in leaf-form and habit from *V. herbacea*. In 1962 I saw the same plant naturalised in the grounds of Sir Ralph Newman at Blackpool House, near Dartmouth, South Devon, and later I was sent a specimen from Sussex, as a result of talking about it at the Wild Life Exhibition in 1963. It is illustrated as "*V. major*" in Gathorne-Hardy (1958), as also in Nash (1948), where it is referred to

as 'the puzzling plant which has the habit of growth of the large Periwinkle (*V. major*) while its narrow propellor-like petals suggest an affinity with the small species *Vinca herbacea*'.

In an attempt to discover the correct name for this plant I looked through the specimens of *Vinca* in Herb. Mus. Brit. and there found in the Asiatic cover a specimen of *V. pubescens* D'Urville from Transcaucasia (Grossheim & Schischkin, Pl. Or. Exsicc. 1928, no. 394) which looked promising, but I had no time to follow this up. Had I gone on to examine the cultivated material, Dr. Stearn tells me, I would have found there specimens corresponding to the Dunraven plant which had been collected in 1931 and 1954 from the type plant of *V. major* var. *oxyloba* Stearn from the garden of E. A. Bowles at Myddelton House, Enfield, Middlesex.

However, I came by chance on the Supplement to the *Journal of Botany*, vol. **70** (1932) entitled '*Notes from the University Herbarium, Cambridge*' by J. S. L. Gilmour and W. T. Stearn and there on page 27 was this plant clearly described and named *V. major* subsp. *hirsuta* (Boiss.) Stearn, with much of the synonymy given above. Dr. Stearn states that the cultivated plant on which his name *V. major* var. *oxyloba* was based (cf. *Gard. Chron.* ser. 3, **88**, 516 (1930)), is of unknown provenance. Wild specimens are all from the western Caucasus and adjacent north-eastern Turkey (Asia Minor) forming the south-eastern corner of the Black Sea.

Dr. Stearn has since confirmed the name and tells me that he has seen this plant in a number of widely separated private gardens, but that *V. herbacea* is rarely cultivated outside botanic gardens and is unlikely ever to become naturalised. It appears probable, therefore, that the name *V. herbacea* should be deleted from the British list.

In habit and other characters *V. major* subsp. *hirsuta* is very like *V. major* subsp. *major* (the type with predominantly ovate leaves long naturalised in Britain) of southern Europe but differs in its narrower ± lanceolate leaves and its strong violet corolla ('Campanula Violet', R.H.S. Hort. Colour Chart 37) with much narrower lobes about four times as long as broad, whereas in subsp. *major* they are often nearly as broad as long.

The genus *Vinca* merits a monographic study. Pichon (1951) reduced the species to three—*V. herbacea* (including *V. libanotica*, *V. erecta*, etc.), *V. major* (including *V. difformis*, *V. pubescens*, etc.), and *V. minor*, remarking, however, that although there undoubtedly exist well-defined forms producing homogeneous populations, these were deliberately neglected in his revision. Thus he failed to note any distinction between *V. major* subsp. *major* and subsp. *hirsuta*.

I am greatly indebted to Dr. W. T. Stearn for copious help in the preparation of this note, to J. E. Dandy and J. E. Lousley for assistance, to Dr. E. F. Warburg for searching the Druce Herbarium at Oxford, albeit in vain, for specimens supporting Druce's records of *V. herbacea*, and to the Curator of Bexhill Museum for searching the Stockdale herbarium.

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—D. McCLINTOCK.

455/g. **Salvia glutinosa** L. 1753, *Sp. Plant.*, 37. V.c. 6, N. Som.; wood near Claverton, Bath, 1938, Miss A. E. White (Sandwith, 1939) & *Rep. Bot. Soc. & E.C.*, **12**, 290 (1942). V.c. 23, Oxon.; roadside bank just west of Henley, 1958, V. S. Summerhayes (*Hb. Kew*). V.c. 33, E. Glos.; hedge by road, Lower Slaughter, 1896 (Britten, 1896). V.c. 88, Mid Perth; extensive colony in densely shaded wood on island, south bank of river Tay, east of Caputh bridge, 1959, A. W. Robson.

Robust, erect perennial up to 90 cm. tall. Stems hairy, glutinous. Leaves ovate-oblong, long-pointed, cordate-sagittate at base; lower leaves 17·5-20 cm. long, upper smaller. Bracts ovate, slender-pointed, shorter than the calyx. Racemes simple; whorls distant, loose, up to 6-flowered; calyx tubular, up to 1·25 cm. long; upper lip truncate, entire, somewhat gaping; corolla pale yellow, up to 3.75 cm. long, gaping, tube exserted, swollen.

Native from Southern France and Switzerland to southern Russia and the Caucasus. Introduced into Britain as a garden plant in 1759. Known as Jupiter's Distaff or Clammy Sage.

I am indebted to N. Y. Sandwith for drawing my attention to the records from N. Somerset and Oxon.

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Sandwith, C. I., 1939, Bristol Botany in 1938, *Proc. Bristol Nat. Soc.*, **8**, 389-393.

—D. H. Kent.

560/T. **Telekia speciosa** (Schreb.) Baumg., 1816, *Enum. Stirp. Transs.* 3, 150: *T. cordifolia* DC., 1836, *Prodr.* **5**, 485: *T. ovata* C. Koch, 1850, *Linnaea* **23**, 712: *Buphthalmum speciosum* Schreb., 1766, *Icon. et Descr.* **1**, 11; *B. cordifolium* Waldst. & Kit., 1805, *Icon. Pl. Rare. Hung.* **2**, 117: *Inula caucasica* Pers., 1807, *Syn.* **2**, 450: *Molpadia suaveolens* Cass., 1824, in *Dict. Sci. Nat.* **32**, 401: *Corvisartia caucasica* G. Don ex Loud., 1830, *Hort. Brit.*, 350. V.c. 24, Buckingham; village green, Bradenham, near Princes Risborough, 1962, Mrs. Joyce F. May, comm. D. McClintock (*Hb. Lousley*). V.c. 31, Huntingdon; Woodwalton Fen, H. Phillips (1933, *Rep. Bot. Soc. & E.C.* **10**, 103): apparently planted here c. 1930, and now naturalised, J. A. Thompson, det. S. M. Walters (1964, *Ann. Rep. Hunts. Fauna & Flora Soc.*, **16**, 5). V.c. 34, W. Gloucester; by Portway, 1938, Mrs. C. I. Sandwith (1940, *Proc. Bristol Nat. Soc.*, Ser. 4, **9**, 26). V.c. 39, Stafford; Worthington's Maltings, Burton-on-Trent, 1943, R. C. L. Burges (*Hb. Lousley*). V.c. 48, Merioneth; near Bala Lake, 1941, J. A. Webb (1951, *Watsonia* **2**, 45). V.c. 83, Edinburgh; quarry north-west of Craigmillar Castle, Edinburgh, 1955, C. W. Muirhead (*Hb. Edinb.*). 89, E. Perth; banks of the Tay at Insherrit near Kinfauns, several plants apparently naturalised, 1962, A. W. Robson. V.c. 90, Forfar; Glen Isla, Corstorphine (1931, *Rep. Bot. Soc. & E.C.* **9**, 356). V.c. 92, S. Aberdeen; waste ground near Ballater, 1938, R. C. L. Burges, marshy field near Knock Castle, Ballater, 1949, J. E. Lousley (*Hb. Lousley*). Thoroughly established on Deeside at intervals, probably down to Aboyne, J. E. Lousley. V.c. 96, Easterness; Lovat Bridge, Beauly, Rev. J. Roffey (1915, *Rep. Bot. Soc. & E.C.* **4**, 15). V.c. 98, Argyll; N. Connel-Bonawe Road, 1961, A. G. Kenneth (*Hb. Edinb.*). North-side of Loch Etive, a large colony among scrub near Ardchattan priory, 1962, A. G. Kenneth, det. C. W. Muirhead: specimens from here are also in *Hb. Lousley*.

Robust, hairy, strongly-scented perennial, 60-150 cm. tall, superficially

resembling *Inula helenium*. Leaves alternate, up to 25 cm. long, glabrous above, hairy beneath; lower leaves triangular-cordate., double toothed, stalked; upper leaves ovate, sessile, with simple teeth. Florets subtended by linear filiform scales (absent in *Inula*). Capitula solitary or few together, each often 5-8 cms. across, with orange-yellow filiform ray florets, and a very large prominent disk. Involucral bracts ovate, mucronate.

Native of S.-E. Europe from Austria and Czechoslovakia through the Balkans to southern Russia, Asia Minor and the Caucasus. Introduced into Britain in 1739 and now established as a garden escape, though it has also occurred as a grain adventive.

I am indebted to Miss C. W. Muirhead for details of specimens at the Royal Botanic Garden, Edinburgh, and to J. E. Lousley for data on material in his herbarium.—D. H. Kent.

612/e. **Galanthus elwesii** Hook., 1875, *Curt. Bot. Mag.*, **101**, t. 6166. V.c. 22, Berks.; well naturalised and dominating ground flora in a spinney at Longworth, 1964, Julia Loken and B. T. Styles.

Bulb globose, fleshy, 2·5 cm. long, 2 cm. in diameter. Leaves 2, green, glaucous, 7·5-10·0 cm. long and 1.5-3 cm. broad. Scape up to 12.5 cm. tall. Spathe 3-3·5 cm. long. Pedicel up to 2 cm. long. Outer perianth segments white, obovate, c. 2 cm. long and 13 mm. broad; inner segment white, oblong, c. 11 mm. long and 6 mm. broad, cuneate at base with green markings. Capsule subglobose.

Easily distinguished from *G. nivalis* by its broad, glaucous, erect, leaves.

Native of Greece, the Aegean islands, Yugoslavia, Turkey and Bulgaria. Introduced into cultivation in 1874.—D. H. Kent.

621/C. **Curtonus paniculatus** (Klatt) N.E. Br., 1932, *Trans. Roy. Soc. S. Africa*, **20**, 270. *Antholyza paniculata* Klatt, 1868, *Linnaea*, **35**, 379. V.c. 98, Argyll; open ground near Inn, Cairnbaan, a large patch, 1962, A. G. Kenneth, det. C. W. Muirhead and D. McClintock. V.c. 101, Kintyre; disused quarry near Bellanoch, 1961, A. G. Kenneth, det. C. W. Muirhead and D. McClintock. Prevalent about Ardrishaig, 1962, A. G. Kenneth (*Hb. Lousley*). Corms subglobose. Stems stout, terete, 90-120 cm. tall; leaves basal, ensiform or lanceolate, 2·5-8 cm. wide, rigid but thin in texture, up to 60 cm. long with 9-11 prominent ribs. Flowers deep orange-red, in a panicle of many-flowered spikes. Spikes equilateral, close, with a very wavy rachis; spathe-valves rigid, brown, oblong, about 1 cm. long; tube curved, 2·5-3 cm. long, gradually widening to a throat 4 mm. diameter; upper segment lingulate, 1·25-2 cm. long, the others smaller, spreading, lanceolate; stamens reaching to the tip of the upper segment. The plant superficially resembles a robust form of *Crocosmia* × *crocosmiflora*, with which it is often confused. Native of Natal and The Transvaal. Widely cultivated in Scottish gardens and now established as an escape or outcast.

I am indebted to J. E. Lousley for details of a specimen in his herbarium.—D. H. Kent.

PLANT RECORDS

Compiled by E. C. Wallace

"Plant Records" are arranged in the order given in the *List of British Vascular Plants* (*L.B.V.P.*) by J. E. Dandy (1958).

Records where no date is given are for the year 1963.

The following signs are used:—

§ before the *L.B.V.P.* number: to indicate that the paragraph contains information necessitating a correction to an annotated copy of the *Comital Flora.*

ŧ before the *L.B.V.P.* 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.* Some of these records may, however, appear as dots on maps of the particular species in the *Atlas of the British Flora.*

‡ before the record: to indicate a record additional to an annotated copy of the *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 National Grid Co-ordinates, made as accurate as is thought advisable, are added to all records. These will not be published, but the original cards containing them will be filed, and may be made available for reference.

§1/4. Lycopodium clavatum L. 37, Worcs.; Wyre Forest, M. C. Clark and S. W. Green (1963, *Proc. Birm. N.H. & Phil. Soc.*, **20** (2), 38). *82. Haddington; moorland near Lammerlaw, Gifford, 1958, E. P. Beattie.

1/5. Lycopodium alpinum L. 78, Peebles; Dollar Law, occasional, D. McCosh.

§4/1. Equisetum hyemale L. 99, Dunbarton; stony flushes on north side of Glen Luss, with *Saxifraga aizoides*, 1962, A. A. Slack, A. McG. Stirling and E. Todd. *107, E. Sutherland; by stream flowing from Ben Griam More into Loch nan Clar, 1962, A. A. Slack.

4/8. Equisetum pratense Ehrh. 88, Mid Perth; bank of Frenich Burn, 1962, H. Milne-Redhead.

§4/10. Equisetum telmateia Ehrh. 84, Linlithgow; Wood near Society, E. P. Beattie. Remove v.c. 84 from brackets in c.f.—Ed.

5/1. Osmunda regalis L. 59, S. Lancs.; overgrown canal bank, Reddish, J. N. Mills. 60, W. Lancs.; wet sea cliff, Halfmoon Bay, Heysham, A. Hitchon.

7/1. Hymenophyllum tunbrigense (L.) Sm. 72, Dumfries; two tiny patches on shaded sandstone rocks in a wooded glen near Canobie, 1962, D. A. Ratcliffe.

§11/1. Adiantum capillus-veneris L. ‡†22, Berks.; Sonning Bridge; plants have since died, but it is thought that the spores may have originated from plants in the adjacent churchyard, M. Fletcher, conf. H. J. M. Bowen (1964, *Reading Nat.*, **16**, 21).

†12/1. Onoclea sensibilis L. 89, E. Perth; several colonies in Willowgate Marshes below Perth, 1962, A. W. Robson.

§14/1. Phyllitis scolopendrium (L.) Newm. *82, Haddington; Archerfield and Biel estates, several plants, 1960→: *84, Linlithgow; Hopetoun estate, a few plants, 1960→, E. P. Beattie.

15/2. Asplenium obovatum Viv. 48, Mer.; dry stone walls, Port Meirion, R. H. Roberts.

16/1. Ceterach officinarum DC. 44, Carm.; limestone rock, Carmel, one robust plant, I. M. Vaughan. 66, Durham; Harwood in Teesdale, 1,500 ft., H. G. Proctor.

§21/3. Dryopteris abbreviata (DC.) Newm. *78, Peebles; rocky bank near Talla; scree near Bitch Craig, Manor, D. McCosh.

§21/6. Dryopteris carthusiana (Vill.) H.P. Fuchs. *84, Linlithgow; wood near Uphall, E. P. Beattie.

21/6×7. Dryopteris carthusiana × dilatata. 46, Cardigan; Borth Bog, frequent with, and apparently outnumbering, both parents, P. M. Benoit, conf. S. Walker (1964, *Nature in Wales*, **9**, 127).

§22/2. Polystichum aculeatum (L.) Roth. *84, Linlithgow; Hopetoun Estate, for many years, E. P. Beattie.

25/1. Polypodium vulgare L. 48, Mer.; common throughout the vice-county, especially on dry stone walls, acid woody banks and tree branches, P. M. Benoit.

§25/a. Polypodium australe Fée. *49, Caern.; on the castle walls, and on calcareous rock, Conway, R. H. Roberts.

§25/i. Polypodium interjectum Shivas. *36, Hereford; Aymestry, abundant on limestone cliffs; mortared-walls, Shobdon, R. H. Roberts, ‡40, Salop; Knowle Wood, S. W. Greene and J. M. Gray (1963, *Proc. Birm. N.H. & Phil. Soc.*, **20** (2), 36). 48, Mer.; common on mortared walls in the west of the vice-county, P. M. Benoit.

25/i×1. Polypodium interjectum × vulgare. 48, Mer.; in bushy masses, common with, and often outnumbering the parents on roadside walls in the west of the vice-county; Llanffestiniog, Maentwrog, Talsarnau, Harlech, Pensarn, Llanddwywe, Llanaber, Glandwr Bridge, Llanelltyd to Dolgellau, Nannau, Torrent Road, Brithdir, Arthog, Friog, Gogarth; identified by intermediacy of characters and sterile spores, P. M. Benoit.

28/1. Botrychium lunaria (L.) Sw. 48, Mer.; Morfa Harlech, 41 fertile fronds counted in 1962, where there were only 3 in each of the previous four seasons, P. M. Benoit (1962, *Nature in Wales*, **8**, 72).

§34/1. Juniperus communis L. *82, Haddington; Hopes Water, Gifford, for many years, E. P. Beattie.

46/11. Ranunculus lingua L. 45, Pemb.; the upper pond, Caldey Island, J. W. Donovan (1963, *Nature in Wales*, **8**, 190).

§46/15. Ranunculus sceleratus L. *79, Selkirk; Galashiels Sewage Works, in great abundance, 1950→, E. P. Beattie.

50/3. Thalictrum minus L. 79, Selkirk; steep wooded banks of Ettrick Water, Ettrickbridge End, 1962, H. Milne-Redhead.

§†54/1. Mahonia aquifolium (Pursh) Nutt. *82, Haddington; Biel estate, Dunbar, 1960→: *84, Linlithgow; near Livingstone: *85, Fife; Raith estate, 1960→, E. P. Beattie.

§57/1. Ceratophyllum demersum L. *51, Flint; Partin's Pond, Padeswood, K. A. Davies, comm. Nat. Mus. Wales.

§57/2. Ceratophyllum submersum L. 25, E. Suffolk; Boyton; Felixstowe; Sudbourne, A. W. Punter, comm. F. H. Perring. *69, Westmorland; plentiful in old Lancaster—Kendal canal, near Stainton, Mrs. M. R. Gilson.

§66/5. Fumaria martinii Clavaud. *10, Wight; allotments, Lake, Sandown, Miss W. F. Buckle, det. and comm. N. Y. Sandwith. *11, S. Hants; weed in Hillier's Nursery, Ampfield, Romsey, C. R. Lancaster, det. and comm. N. Y. Sandwith.

§†71/1. Hirschfeldia incana (L.) Lagr.-Foss. *79, Selkirk; Galashiels Sewage Works, one large plant, E. P. Beattie.

†76/2. Rapistrum rugosum (L.) All. 88, Mid Perth; rubbish-tip, Dunning, one large bushy plant, 1958, A. W. Robson.

§79/2. Lepidium campestre (L.) R. Br. *106, E. Ross; well-established on bank near Kessock lighthouse, M. McC. Webster.

84/4. Thlaspi alpestre L. 88, Mid Perth; dry gravelly patch, Creagan Loch, with *Carex capillaris*, 1962, H. Milne-Redhead.

§88/6. Cochlearia anglica L. ‡5, S. Som.; mud-bank by river Parrett, 1962, H. W. Boon (1963, *Proc. Som. Arch. & N.H.S.*, **106**, 127).

§89/1. Subularia aquatica L. *106, E. Ross; lochan on east side of Maoile Lunndaidh, at 2,000 ft., 1959, A. A. Slack and J. Dickson.

§94/4. Draba muralis L. *88, Mid Perth; Methven railway station, rarely occurring by sleeper-fence, A. W. Robson.

97/8. Cardamine bulbifera (L.) Crantz. †95, Moray; policies of Blackhills House, Llanbryde, doubtless planted, M. McC. Webster.

102/2×1. Rorippa ×sterilis Airy Shaw. 42, Brecon; by stream east of Craig Cerrig-Gleisid, 1961, Birmingham Nat. Hist. & Phil. Soc. Field Meeting, det. A. E. Wade, comm. J. A. Kiernan.

§†104/1. Hesperis matronalis L. *84, Linlithgow; banks of river Almond, Kirkliston, 1961→, E. P. Beattie.

§115/1. Hypericum androsaemum L. *79, Selkirk; cliff by Ettrick Water, Ettrickbridge, 1962, H. Milne-Redhead.

115/6b×5. Hypericum maculatum subsp. obtusiusculum × perforatum. 33, E. Glos.; wide roadside verge, Akeman Street, near Bibury, with both parents, E. W. Yemm and A. J. Willis, conf. N. K. B. Robson. 40, Salop; north end of Llanymynech Hill, one plant with both parents, P. M. Benoit, conf. N. K. B. Robson.

§115/14. Hypericum elodes L. 82, Haddington; record printed in *Proc. B.S.B.I.*, **3**, 397 (1960), was an error, E. P. Beattie. Delete v.c. 82 from *C.F.*—Ed.

127/8. Dianthus deltoides L. 17, Surrey; Wentworth, possibly native, J. E. Smith.

131/10. Cerastium diffusum Pers. (*C. atrovirens* Bab.). 17, Surrey; railway line south of Limpsfield, one plant, R. Clarke, conf. and comm. D. P. Young.

†141/6. Arenaria balearica L. 88, Mid Perth; small colony established in river-wall opposite Royal George Hotel, Perth, C. Murray, comm. A. W. Robson.

§168/14. Geranium pusillum L. *108, W. Sutherland; sandy hollow, Rabbit Islands, Kyle of Tonge, 1962, C. R. Lancaster.

168/16b. Geranium robertianum subsp. celticum Ostenf. 44, Carm.; exposed limestone rock, Carmel, I. M. Vaughan.

§†170/7. Oxalis corymbosa DC. ‡25, E. Suffolk; garden weed, Ipswich and Woodbridge, J. C. N. Willis, det. D. P. Young (1963, *Trans. Suffolk Nat. Soc.*, **12**, 197). *30, Bedford; garden weed, Great Barford House, A. Berens, det. D. P. Young.

§192/10. Trifolium striatum L. *78, Peebles; grassy bank above river Tweed, west of Peebles, D. McCosh.

193/1. Anthyllis vulneraria L. 99, Dunbarton; basalt crags, Glenarbuck, A. McG. Stirling.

§201/2. Oxytropis campestris (L.) DC. *101, Kintyre; on steep buttress of rotten rock, 500 ft. above sea, west of Largybaan, 1961. Some of the flowers had purple colouring extending from the keel into the standard, A. A. Slack.

§203/1. Coronilla varia L. *86, Stirling; abundant on waste ground, Grangemouth Docks, E. P. Beattie.

§†206/5. Vicia tenuifolia Roth. *95, Moray; rough ground, Brodie station, M. McC. Webster.

§206/16. Vicia lathyroides L. *78, Peebles; grassy bank above river Tweed, west of Peebles, D. McCosh.

†208/1. Physocarpus opulifolius (L.) Maxim. 88, Mid Perth; island below Caputh Bridge, 1959; several shrubs by river Almond near Inveralmond Bridge, A. W. Robson.

†215/2. Fragaria moschata Duchesne. 88, Mid Perth; road verge colony near Newton of Condie, Forgandenny, 1954, A. W. Robson.

†216/2. Geum macrophyllum Willd. 88, Mid Perth; spreading along road verge near Milleam, Kintell Bridge, A. W. Robson.

216/3×1. Geum × intermedium Ehrh. 84, Linlithgow; colony near Society, E. P. Beattie.

217/1. Dryas octopetala L. 101, Kintyre; in turf below steep crag called Dun Ban, near Largybaan, 1961; localizing Balfour's record, A. A. Slack.

§220/3(2). Alchemilla filicaulis subsp. vestita (Buser) M. E. Bradshaw. *78, Peebles; roadside, Carlops; Newlands burn, D. McCosh.

§220/3(8). Alchemilla xanthochlora Rothm. *78, Peebles; West Linton; kirk yard, Newlands, D. McCosh.

§220/3(10). Alchemilla glabra Neygenf. *78, Peebles; Gameshope burn; Newlands burn; Shawhill, D. McCosh.

§220/3(11). Alchemilla wichurae (Buser) Stéfanss. *106, E. Ross; south-east coire of An Coileachan (Fannichs), 1962, B.S.B.I. Field Meeting, comm. A. A. Slack.

§†227/4. Cotoneaster microphyllus Wall. ex Lindl. *84, Linlithgow; Midhope Castle, 1960→, E. P. Beattie.

§†235/11. Sedum reflexum L. *79, Selkirk; small colony on roadside bank leading to Galashiels Sewage Works, 1960→, E. P. Beattie.

†239/7. SAXIFRAGA CYMBALARIA L. 11, S. Hants; weed in Hillier's Nursery, Winchester, C. R. LANCASTER.

†240/1. TELLIMA GRANDIFLORA (Pursh) Dougl. ex Lindl. 83, Edinb.; Craiglockhart Dell, Edinburgh; Dalkeith Palace grounds; Kirknewton, 1960→, E. P. BEATTIE.

†241/1. TOLMIEA MENZIESII (Pursh) Torr. & Gray. 79, Selkirk; wooded island in Ettrick Water, Lindean, 1962, H. MILNE-REDHEAD.

242/2. CHRYSOSPLENIUM ALTERNIFOLIUM L. 88, Mid Perth; cave in cliff, Meall Tairneachan, 2,300 ft., 1962, H. MILNE-REDHEAD.

†242/P. PELTIPHYLLUM PELTATUM (Benth.) Engler. 85, Fife; waste ground, Inverkeithing station, E. P. BEATTIE.

§246/1. RIBES SYLVESTRE (Lam.) Mert. & Koch. 78, Peebles; old railway line near Dolphinton station, 1960→: *82, Haddington; thicket near Morham Bank, Haddington: 84, Linlithgow; bank of river Almond, Kirkliston, a few plants, E. P. BEATTIE.

§247/3. DROSERA INTERMEDIA Hayne. ‡47, Montg.; bog land near Dovey Junction, 1961, W. M. Condry (1961, *Nature in Wales*, **7**, 112).

§251/2. DAPHNE LAUREOLA L. *†78, Peebles; naturalised in Traquair churchyard, 1961, E. P. BEATTIE.

§254/12. EPILOBIUM ALSINIFOLIUM Vill. *78, Peebles; wet flush near Talla; south-west of Dollar Law, D. McCOSH. 79, (Peebles); east slope of Cramalt Crag, D. A. Ratcliffe (1962, *Trans. Bot. Soc. Edinb.*, **39**, 233). 108, W. Sutherland; streamside, Cranstackie, A. G. KENNETH, det. E. C. WALLACE.

§†254/14. EPILOBIUM NERTERIOIDES Cunn. ‡52, Anglesey; five smallish plants in broken down walls just outside main entrance of Beaumaris Castle, Mrs. M. D. G. Jones (1963, *Nature in Wales*, **8**, 195).

§261/1. HIPPURIS VULGARIS L. *84, Linlithgow; small colony in pond near Winchburgh, E. P. BEATTIE.

§262/H. CALLITRICHE HAMULATA Kuntze. ‡H.5, E. Cork; lake in Glenbower Wood, Killeagh, 1962, M. J. P. Scannell, conf. F. H. Perring (1964, *Irish Nat. J.*, **14**, 215).

§263/1. VISCUM ALBUM L. *†83, Edinb.; planted over a century ago in the Dean Cemetery; has now spread to various trees in the vicinity, E. P. BEATTIE.

§†311/2. HERACLEUM MANTEGAZZIANUM Somm. & Levier. *84, Linlithgow; Hopetoun Estate, in abundance, 1960→, E. P. BEATTIE.

§315/1. BRYONIA DIOICA Jacq. *†83, Edinb.; Warnston Cemetery, Edinburgh; possibly bird-sown from Royal Botanic Garden, Edinburgh, 1960→, E. P. BEATTIE.

†316/1. Asarum europaeum L. 70, Cumberland; Mire House, near Bassenthwaite Lake, E. Wilson, comm. F. H. Perring.

§319/16. Euphorbia cyparissias L. *†86, Stirling; canal banks near Polmont, garden escape, E. P. Beattie.

§†320/19. Polygonum cuspidatum Sieb. & Zucc. *82, Haddington; roadside between Gladsmuir and Samuelston, 1959→, E. P. Beattie.

§324/1. Oxyria digyna (L.) Hill. ‡78, Peebles; rocks near Talla, 1962: noted by William Chambers in 1864, as occurring very rarely in the county, D. McCosh.

325/14. Rumex sanguineus L. 84, Linlithgow; by roadside near Society, 1960→; plants with prominent red veins, E. P. Beattie.

330/1×6. Ulmus glabra × plotii. 37, Worcs.; by bridge over Gladder Brook, near Ribbesford Woods, between Bewdley and Stourport, 1962, J. A. Kiernan, det. R. Melville.

§343/18. Salix lanata L. *97, Westerness; Coire Cheap, Geal Charn, 3,500 ft., abundantly, 1961, A. A. Slack.

343/22. Salix reticulata L. 97, Westerness; Coire Cheap, Geal Charn, 3,500 ft., 1961, A. A. Slack.

359/1. Pyrola minor L. 40, Salop; Knowle Wood, J. M. Gray (1963, *Proc. Birm. N.H. & Phil. Soc.*, **20** (2), 36).

§362/2. Monotropa hypophegea Wallr. ‡3, S. Devon; Axmouth, Pinhay cliff, under beech, 1961, J. E. Carpenter, det. T. J. Wallace (1963, *Trans. Devon Assoc.*, **95**, 89).

367/3×5. Primula × variabilis Goupil, non Bast. 81, Berwick; Coldingham Bay: 82, Haddington; Aberlady: 83, Edinb.; railway embankment near Borthwick: 84, Linlithgow; Dalmeny Estate: 85, Fife; between Largs and Elie, E. P. Beattie.

†370/5. Lysimachia punctata L. 88, Mid Perth; on island below Capath Bridge, 1959, A. W. Robson.

371/1. Trientalis europaea L. 99, Dunbarton; under pines on Inch Conachan, 1959; confirming old record, A. A. Slack.

387/1. Nymphoides peltata (S. G. Gmel.) Kuntze. 83, Edinb.; colony at Duddingston became extinct in 1960, E. P. Beattie.

†392/2. Symphytum asperum Lepech. 64, Mid W. York; Otley, two robust plants, Mrs. F. Houseman, det. A. E. Wade.

†392/2×1. Symphytum × uplandicum Nyman. 85, Fife; plentiful on banks of a burn, Inverkeithing, E. P. Beattie.

§399/1. Pulmonaria longifolia (Bast.) Bor. *†78, Peebles; long established as an escape at Garvald House, near Dolphinton, E. P. Beattie.

§†399/2. Pulmonaria officinalis L. *82, Haddington; roadside near Newton Hall, Gifford, two plants, E. P. Beattie.

400/3. Myosotis brevifolia C. E. Salmon. 78, Peebles; Manorhead, near Bitch Craig, 1962; frequent in flushes south-east of Dollar Law, and extending up to about 2,200 ft. by larger burns and down to the Manor Water at least to Langhaugh at 900 ft., D. McCosh.

§400/7. Myosotis sylvatica Hoffm. *96, Easterness; calcareous Moine cliffs, Greag nan Eun, near Invermoriston, 1961, D. A. Ratcliffe.

†406/p. Calystegia pulchra Brummitt & Heywood. 12, N. Hants; Empshott Green, Lady Anne Brewis. 50, Denb.; near the "Goat Hotel", close to the turn for Betws Gwerfil Goch, R. H. Roberts. 95, Moray; Dyke Churchyard: 96, Easterness; Kirkhill village green, M. McC. Webster.

411/1. Hyoscyamus niger L. 45, Pemb.; in quantity at Stackpole Warren, B.S.B.I. Field Meeting (1963, *Nature in Wales*, **8**, 191).

§416/10. Verbascum virgatum Stokes. ‡44, Carm.; disturbed ground near Ferryside, R. F. May, conf. B. Seddon (1963, *Nature in Wales*, **8**, 190).

†424/5. Scrophularia vernalis L. *96b, Nairn; Cawdor Castle, M. McC. Webster.

†428/1. Erinus alpinus L. 84, Linlithgow; wall of Abercorn Churchyard, E. P. Beattie. 82, Haddington; fairly abundant and well established on old walls, Leaston, E. B. Basden, conf. at Roy. Bot. Gard., Edinburgh.

430/12. Veronica alpina L. 97, Westerness; in rocky flush near summit of Geal Charn, west of Loch Pattack, 1959, A. A. Slack.

§430/16. Veronica verna L. 3, S. Devon; the specimen on which the record published in *Proceedings B.S.B.I.*, **1**, 58 (1954), was based is *V. arvensis*, G. Steele-Perkins. Delete V.c. 3 from *C.F.*—**Ed.**

433/2b. Rhinanthus minor subsp. stenophyllus (Schur) O. Schwartz. 45, Pemb.; bog near Mathry, 1962, T. A. W. Davis, det. F. H. Perring, as *R. stenophyllus* (1963, *Nature in Wales*, **8**, 130).

§434/3. Melampyrum pratense L. ‡78, Peebles; Bitch Craig, Manor, 1962: for earlier record see Buchan's *History of Peebleshire*, where the plant is recorded from Cowie's Linn, D. McCosh.

§439/1. Lathraea squamaria L. *44, Carm.; hazel coppice in calcareous woodland, Carmel, I. M. Vaughan. 79, Selkirk; in woodland of *Ulmus glabra* and *Sambucus nigra*, Boldside; mature fir plantation, The Island, Lindean, 1962, H. Milne-Redhead.

§440/4. Orobanche alba Steph. ex Willd. 98, Argyll; Ardesite crags, north of Loch Melfort, A. A. Slack and A. McG. Stirling: Creag a'

Chapmill, Ford, A. McG. Stirling. *108, W. Sutherland; sea-cliff, Oldshore More, 1962, A. A. Slack.

§441/1. Pinguicula lusitanica L. ‡87, W. Perth; south-facing slopes above Glen Falloch farm, 1961, localising record in White's *Flora of Perthshire*, A. A. Slack.

§457/2. Prunella laciniata (L.) L. *30, Bedford; paddock, Great Barford House, A. Berens, det. F. H. Perring.

§462/2. Lamium moluccellifolium Fr. *88, Mid Perth; garden weed, Methven, 1963, Miss M. Stewart, comm. A. W. Robson.

§471/4. Ajuga pyramidalis L. *105, W. Ross; Lag na Saille, near Inverpolly, 1961, D. A. Ratcliffe. By waterfalls on sea-cliffs, Melvaig, 1962, A. A. Slack.

§485/7. Galium sterneri Ehrend. 72, Dumfries; steep rocky banks, Druid Hill, Scar Glen, H. Milne-Redhead. *78, Peebles; rocky ledge southwest of Talla, 1962, D. McCosh. *79, Selkirk; steep grassy bank, Leap Linn, Ale Water, 1962, H. Milne-Redhead. *99, Dunbarton; basalt crags, Glenarbuck, A. McG. Stirling.

§488/1. Viburnum lantana L. *†84, Linlithgow; Dundas Estate, Kirkliston, 1956→, E. P. Beattie.

490/1. Linnaea borealis L. 95, Moray; pine woods, Fochaber, Mrs. H. J. Younger, comm. M. McC. Webster.

†502/3. Bidens frondosa L. 37, Worcs.; south side of Worcester and Birmingham Canal at Stoke Wharf, south of Bromsgrove, 1962, J. A. Kiernan.

†506/9. Senecio tanguticus Maxim. 83, Edinb.; small colony on bank of river Almond, Cramond Bridge, 1961: 84, Linlithgow; waste ground, Linlithgow, E. P. Beattie.

†509/2. Petasites albus (L.) Gaertn. 88, Mid Perth; Kincardine Castle glen, Auchterarder, small colony of female plants on stream alluvium, 1960, A. W. Robson.

†509/3. Petasites japonicus (Sieb. & Zucc.) F. Schmidt. 88, Mid Perth; small colony on road verge (A9), west side, north of Loaning hill crossroads, 1958: 89, E. Perth; road verge (A85) Perth-Dundee, near Kinfauns station. Lay-by construction on site in 1959 has tended to increase the size of this colony known to me prior to 1952, A. W. Robson.

512/4. Inula conyza DC. 89, E. Perth; frequent locally on scree slopes, Kinnoull Hill, Perth, 1962, A. W. Robson.

515/2. Gnaphalium norvegicum Gunn. 106, E. Ross; crags on east side of Maoile Lunndaidh, 1959, A. A. Slack and J. Dickson.

†519/5. Aster longifolius Lam. 88, Mid Perth; several plants among shingle flora, which included *A. novi-belgii*, south bank of river Tay below Caputh Bridge, 1959, A. W. Robson.

†530/1. Santolina chamaecyparissus L. 85, Fife; waste ground, Inverkeithing, 1960→, E. P. Beattie.

§†541/1. Silybum marianum (L.) Gaertn. *79, Selkirk; Galashiels Sewage Works, a single plant, E. P. Beattie.

552/1. Tragopogon pratensis L. subsp. pratensis. 83, Edinb.; Corstorphine; Sighthill, 1960→: 85, Fife; railway embankment between Guardbridge and St. Andrews, 1959→, E. P. Beattie.

†554/4. Lactuca tatarica (L.) C. A. Mey. 49, Caern.; several plants in dunes, West Shore, Llandudno, Mrs. F. Houseman, det. J. E. Lousley.

§†559/2. Crepis vesicaria subsp. taraxacifolia (Thuill.) Thell. *H.28, Sligo; verge to road, Cullenduff, near Sligo, 1962, M. McC. Webster, conf. J. B. Marshall. H.33, Fermanagh; railway cutting, west end of Belleek station, 1900, R. L. Praeger (*Herb. Dublin*), det. J. B. Marshall.

§559/5. Crepis biennis L. ‡44, Carm.; abundant at Blaenau near Llandybie, and at Llandybie, R. F. May, conf. B. Seddon (1963, *Nature in Wales*, **8**, 190). H.17, N.-E. Galway; grass field, Cregmore Bridge, 1906, R. L. Praeger (*Hb. Dublin*), det. J. B. Marshall.

§562/1. Luronium natans (L.) Raf. *98, Argyll; small loch in Glen Creran, A. G. Kenneth, *et al.*

566/1. Butomus umbellatus L. 45, Pemb.; upper pond, Caldey Island, one plant, J. W. Donovan (1963, *Nature in Wales*, **8**, 191).

§568/1. Stratiotes aloides L. *†6, N. Som.; South Moor, south of Glastonbury, in stream for more than 100 yards, A. F. Devonshire, comm. N. Y. Sandwith.

§†570/1. Elodea canadensis Michx. *78, Peebles; artificial pool, Baddinsgill; pond, Bachan; river Tweed, Dawyck, 1962, D. McCosh.

§†571/1. Lagarosiphon major (Ridl.) Moss. ‡4, N. Devon; north-west corner of old quarry pool, Morchard Bishop, W. H. Tucker (1963, *Trans. Devon. Assoc.*, **95**, 89).

577/6. Potamogeton gramineus L. 17, Surrey; Hedge Court Pond, Felbridge, R. Clarke, conf. J. E. Dandy, comm. D. P. Young.

§588/1. Convallaria majalis L. *44, Carm.; in scrub over limestone rock, Carmel, I. M. Vaughan.

598/1. Ornithogalum umbellatum L. †82, Haddington; large patch by damp roadside between Mumbie and Leaston, E. B. Basden.

§†605/2. Juncus tenuis Willd. *95, Moray; path to wood, west of Grantown railway station, M. McC. Webster.

†607/11. Allium paradoxum (Bieb.) G. Don. 79, Selkirk; woodland, The Island, Lindean, 1962, H. Milne-Redhead.

§611/1. Leucojum vernum L. *†85, Fife; naturalised for many years at Cambo, Crail, E. P. Beattie.

§612/1. Galanthus nivalis L. *†84, Linlithgow; in abundance at Hopetoun for many years: †85, Fife; in abundance at Cambo, Crail, for many years, E. P. Beattie.

§614/1. Narcissus pseudonarcissus L. *†82, Haddington; naturalised at Archerfield, Dirleton, for many years: *†84, Linlithgow; naturalised on Dundas Hill, Kirkliston, for many years, E. P. Beattie.

§622/1. Tamus communis L. 88, Mid Perth; record given in *Proceedings B.S.B.I.*, **3**, 415 (1960), was an error, E. P. Beattie. Delete v.c. 88 from *C.F.*—**Ed.**

625/2. Epipactis helleborine (L.) Crantz. 88, Mid Perth; Wharryburn Den, Dunblane, locally abundant in mixed wood, J. Aitken, comm. A. W. Robson.

§625/6. Epipactis phyllanthes G. E. Sm. 13, W. Sussex; beech belt on chalk near Goodwood, Westhampnett, W. W. A. Phillips, conf. and comm. D. P. Young. 17, Surrey; oak-birch wood on Bagshot Sands (pH 4·3), Weybridge, det. and comm. D. P. Young (as var. *degenera* D. P. Young), *40, Salop; beech wood on Carboniferous Limestone, Benthall, Sir Paul Benthall, det. and comm. D. P. Young (as var. *pendula* D. P. Young).

627/3. Spiranthes romanzoffiana Cham. 97, (Argyll); Shielfoot, on south side of river Shiel, one plant, 1961, A. A. Slack.

628/2. Listera cordata (L.) R.Br. 80, Roxburgh; plentiful with *Pyrola minor* in *Sphagnum*-floored birch and alder wood, Adderstonlee Moss, 1962, H. Milne-Redhead.

649/2. Arum italicum Mill. subsp. italicum. 0, Guernsey; King's Mills, Upper Mill (Moulin de Haut), 1961, C. T. Prime and O. Buckle. 12, N. Hants; outside old cottage, Greatham, Lady Anne Brewis, conf. C. T. Prime.

649/2b. Arum italicum subsp. neglectum (Townsend) Prime. 0, Jersey; St. Peter's Manor; Millais; Ville Bagot, near Greve de Lecq; St. Marys; Edward VI Gun Memorial; lane near the Gun Memorial, all 1962, C. T. Prime and O. Buckle: Guernsey; St. Andrew's Church; Les Blanches Rocques; Fair Field, 1961, P. Girard, conf. C. T. Prime and O. Buckle: Water Lane and Fermain Bay, St. Martin; Moulin Huet Bay Road; St. George's Hill; King's Mills; Rue des Bergers; St. Matthew's Church, Cobo; Kermartin, near Le Bourg, all 1961, C. T. Prime and O. Buckle.

654/3. Eriophorum latifolium Hoppe. 98, Argyll; in flushes descending from the serpentine area in Glendarnell, A. A. Slack.

655/12. Scirpus fluitans L. 96, Easterness; ditches near Muchrach, Glen Cannick, 1962: 99, Dunbarton; ditches at north end of Geal Loch, 1961, A. A. Slack.

§660/2. Rhynchospora fusca (L.) Ait. f. ‡48, Mer.; Arthog Bog, near Barmouth, P. M. Benoit (Montgomeryshire Field Society Excursion) (1963, *Nature in Wales*, **8**, 149).

§663/12. Carex sylvatica Huds. *106, W. Ross; gorge at Ethie, Black Isle, 1962, B.S.B.I. Field Meeting, comm. A. A. Slack.

§663/17. Carex vesicaria L. *51, Flint; pond, Plas Newydd, Pontblyddyn, near Mold, K. A. Davies, comm. Nat. Mus. Wales.

663/28. Carex limosa L. 67, Northumberland, S.; small boggy patches in young conifer plantation, Buck Lakes, Kielder Forest, 1962, H. Milne-Redhead.

§663/29. Carex paupercula Michx. ‡48, Mer.; moors near Trawsfynydd, M. Wenham (1963, *Nature in Wales*, **8**, 147).

§663/33. Carex lasiocarpa Ehrh. *50, Denb.; fen, Llyn Creiniog, 1962, B. Seddon, comm. Nat. Mus. Wales.

§663/47. Carex acuta L. *108, W. Sutherland; bog by Loch Naver, Altnaharra, 1962, C. R. Lancaster, conf. at British Museum (Nat. Hist.).

§663/52. Carex bigelowii Torr. ex Schwein. 79, Selkirk; Lochraig Rig (1963, *Proc. B.S.B.I.*, **5**, 142) is in v.c. 78, D. McCosh. Delete v.c. 79 from *C.F.*—Ed.

§663/54. Carex paniculata L. *78, Peebles; Lochurd; Dolphinton, 1962, D. McCosh.

663/61. Carex arenaria L. 99, Dunbarton; in a quarry, foot of Auchingaich Glen, several miles from the sea, 1961, A. A. Slack.

§663/81. Carex dioica L. ‡46, Cardigan; flush in *Molinia-Calluna* Moor at 1,100 ft., on the north side of Trawsallt, opposite Hafod Uchtryd, about 550 yards west of Bryn Mawr. A. O. Chater (1963, *Nature in Wales*, **8**, 191).

§669/4. Glyceria maxima (Hartm.) Holmberg. *78, Peebles; ditch below Medwynbank, 1962, D. McCosh.

670/2×671/2. × Festulolium holmbergii (Dörfl.) P. Fourn. 33, E. Glos.; open hillside, Dunn's Hill, near Winchcombe, R. Dudley-Smith, conf. D. M. Barling.

670/6×672/1. Festuca rubra × Vulpia membranacea. 4, N. Devon; Braunton Burrows, several tufts, growing with both parents, A. J. Willis, conf. C. E. Hubbard.

§672/3. Vulpia myuros (L.) C. C. Gmel. ‡†83, Edinb.; Borthwick railway tip, abundant, M. McC. Webster. For earlier records see Martin, *Field Club Flora of the Lothians*, ed. 3, 329 (1934).—Ed.

§676/14. Poa palustris L. 88, Mid Perth and *89, E. Perth; several places from Perth downstream to Kinfauns, abundant in marshes, 1961, A. W. Robson.

§680/1. Briza media L. *105, W. Ross; in pastures within policies of Applecross House, 1961, A. A. Slack.

§681/2. Melica nutans L. *78, Peebles; rocky bank south-west of Talla, in small quantity, 1962, D. McCosh.

§682/2. Bromus thominii Hardouin. *47, Montg.; Llanymynech Hill (Carboniferous Limestone), 1962, P. M. Benoit.

§683/11. Bromus ferronii Mabille. *46, Cardigan; exposed top of sea cliff opposite Cardigan Island, 1954, P. M. Benoit, conf. A. Melderis.

§683/18. Bromus secalinus L. *88, Mid Perth; Muirshead Farm, by Dunning; solitary specimen in temporarily uncultivated area of field, 1957, A. W. Robson.

§684/2. Brachypodium pinnatum (L.) Beauv. *28, W. Norf.; close to the main road about two miles east of Thetford, 1954, R. C. Palmer.

§689/1. Koeleria cristata (L.) Pers. *78, Peebles; grassy bank above river Tweed west of Peebles, 1962, D. McCosh.

†690/1. Gaudinia fragilis (L.) Beauv. H.3, W. Cork; Toormore, west of Schull, a pure stand about two feet square, M. J. P. Scannell and J. E. O'Donovan (1964, *Irish Nat. J.*, **14**, 215).

§693/1. Helictotrichon pratense (L.) Pilg. *78, Peebles, frequent about Talla, west of Peebles, 1962, D. McCosh.

ABSTRACTS FROM LITERATURE

Compiled by D. H. Kent

Thanks are due to E. B. Bangerter and W. Scott, jun., for their assistance.

SYSTEMATIC

1/4. Lycopodium clavatum L.—See 24/4. Thelypteris dryopteris (L.) Slosson.

4. Equisetum. Page, C. N., 1963, A hybrid horsetail from the Hebrides, *Brit. Fern Gaz.*, **9**, 117-119. A putative hybrid between *Equisetum fluviatile* and *E. palustre* is described from Harris. Further study is needed to establish the parentage, or otherwise, of the plant.—[D.H.K.]

6/1. Trichomanes speciosum Willd. McClintock, D., 1963, Killarney ferns in Brittany, *Countryman*, **61**, 141-143. Records the occurrence of *Trichomanes speciosum* in a number of old wells in the Plöermel area of Brittany and suggests that similar habitats in south-west England should be searched.—[D.H.K.]

14/1. Phyllitis scolopendrium (L.) Newm. Kaye, R., 1963, Leaf-base propagation of Phyllitis scolopendrium. *Brit. Fern Gaz.*, **9**, 120-121.

15. Asplenium. Karpowicz, W., 1963, Paprocie na serpentynitach w Polsce, *Fragm. Flor. Geobot.*, **9**, 35-58. Studies on *Asplenium* species and hybrids found growing on serpentine rocks in Poland.—[D.H.K.]

15/7×8. Asplenium × murbeckii Dörfl. Lovis, J. A., 1963, Meiosis in Asplenium × murbeckii from Borrowdale, *Brit. Fern Gaz.*, **9**, 110-113.

22. Polystichum. Dyce, J. W., 1963, Variation in Polystichum in the British Isles, *Brit. Fern Gaz.*, **9**, 97-109.

24/4. Thelypteris dryopteris (L.) Slosson. Clark, M. C. and Greene, S. W., 1963, Thelypteris dryopteris (L.) Slosson and Lycopodium clavatum L. in Wyre Forest, *Proc. Birm. N. H. & Phil. Soc.*, **20** (2), 38. *Thelypteris dryopteris* has been rediscovered in the Wyre Forest, where it had not been seen for over 30 years. *Lycopodium clavatum* has been found in the Wyre Forest. It is new to the area.—[D.H.K.]

32/1. Larix decidua Mill. Mitchell, A. F., 1963, The history of the introduction of European Larch to Britain, *Scot. For.*, **17**, 147-171. Evidence is provided to show that *Larix decidua* was introduced into Britain about the year 1620. The early records of plantings in England and Scotland are examined, and particular attention given to plantings made about 1738. Sizes of surviving trees are given.—[D.H.K.]

36→ Ranunculaceae. Tamura, M., 1963, Morphology, ecology and phylogeny of the Ranunculaceae, 1, *Sci. Rep. Osaka Univ.*, **11**, 115-126.

62/1. Chelidonium majus L. Bolman, J., 1963, Een mutatie avant la lettre, *Natura*, **60**, 3-4. A short account of the laciniate forms of *Chelidonium majus*.—[D.H.K.]

66. Fumaria. Sell, P. D., 1963, Taxonomic and nomenclatural notes on European Fumaria species, *Fedde. Rep.*, **68**, 174-178. British and Irish

material of *Fumaria capreolata* differs from continental material in having larger, differently shaped fruits, longer bracts and narrower sepals. Originally described by Pugsley as *F. capreolata* var. *babingtonii* it is now raised to subspecific rank as **F. capreolata** subsp. **babingtonii** (Pugsl.) Sell.

The correct name for *F. micrantha* Lag. (1816), is **F. densiflora** DC., based on a holotype specimen collected at Toulon by Ziz in 1810, and now in the De Candolle herbarium at Geneva.

Two subspecies of *F. officinalis* occur in Britain, subsp. *officinalis* and subsp. **wirtgenii** (Koch) Arcangeli. The former is widespread while the latter is common on calcareous soils in eastern and south-eastern England, but the two subspecies sometimes grow together with intermediates.—[D.H.K.]

67/1. Brassica oleracea L. Liger, J., 1963, La Station Granvillaise de Brassica oleracea L., *Rev. Soc. Sav. Haute Norm.*, **29**, 29-33. *Brassica oleracea* does not occur on the coast of Calvados or la Manche except at Granville. Its plant associates, however, and other evidence raise doubts as to its native status.—[E.B.B.]

86. Capsella. Salisbury, E. J., 1963, Intermittent germination of Capsella, *Nature*, **199**, 1303-1304. The author sowed 2,327 ripe seeds of *Capsella*, all taken from one plant, on 16th July 1962 and kept them under greenhouse conditions. The first seeds germinated on 2nd September 1962 and further seeds germinated at intervals until the following April. 77% of the seed proved viable, and most germination flushes occurred when ever there was a rise in atmospheric temperature.—[D.H.K.]

113. Viola. Dizerbo, A. H., 1963, Quelques pollens de Viola des sections Nomimium Ging. et Dischidium Ging., *Bull. Soc. Bot. France*, **110** 26-33. The morphology of the pollens studied shows these to be very homogeneous. The placing of *Viola riviniana* subsp. *minor* as a distinct subspecies is justified. The pollen of *V. biflora* of the Section *Dischidium* shows it to be related to species of the Section *Nomimium*.—[Author's summary.]

113. Viola. Jäger, I., 1963, Die hypopeltaten en Sepalen von Viola arvensis und Viola mirabilis, *Österr. Bot. Zeitschr.*, **110**, 417-427.

131. Cerastium. Sell, P. D. & Whitehead, F. H., 1964, Notes on the annual species of Cerastium in Europe, *Fedde. Rep.*, **69**, 14-24. A revision of the annual species of *Cerastium* occurring in Europe. The correct name for *C. atrovirens* Bab. is shown to be **C. diffusum** Pers. subsp. **diffusum** (1805, *Syn. Pl.*, **1**, 520).—[D.H.K.]

148. Scleranthus. Sell, P. D., 1963, Notes on the European species of Scleranthus, *Fedde. Rep.*, **68**, 167-169. A revision of the European species of *Scleranthus*. **S. perennis** subsp. **prostratus** subsp. nov.* is described from East Anglia.—[D.H.K.]

154. Chenopodium. Cumming, B. G., 1963, The dependence of germination on photoperiod, light quality and temperature in Chenopodium species, *Canad. J. Bot.*, **41**, 1211-1234.

154. Chenopodium. Guinet, P., 1959, Essai d'identification des graines de chénopodes commensaux des cultures ou cultivés en France, *Agric. Trop.*, **6**, 241-266. Descriptions of the seeds of species of *Chenopodium*

*See Plant Notes, p. 338.—**Ed.**

are given with illustrations of the seed-coats. A key, based on seed characters, is also provided.—[E.B.B.]

170. Oxalis. Eiten, G., 1963, Taxonomy and regional variation of Oxalis section Corniculatae. 1. Introduction, keys and synopsis of the species, *Amer. Midl. Nat.*, **69**, 257-309. The history of publication, phylogeny and world distribution of the species of *Oxalis* section *Corniculata* are given. *Oxalis corniculata* is an extremely variable species especially in Australasia. The name *O. stricta* L. is incorrectly retained for *O. europaea* Jord., and *O. dillenii* Jacq. is used for *O. stricta* L. Keys are provided for the identification of the various species and their varieties. —[D.H.K.]

171/3. Impatiens parviflora DC. Hughes, A. P. & Evans, G. C., 1963, Plant growth and the aerial environment. 4. Effects of day length on Impatiens parviflora, *New Phyt.*, **62**, 367-388.

190. Medicago. Heyn, C. C., 1963, The annual species of Medicago, *Scripta Hierosolymitana* **12**, 1-154. (Jerusalem). A monograph of the annual species of *Medicago*, with full descriptions and synonymy, and many line drawings of the different species. Keys are given for the identification of species and varieties.—[D.H.K.]

190. Medicago. Lesins, K. & Lesins, I., 1963, Pollen morphology and species relationships in Medicago L., *Canad. J. Gen. & Cytol.*, **5**, 270-280.

195. Lotus. Larsen, K. and Zertová, A., 1963, On the variation pattern of Lotus corniculatus in eastern Europe, *Bot. Tidsskr.*, **59**, 176-194. Cytotaxonomical studies on a number of *Lotus* "species" from eastern Europe have shown that they are best placed under *L. corniculatus*, which must be regarded as a very variable species.—[D.H.K.]

195. Lotus. Nettancourt, D. de & Grant, W. F., 1963, The cytogenetics of Lotus (Leguminosae), 2. A diploid interspecific hybrid between L. tenuis and L. filicaulis, *Canad. J. Gen. & Cytol.*, **5**, 338-347.

199. Colutea. Browicz, K., 1963, The genus Colutea L. A monograph, *Monogr. Bot.*, **14**, 3-135. A monograph of *Colutea*. Descriptions of the various species are provided together with synonymy and information on geographical range. A key is provided for the identification of the various species, subspecies and varieties.—[D.H.K.]

212/11. Potentilla tabernaemontani Aschers. Smith, G. L., 1963, Studies in Potentilla L. 1. Embryological investigations into the mechanism of agamospermy in British P. tabernaemontani Aschers., *New Phyt.*, **62**, 264-282.

212/12. Potentilla crantzii (Crantz) G. Beck ex Fritsch. Smith, G. L., 1963, Studies in Potentilla L. 2. Cytological aspects of apomixis in P. crantzii (Cr.) Beck ex Fritsch, *New Phyt.*, **62**, 283-300.

220. Alchemilla. Pedersen, A., 1963, Alchemilla mollis, Alchemilla subglobosa, Alchemilla obtusa og Alchemilla glabra, *Bot. Tidsskr.*, **59**, 255-257. *Alchemilla subglobosa* Westerl. and *A. obtusa* Buser, recorded from Denmark by Wiinstedt (1957, *Bot. Tidsskr.*, **53**) must, according to a recent revision, be removed from the Danish flora. *A. mollis* (Buser) Rothm. is cultivated as a garden plant in Denmark and can be found established on roadsides as an escape. *A. glabra* var. *subreniformis* Westerl. (var. *dasyneura* Sougn. & Law.) is known from a number of localities in Denmark.—[Author's summary]

220/9. Alchemilla glomerulans Buser. Pedersen, A., 1963, Nøgleblostret Løvefod, ny for Danmark, *Bot. Tidsskr.*, **59**, 257-259. *Alchemilla glomerulans* has been noted for Denmark. The specimen on which the record is based was collected in 1930 but had been misidentified as *A. micans*.—[D.H.K.]

221/1. Aphanes arvensis L. Ohwi, J., 1963, Two new alien plants, *J. Jap. Bot.*, **38**, 240. *Aphanes arvensis* has been found as an adventive in Japan.—[D.H.K.]

225/9. Rosa dumalis Bechst. Van Ooststroom, S. J. & Reichgelt, T. J., 1963, De geschiedenis van Rosa dumalis Bechst. in Nederland, *Gorteria*, **1**, 153-155. The occurrence of *Rosa dumalis* in the Netherlands is reviewed and the differences between it and *R. canina* L. are discussed.—[D.H.K.]

254/7. Epilobium adnatum Griseb. Klaveness, K., 1963, Epilobium adnatum Griseb. i Norge, *Blyttia* **1963**, 194-195.

262. Callitriche. Schotsman, H., 1962, Note préliminaire sur les Callitriches du Sud-Ouest, *Bull. Cent. Etud. Rech. Sci. Biarritz*, **4**, 205-209. A list of species with distribution in three Departments—Gironde, Landes and Basses-Pyrénées is given. *C. stagnalis*, *C. obtusangula*, *C. hamulata*, *C. truncata* and *C. platycarpa* are noted for some or all of these Departments.—[E.B.B.]

318/2. Mercurialis annua L. Durand, B., 1963, Le complexe Mercurialis annua L. s.l. Une étude biosystématique (chapitres 1 et 2), *Ann. Sci Nat. Bot.*, **4**, 579-623. The introduction to this extensive study of the *Mercurialis annua* complex indicates the difficulties found by past authors in arriving at a satisfactory systematic treatment of this polymorphic species. The present treatment is based on comparative morphology, caryology, biogeography and genetics. The first chapter deals with caryology, the second with geographical distribution. Of the many polyploid cytotypes met with in the Mediterranean range of its area the diploid, $2n=16$, is noted as occurring in the British Isles.—[E.B.B.]

320. Polygonum. See 325. Rumex.

325. Rumex. Hylander, N., 1963, Nordiska fynd av Rumex fueginus Phil. och av ett par nordamerikanska Polygonum-arter av gruppen Avicularia, *Bot. Not.*, **116**, 354-368. The American species *Rumex fueginus* Phil. has been found in various localities in Sweden, Norway and Finland. It is closely related to *R. maritimus* with which it is easily confused.

Attention is drawn, also, to a gathering of the N. American species *Polygonum erectum* L., collected at Helsingfors, Finland, 1924, and to *P. ochreatum* Blake twice gathered at Svenborg, Denmark. Both species are new adventives to Europe.—[D.H.K.]

325. Rumex. Swietlińska, Z., 1963, Cytogenetic relationships among Rumex acetosa, Rumex arifolius and Rumex thyrsiflorus, *Acta Soc. Bot. Pol.*, **32**, 216-279.

330/1. Ulmus glabra Huds. Caldwell, J., 1962, The Exeter Elm and W. Ford's Nursery, *Trans. Devon. Assoc.*, **94**, 411-412. The history of *Ulmus glabra* var. *exoniensis* K. Koch (*U. montana* var. *fastigiata* Loudon) is given. The variety was introduced into commerce in 1826 by W. Ford, a nurseryman of Exeter. A solitary tree of the variety is now known in the Exeter area.—[D.H.K.]

340/1. Castanea sativa Mill. Macara, A. M., 1963, Tentativa de

induçao artificial de poliploidia em Castanea sativa Miller, *Brotéria*, **32**, 179-218. An account of attempts to induce polyploidy in *Castanea sativa* by means of treatment with various colchicine solutions.—[D.H.K.]

341. QUERCUS. Cousens, J. E., 1962, Notes on the status of the sessile and pedunculate oaks in Scotland and their identification, *Scot. For.*, **16**, 170-179.

357. ERICA. Dulfer, H., 1963, Bemerkungen über einige Linnésche Erica-Arten, *Bot. Jahrb.*, **82**, 429-434.

357/1. ERICA TETRALIX L. Gauckler, K., 1960, Die Moor-Glockenheide —Erica tetralix—im Ostliche Süddeutschland, speziell in Franken, *Ber. Nat. Ges. Bamberg*, **37**, 53-58.

359/1. PYROLA MINOR L. Greene, S. W. and Gray, J. M., 1963, Pyrola minor L. in south Shropshire, *Proc. Birm. N.H. & Phil. Soc.*, **20** (2), 36. Reports the discovery of *Pyrola minor* at Knowle Wood, Salop. The species has not been recorded from the west Midlands for over thirty years.—[D.H.K.]

365. LIMONIUM. Pignatti, S., 1962, Studi sui Limonium. 5, Note sulla sistematica delle specie iberiche di Limonium, *Collect. Bot.*, **6**, 293-330. A revision of the Spanish and Portuguese species of *Limonium*.—[D.H.K.]

365. LIMONIUM. Pignatti, S., 1963, Über die Beziehungen zwischen italienischen und iberischen Arten der Gattung Limonium (Plumbaginaceae), *Webbia*, **18**, 73-93.

372. ANAGALLIS. Kornas, J., 1962, Rodzaj Anagallis L. w Polsce, *Fragm. Flor. Geobot.*, **8**, 131-138. A revision of *Anagallis* in Poland. *A. arvensis* f. *arvensis* is common throughout the country in all types of cultivated ground. *A. arvensis* f. *azurea* Hyl. is limited to south and central Poland and often grows with f. *arvensis*. *A. foemina* Mill. is rare and confined to calcareous soils in the central Polish uplands. *A. tenella* has been reported only once as an introduction at the beginning of the nineteenth century.—[D.H.K.]

388. POLEMONIUM.—See 404→ CONVOLVULACEAE.

403/1. ECHIUM VULGARE L. Debray, M., 1963, Fascie rubanée sur une vipérine (Echium vulgare L.), *Rev. Soc. Sav. Haute Norm.*, **29**, 21-27. A specimen of *Echium vulgare*, remarkably fasciated, is described in detail. Some account of the causes of fasciation is given.—[D.H.K.]

404→ CONVOLVULACEAE. Hansen, A., 1963, Convolvulaceernes, Cuscutaceernes, Hydrophyllaceernes, Polemoniaceernes og Solanaceernes udbredelse i Danmark, *Bot. Tidsskr.*, **59**, 141-176. The distribution of the *Convolvulaceae*, *Cuscutaceae*, *Hydrophyllaceae*, *Polemoniaceae* and *Solanaceae* within Denmark are described and discussed.—[D.H.K.]

407. CUSCUTA. MacLeod, D. G., 1963, The parasitism of Cuscuta, *New Phyt.*, **62**, 257-263.

408→ SOLANACEAE.—See 404→ CONVOLVULACEAE.

430/14. VERONICA PEREGRINA L. Bangerter, E. B., 1963, A note on an alien speedwell (Veronica peregrina), *Country-side*, **19**, 463-465. The history of the N. American species *Veronica peregrina* as an adventive in Britain is outlined, and a request made for records and material in order to establish its present distribution.—[D.H.K.]

435. EUPHRASIA. Wilkins, D. A., 1963, Plasticity and Establishment in Euphrasia, *Ann. Bot.*, **27**, 533-552. Several species of *Euphrasia* were

cultivated in the presence of chosen hosts and a number of characters measured and analysed. Establishment increased the size and vigour of the parasite to a degree, depending on the host species, *Trifolium repens* and *Plantago coronopus* being the most effective and *Festuca ovina* and *Potentilla erecta* the least. Hostless plants often survived and set seed but remained much smaller.

The detailed effects on individual characters depended on the precise date of the establishment.

Flower measurements were slightly increased by establishment in the trial, but showed far greater plasticity from year to year in the wild.

The measurement of plasticity is discussed and some suggestions made for the experimental analysis of its adaptive significance.—[Author's summary.]

436/1. Odontites verna (Bellardi) Dumort. Pedersen, A., 1963, Odontites verna ssp. pumila emend. en ny underart fra svenske og danske stradenge, *Bot. Tidsskr.*, **58**, 290-296. *Odontites verna* f. *pumila* Nordstedt is raised to subspecific status and its distribution on the coast of Denmark and Sweden is given.—[D.H.K.]

441. Pinguicula. Casper, S. J., 1963, Gedenken zur Gliederung der Gattung Pinguicula L., *Bot. Jahrb.*, **82**, 321-325.

472. Plantago. Blaise, S., 1963, Etude palynologique de deux espèces voisines de Plantains, *Bull. Soc. Bot. France*, **110**, 91-107. A study of the pollen of *Plantago coronopus* and *P. macrorhiza* shows that characters such as diameter, number of pores, and appearance of the granulations may have biosystematic value.—[E.B.B.]

472/5. Plantago coronopus L. Gorenflot, R., 1963, Autoallopolyploidie expérimentale chez Plantago coronopus L., *Bull. Soc. Bot. France*, **110**, 76-91. Statistical study of colchiploids of *Plantago coronopus* show that increase in size and decrease in pilosity of leaf and flower result from doubling of chromosomes. Size of stomatal cells also increases.—[E.B.B.]

479/1. Jasione montana L. Harrison, J. W. Heslop, 1963, The Sheep's Bit, Jasione montana L., in our counties, *Vasc.*, **48**, 21. There are a number of old records for *Jasione montana* in Durham and Northumberland but the plant does not appear to have been seen there in recent years, although it is still locally plentiful in Kirkcudbrightshire. The writer solicits modern records from the northern counties.—[D.H.K.]

501→ Compositae. Sorsa, V., 1963, Cytological observations in four species of Compositae in Finland, *Arch. Soc. Zool.-Bot. Fenn. 'Vanamo'*, **18**, 65-67. The following chromosome numbers are reported from material gathered in southern Finland—*Lapsana communis*, $n=8$, *Leontodon autumnalis*, $n=6$, *Sonchus arvensis*, $n=9$, and *Hieracium umbellatum*, $n=9$.—[D.H.K.]

516/1. Anaphalis margaritacea (L.) Benth. Kownas, S., 1959, Stanowisko, Anaphalis margaritacea (L.) Benth. et Hook. w Polsce, *Fragm. Flor. Geobot.*, **5**, 217-221.

517. Antennaria. Tüxen, R., 1962, Antennaria hibernica auch in Norwegen, *Mitt. Flor.-Soz. Arb. N.F.*, **9**, 18-19. Reports the discovery of *Antennaria hibernica* in Norway.—[D.H.K.]

558/1 (163). Hieracium strumosum (W. R. Linton) A. Ley. Ornduff, R., 1963, Hieracium revisited, *Leafl. West. Bot.*, **10**, 38. An introduced

species of *Hieracium* which has been spreading rapidly in the vicinity of Council Crest, Portland, Oregon, in recent years has been identified as *H. strumosum* by P. D. Sell.—[D.H.K.]

560. TARAXACUM. Harvey, M. J. & Hawkes, J. G., 1963, Marsh dandelions in Warwickshire, *Proc. Birm. N.H. & Phil. Soc.*, **20** (2), 14. Prof. S. L. Van Soest has referred Warwickshire marsh dandelion material to *Taraxacum faroense* Dahlst.—a predominantly northern microspecies, and to *T. nordstedtii* Dahlst.—a microspecies with a more southerly distribution. The latter is by far the most common in Warwickshire, and is quite frequent in marshy or boggy areas in the north and north-east of the county.

The chromosome number of Warwickshire material of *T. faroense* has been determined as $2n=40$.—[D.H.K.]

560. TARAXACUM. Malecka, J., 1963, Badania cytologiczne nad rodzajem Taraxacum, *Acta Biol. Cracov.*, **1963**, 117-136. Cytological studies on Polish species of *Taraxacum*.—[D.H.K.]

616/4. IRIS PSEUDACORUS L. Cody, W. J., 1961, Iris pseudacorus L.—escaped from cultivation in Canada, *Canad. Field-Nat.*, **75**, 139-142. *Iris pseudacorus*, an introduction from Europe, is grown in Canadian gardens. First noted as an established escape in Newfoundland by Fernald in 1911, and in Ontario in 1915, it has now spread with great rapidity in swamps and marshes and by streams. The species is now widespread and locally abundant in many parts of Canada and could be mistaken for a native plant.—[D.H.K.]

618. CROCUS. Ploeg, D. T. E. Van der, 1963, Kleinbloemige "wilde boeren crocussen" in Friesland, *Gorteria*, **1**, 145-147. Notes on the naturalisation of *Crocus tomasinianus* Herb. and *C. vernus* L. in pastures in Friesland. Intermediates between the two species are reported from some of the colonies which have been established for fifty years or more.—[D.H.K.]

636/1. GYMNADENIA CONOPSEA (L.) R.Br. Correll, D. S., 1963, Habenaria conopsea in North America, *Rhodora*, **65**, 241-242. The American records of *Gymnadenia conopsea* are reviewed and attention is drawn to a specimen, in the herbarium of the University of North Carolina, collected in Labrador in 1921. Whether the species is indigenous or naturalised in North America is uncertain.—[D.H.K.]

640/1. OPHRYS APIFERA Huds. Grebe, H., 1961, Neufund von Ophrys apifera bei Hannover und klimatische Ursachen für die Ansiedlung dieser Orchidee, *Ber. Naturh. Ges. Hann.*, **105**, 19-22.

656/A. ELEOCHARIS AUSTRIACA Hayek. Walters, S. M., 1959, Heleocharis austriaca Hayek and Glyceria declinata Bréb., two plants new for the Flora of Poland, *Fragm. Fl. Geobot.*, **5**, 239-244.

664→ GRAMINEAE. Knobloch, I. W., 1963, The extent of hybridisation in the Gramineae, *Darwiniana*, **12**, 624-628.

669/3. GLYCERIA DECLINATA Bréb.—See 656/A. ELEOCHARIS AUSTRIACA Hayek.

678/1. DACTYLIS GLOMERATA L. Kummerow, J., 1963, Endogenous fluctuations of germination capacity in Dactylis glomerata, *Amer. J. Bot.*, **50**, 915-920.

678/1. DACTYLIS GLOMERATA L. Stebbins, G. L., 1961, A diploid sub-

species of the Dactylis glomerata complex from Portugal, *Agron. Lusit.*, **23**, 9-15. *Dactylis glomerata* subsp. *lusitanica* is described from Portugal. —[D.H.K.]

689. KOELERIA. Ujhelyi, J., 1961, Area specierum generis Koeleriae Pers. in Hungaria, *Fragm. Bot.*, **1**, 1-4.

712. ANTHOXANTHUM. Borrill, M., 1963, Experimental studies of evolution in Anthoxanthum (Gramineae), *Genetica*, **34**, 183-210. Hybridisation reveals a close affinity of *Anthoxanthum odoratum* and the Mediterranean annual *A. ovatum*. *A. alpinum* is genetically somewhat more isolated though occasional sterile hybrids with *A. ovatum* can be obtained.

Morphology reveals an affinity between *A. odoratum* and *A. ovatum*. There are no diagnostic characters linking *A. odoratum* and *A. alpinum*.

The perennial nature of the generality of *A. odoratum*, plus phenotypic flexibility and an ability to behave as an annual in particular habitats suggest an affinity both to *A. alpinum* (winter-hardy perennial) and *A. ovatum* (variable annual, or occasional biennial).

The artificial allotetraploid based on the sterile hybrid between *A. alpinum* and *A. ovatum* simulates *A. odoratum*, more closely than do either of the diploids.

Experimental observations suggest a very reasonable possibility that a similar sequence of events perhaps occurring on several occasions under natural conditions could have given rise to the tetraploid species *A. odoratum*.—[Author's summary.]

TOPOGRAPHICAL

ENGLAND. Kent, D. H., 1963, Progress in the study of the British flora since World War II, *Webbia*, **18**, 130-150.

O, CHANNEL ISLANDS. Le Sueur, F., 1962-63, Botanical report for 1961, *Soc. Jers. Ann. Bull.*, **18**, 148-153; for 1962, *loc. cit.*, **18**, 256-258. Gives a number of interesting records for Jersey.—[D.H.K.]

O, CHANNEL ISLANDS. Le Sueur, F. & McClintock, D., 1963, A check list of flowering plants and ferns wild on Sark and its islets, *Rep. & Trans. Soc. Guern.*, **17**, 303-318.

3, S. DEVON. Simmons, I. G., 1963, The blanket bog of Dartmoor, *Trans. Devon. Assoc.*, **95**, 180-196.

3-4, DEVON. Frost, L. C., 1962, A flora annotated by William Wavell, containing some first records for Devon, *Trans. Devon. Assoc.*, **94**, 623-629. The author has in his possession a copy of Relhan's *Flora Cantabrigiensis* (1785), annotated by Dr. William Wavell, a physician in practice at Barnstaple in 1796. Some of the annotations are first records for Devonshire species.—[D.H.K.]

3-4, DEVON. Greig, O., 1962, Fifty-fourth report on the botany of Devon: Phanerogams, *Trans. Devon. Assoc.*, **94**, 141-144.

3-4, DEVON. Wilkinson, V. M., 1963, Fifty-fifth report on the botany of Devon: Phanerogams, *Trans. Devon. Assoc.*, **95**, 87-89.

4, N. DEVON. Wright, F. R. Elliston, 1962, Changes in vegetation of Braunton Burrows, *Trans. Devon. Assoc.*, **94**, 144-145. Since the reduction of rabbits by myxomatosis the vegetation in parts of Braunton Burrows has assumed the character of impenetrable scrub. In other parts of the

area *Festuca rubra, Vulpia membranacea, V. ambigua* and *Agrostis stolonifera* have increased in quantity while *Senecio jacobaea* has decreased.—[D.H.K.]

5-6, Som. Hallam, A. D., 1963, Somerset botany—Recorder's notes, 1961, *Proc. Som. Arch. & N.H.S.*, **106**, 126-127.

6, N. Som. Simpson, J. F. Hope, Newton, S. E. & Ricketts, M. J., 1963, Plant communities on Shapwick Heath, Somerset, *Proc. Bristol Nat. Soc.*, **30**, 343-361.

6, N. Som. & 34, W. Glos. Sandwith, N. Y., 1963, Bristol botany in 1962, *Proc. Bristol Nat. Soc.*, **30**, 301-308.

7-8, Wilts. Grose, J. D., 1963, Wiltshire plant notes, 23, *Wilts. Arch. & N.H. Mag.*, **58**, 496-498.

9, Dorset. Good, R. d'O., 1963, Botany, *Proc. Dorset. N.H. & Arch. Soc.*, **84**, 37.

11, S. Hants. Hunt, A. K., 1963, Botany, *Proc. Bournemouth Nat. Sci. Soc.*, **52**, 26-27. Gives a few interesting records for the Bournemouth area. —[D.H.K.]

14, E. Sussex. Ticehurst, N. F., 1962, Notes on the local fauna and flora for 1962, *Hastings & E. Sussex Nat.*, **9**, 214-215.

18-19, Essex. Jermyn, S. T., 1963, Plant hunting and recording in Essex, *Essex Nat.*, **31**, 25-34.

21, Middx. Firrell, P. A., 1963, Notes on some unusual plants in Ruislip Nature Reserve, *J. Ruislip & Dist. N.H.S.*, **12**, 5-8.

22, Berks. Hyde, M. B., 1963, Some plants of chalk hills. *Trans. Newbury Dist. F.C.*, **11**, 88-92.

22, Berks. & 23, Oxon. Simmonds, A. M., 1963, Wild Flowers in town. *Reading Nat.*, **15**, 39-41. Gives an account of some of the urban wild flowers to be found growing in Reading—e.g. *Senecio squalidus, Conyza canadensis, Galinsoga purviflora, Mercurialis annua*, etc.—[D.H.K.]

22, Berks., 23, Oxon. & 24, Bucks. Butler, K. I., 1963, The recorders report for botany, 1961-62, *Reading Nat.*, **15**, 17-28. Gives many interesting records made in the Reading area during 1961-62.—[D.H.K.]

25, E. Suffolk. Anonymous, 1963, Botanical report, *Ann. Rep. Lowestoft F.C.*, **2**, 158-159.

25-26, Suffolk. Willis, J. C. N., 1963, Oxalis species in Suffolk, *Trans. Suffolk Nat. Soc.*, **12**, 197-198. Records *Oxalis corymbosa* as a garden weed in the Ipswich and Woodbridge areas, and *O. incarnata* as a garden weed in Ipswich.—[D.H.K.]

26, W. Suffolk. Trist, P. J. O., 1963, Icklingham Plains—habitat study, *Trans. Suffolk Nat. Soc.*, **12**, 199.

33-34, Glos. de Vesian, D. E., 1963, Botanical records: angiosperms, 1960 and 1961, *Proc. Cotteswold N.F.C.*, **33**, 224-228.

34, W. Glos.—See 6, N. Som.

37, Worcs. Clark, M. C. & Greene, S. W., 1963, Thelypteris dryopteris (L.) Slosson and Lycopodium clavatum L. in the Wyre Forest, *Proc. Birm. N.H. & Phil. Soc.*, **20** (2), 38.

37, Worcs. Day, F. M., 1963, Plant records from the Towndrow Herbarium, *Trans. Worcs. Nat. Club*, **11**, 197-198.

37, Worcs. Day, F. M., 1963, Plant records from Worcestershire, 1960, *Trans. Worcs. Nat. Club*, **11**, 197.

37, Worcs. Fincher, F., 1963, Randan Wood: my first twenty-five years, *Trans. Worcs. Nat. Club*, **11**, 198-209. An account of changes which have taken place in the vegetation of Randan Wood, three miles west of Bromsgrove, during the last twenty-five years. The area particularly studied is twelve acres in the northern part of the wood which belong to the author.—[D.H.K.]

38, Warwick. Harvey, M. J. & Hawkes, J. G., 1963, Marsh dandelions in Warwickshire, *Proc. Birm. N.H. & Phil. Soc.*, **20** (2), 14.

40, Salop. Greene, S. W. & Gray, J. M., 1963, Pyrola minor L. in south Shropshire, *Proc. Birm. N.H. & Phil. Soc.*, **20** (2), 36.

Wales. Kent, D. H., 1963, Progress in the study of the British flora since World War II, *Webbia*, **18**, 130-150.

44, Carm., 45, Pemb., 49, Caern., 50, Denbigh & 52, Anglesey. Benoit, P. M., 1963, Field notes: plants, *Nature in Wales*, **8**, 129-132.

48, Mer. Benoit, P. M., 1963, Alpine plant discoveries in Merioneth, *Nature in Wales*, **8**, 116-121. At least twenty-five alpine species have been recorded from Merioneth, but about eight of them were thought possibly extinct. During the last four years six of these species, viz. *Carex bigelowii, Salix herbacea, Silene acaulis, Saussurea alpina, Juniperus communis* and *Cardaminopsis petraea*, have been rediscovered. In addition, an alpine plant—*Orthilia secunda*—new to the county was discovered in 1961. The two species which have yet to be refound are *Poa alpina*, last collected in 1871, and *Woodsia ilvensis*, apparently last seen in 1894. Alpine species which have been erroneously recorded for Merioneth are also discussed.—[D.H.K.]

53-54, Lincoln. Gibbons, E. J., 1961-62, Botany, *Trans. Lincs. Nat. Union*, **15**, 118-120 & 190-193.

55, Leics. Loughborough Naturalists' Club, 1962, *Surveys of Leicestershire Natural History, No. 1. Bradgate Park and Cropston Reservoir margins*. Pp. 108. Includes accounts of the flora and vegetation of the areas.—[D.H.K.]

55, (Rutland). Wood, J. R. Ironside, *et al.*, 1963, The Eye Brook Reservoir, *Rep. Uppingham School F.C.*, **17**, 15-29. Includes an account of the flora.—[D.H.K.]

59, S. Lancs. Savidge, J. P., Heywood, V. H. & Gordon, V. (Editors), 1963, *Travis's Flora of South Lancashire*. Pp. xv + 400 + 5 half-tone plates and a map. Liverpool Botanical Society. Price 30/-.

63, S.-W. York and 64, Mid-W. York. Nelson, G. A., *et al.*, 1963, A flora of Leeds and District, *Proc. Leeds Phil. & Lit. Soc. Sci. Sect.*, **9** (5), 113-170. A concise account of the flora of the Leeds area which provides localities and details of habitat and flowering period.—[D.H.K.]

66, Durham, 67-68, Northumberland & 70, Cumberland. Harrison, J. W. Heslop, 1963, Records: flowering plants and ferns, *Vasc.*, **48**, 16 & 24.

69b, N. Lancs. Montague, J. E., 1963, The flora of Angerton Moss, *Proc. Barrow Nat. F.C. & Phot. Soc., N.S.*, **9**, 46-48. An account of the flora of a square mile of bog area lying to the east of Foxfield.—[D.H.K.]

Scotland. Cousens, J. E., 1962, Notes on the status of the sessile and pedunculate oaks in Scotland and their identification, *Scot. For.*, **16**, 170-179.

Scotland. Gimingham, C. H., 1963, Plant life, in *Forests of North-*

eastern Scotland, 54-64. Forestry Commission Guides.

Scotland. Kent, D. H., 1963, Progress in the study of the British flora since World War II, *Webbia*, **18**, 130-150.

79, Selkirk. Wood, J. R. Ironside, 1961, A botanist in Selkirkshire, *Rep. Uppingham School F.C.*, **15**, 104-108.

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ECOLOGICAL (See also TOPOGRAPHICAL)

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The field evidence supporting these views is produced both from the distribution of "calcicolous" species on Ca- and Mg-rich serpentine soils and from the link between vegetation of maritime and Mg-rich serpentine habitats.

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EXHIBITION MEETING, 1963

An Exhibition Meeting was held in the Department of Botany, British Museum (Natural History), London, S.W.7, on Saturday, November 30, 1963, from 2.0 p.m. to 5.30 p.m.

About 350 members and guests attended and exhibits were arranged by 29 individuals. An account of these exhibits, based on notes supplied by exhibitors, is given below.

AN *ALISMA* HYBRID

Specimens were exhibited of a putative hybrid between *Alisma lanceolatum* and *A. plantago-aquatica* from the Isle of Man. Herbarium material of the two parents was also shown for comparison.—D. E. Allen.

VARIATION IN *LIMONIUM*

The exhibit showed some of the variation in the two British salt-marsh species of *Limonium*, *L. vulgare* and *L. humile*. Population samples of *L. vulgare* from different marshes in the same area showed some of the forms that occur at different levels. The population from the higher and older parts of the marshes showed a very dense head of closely arranged spikelets. The lower populations showed a tendency towards the morphological character of *L. humile*, and some specimens appeared to be very close to that species. A few individuals of *L. humile* do grow with the common species in these areas. Between these extremes there was a complete range of forms. It would be easy to attribute these forms to environmental differences as they are each characteristic of a particular area. However, a comparison was made between flowering spikes collected from certain different forms in the wild, and those from the same individuals raised under constant non-saline conditions in the experimental garden. This showed that while the habitat could influence to some extent overall size, the significant morphological character of an individual remained unchanged. It appears that the different forms typical of different levels in the salt marsh may be genetically determined.—L. A. Boorman.

SOME UNFAMILIAR SPECIES

Herbarium specimens were shown of a number of rare species, mainly from Scotland.—C. J. Cadbury.

NATIONAL NATURE WEEK: THE B.S.B.I. EXHIBIT

The exhibit which was prepared for the 1963 National Nature Week Exhibition was shown in the modified form in which it will be used in the future as a travelling exhibit. It is hoped that it will be shown at the 1964 International Botanical Congress in Edinburgh, which will be attended by many botanists from all over the world and that it will then be exhibited in museums and libraries throughout the country, thus demonstrating the society's aims and activities to a wide cross section of the potentially interested general public. A photograph of the whole

B.S.B.I. stand at the exhibition was also shown together with photos showing the visit by H.R.H. The Duke of Edinburgh to a demonstration of maps scheme equipment on the stand.—J. F. M. Cannon.

HYBRID WATER CROWFEET

A chart demonstrating the ability to hybridise and the fertility of hybrids within *Ranunculus* subgenus *Batrachium* was shown. It could be seen that diploid *R. hederaceus* L., *R. omiophyllus* Ten. and *R. ololeucos* Lloyd belonged to separate gene-pools, while hexaploid *R. tripartitus* DC., tetraploid *R. baudotii* Godr., *R. hederaceus* and *R. omiophyllus* and diploid *R. hederaceus* belonged to a single gene-pool. To demonstrate gene-flow across a polyploid level, specimens of hexaploid *R. tripartitus* and tetraploid *R. omiophyllus* and their fertile pentaploid hybrid were shown. This hybrid was shown to be the same as the well known "New Forest *R. lutarius*".

The Water Crowfeet contain some species well adapted to an aquatic environment and others to a terrestrial one. When *R. baudotii* (an aquatic species) is crossed with *R. hederaceus* (a terrestrial species) the F_1 hybrid is morphologically intermediate and is a strange looking plant that is not suited to either aquatic or terrestrial conditions. When this hybrid is selfed there is segregation in the F_2 and offspring suited to aquatic and terrestrial environments are produced. These F_2 plants are often very unlike either parent and can be regarded as pre-adapted to an ecological niche not occupied by either parent. Herbarium specimens of *R. baudotii* and *R. hederaceus* with their hybrids was shown.—C. D. K. Cook.

FLORA OF ABANDONED AND CULTIVATED LAVENDER FIELDS

A series of charts and drawings comparing the flora of abandoned and cultivated lavender fields at Sisteron were shown.—H. Donoghue and R. E. Warren.

SIR HANS SLOANE AND HIS CURIOUS FRIENDS

The exhibit included specimens from the Sloane Herbarium in the Department of Botany, British Museum (Natural History), London, the Sherardian and Dillenian herbaria in the Department of Botany, University of Oxford, an example of one of the sets of exsiccatae issued by Petiver, and a few specimens from Sloane's 'Vegetable substances collection'. These indicated the interest taken in native and cultivated plants from many lands. Books were selected to show the advance made in plant classification; the desire to enumerate all known species of plants and to illustrate a wide selection of them. These works by Morison, Ray, Tournefort, Petiver, Plukenet and Dillenius were frequently cited by Linnaeus, and the Sloane, Sherardian and Dillenian herbaria, therefore, contain many Linnean types. Books and specimens also showed the great advance made by Doody, Sherard and especially Dillenius in the study of cryptogamic botany. Perhaps the first set of instructions to collectors, those issued by Petiver, and his other aids such as samples of mounted specimens and digest of Ray's classification were also exhibited.—Miss P. I. Edwards.

BOTANICAL PAINTINGS

Paintings of British plants, including *Clematis vitalba*, *Calluna vulgaris*,

Plantago media, Nepeta hederacea and *Cirsium eriophorum*, were shown.—Mrs. B. Everard.

VARIATION IN *BUXUS*

A large diagram displaying the variations in density, health, height and flowering of *Buxus sempervirens* at various altitudes was exhibited.

The chart was compiled from information gathered on the B.S.B.I. Junior Field Meeting at Sisteron in 1963.—A J. Gaston, J. W. Patterson, N. C. Russell and M. Wall.

SOME BOTANICAL POSTAGE STAMPS

More than forty countries were represented by about 320 postage stamps, the illustrations being mostly of flowering plants, but including some of fungi.—Mrs. A. N. Gibby.

THE WORK OF THE B.S.B.I. CONSERVATION COMMITTEE

The liaison committee between the B.S.B.I. and the Nature Conservancy meets twice a year, and the exhibit showed by means of a large map of Great Britain the localities which have been considered for one reason or another between 1958 and 1963. Interesting sites threatened by some kind of development were most frequent in the southern part of England. Many other threats have received attention from the Secretary and members of the Committee and certain important aspects such as toxic sprays, dumping of refuse and destruction of ponds are recurring items which could not be shown on the map.—F. N. Hepper.

PROBLEMS IN *EQUISETUM*

—A. C. Jermy.

POA ALPINA L. IN TEESDALE

Poa alpina was found in Upper Teesdale in 1962. This is a new locality, and only the third known locality of the seminiferous form in Britain. The species is circum-polar, and very variable. Various authors have demonstrated apomixis to occur, and variation in chromosome numbers was illustrated from published data. The chromosome numbers of seminiferous material from Teesdale and from Ingleborough suggest that the two populations are not very closely related.—P. S. Lloyd.

ANTHOXANTHUM ODORATUM L. AND *A. ALPINUM* A. & D. LÖVE

Östergren (1942) found both diploid and tetraploid races in *Anthoxanthum odoratum* sensu lato, with distinguishing features. The arctic and alpine diploid plants were described as specifically distinct (as *A. alpinum*) from the widespread tetraploid plants (=*A. odoratum* sensu stricto) by A. & D. Löve (1948).

The occurrence of intermediate plants in Sweden was noted by Hylander (1953). Rozmus (1958) confirmed the described morphological and cytological differences in Polish material and (1960) reported correlated anatomical characters. The absence of discontinuities in the variable characters of *A. odoratum* sensu lato in Sweden was confirmed by I. Hedberg (1961) in a study of herbarium material. Borrill (unpublished)

also finds it frequently difficult to distinguish these taxa.

The recent discovery of a plant resembling *A. alpinum* in the Cairngorms at 800 metres altitude (B. M. G. Jones, 1963) which in cultivation has developed some morphological features more typical of *A. odoratum* sensu stricto, and which cytological examination has shown to be tetraploid, increases the taxonomic difficulty of treating these taxa as species. It seems more natural to us to consider them as subspecies of *A. odoratum* L. (1753) on the basis of the differences in chromosome number, chromosome morphology (K. Jones, unpublished), geographical distribution and ecological preferences. In our opinion the Cairngorm plant is a glabrous form of *A. odoratum*.

The original description of the plant, as a subspecies of *A. odoratum*, was in the Icelandic language by A. Löve (1945) but it was not accompanied by a Latin diagnosis as is required by the *International Code of Botanical Nomenclature* for the validation of new names published after 1st January 1935. The Latin diagnosis was provided by A. & D. Löve (1948) when the taxon was accorded specific rank. Since *A. odoratum L.* clearly has priority, the correct name for the arctic-alpine plant when treated as a subspecies is thus:

Anthoxanthum odoratum subsp. **alpinum** (A. & D. Löve) *stat. nov*

The subspecies is widely distributed in the sub-Arctic and in the north temperate zone on mountains. Specimens and authentic records indicate its occurrence in S.-E. Greenland, Iceland, Fennoscandia, arctic U.S.S.R. from the Kola peninsula to the Ural Mountains, the Alps, Turkish Armenia, the mountains of C. Asia from the Tien Shan to the Altai and in the Himalayas, the Carpathians, Spitzbergen, the mountains of N.-E. Siberia and the Aleutian Islands.

CHARACTERS OF VALUE IN DISTINGUISHING THE PROPOSED SUBSPECIES OF ANTHOXANTHUM ODORATUM L.

Subsp. ALPINUM	Subsp. ODORATUM
Plant yellowish-green.	Plant green.
Blades of basal leaves narrow (usually 2-4 mm. broad in wild material), more or less erect, glabrous except for the cilate auricles, rolled when dry.	Blades of basal leaves broad (usually 4-8 mm. broad in wild material), more or less spreading, sparsely hairy at least on the upper surface, expanded when dry.
Leaves of sterile shoots rolled in bud.	Leaves of sterile shoots folded in bud.
Inflorescence golden-yellow to bronze at maturity.	Inflorescence greenish-yellow to dull brown (or purplish) at maturity.
Pedicels glabrous or with a few minute hairs.	Pedicels hairy.
Glumes glabrous, glossy.	Glumes sparsely hairy, or apparently glabrous (with minute scabridulae), usually ciliate on the keel, matt.
Leaf-sheaths with conspicuous air spaces (visible in T.S.).	Leaf-sheaths without air spaces.
Upper epidermis of leaf blade with several rows of large bulliform cells between the sclerenchyma ridges.	Upper epidermis of leaf blade without bulliform cells (visible in T.S. or in epidermal strip).
Guard cells of mature leaves c.40μ long.	Guard cells of mature leaves c.50μ long.
Sub-arctic, arctic and alpine distribution.	Lowlands and hills in the temperate zone.
Habitat: characteristic of areas of late snow-lie.	Habitat: meadows, grassland, open woodlands, etc.
Diploid; $2n=10$.	Tetraploid; $2n=20$.

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—B. M. G. JONES and A. MELDERIS.

MAYWEEDS

This exhibit illustrated work in progress at Oxford on the genetics and ecology of mayweeds.

It has been known for some time that both diploid ($2n=18$) and tetraploid ($2n=36$) races of *Tripleurospermum maritimum* (L.) Koch exist. A map of chromosome counts made by the contributor was shown. Plants of subsp. *inodorum* (L.) Hyland. ex Vaarama from 21 sites in south, central, east and north Europe were tetraploid, but plants from all 28 sites in Great Britain, 3 sites in northern France, and one site in northern Poland were diploid. Plants of subsp. *maritimum* from 27 sites in the British Isles, 2 sites in Denmark, Iceland and Arctic Russia were all diploid. Diploid and tetraploid plants of subsp. *inodorum* and their triploid hybrid were exhibited. Plants of subsp. *maritimum* were exhibited to show its wide geographical variation.

A combined map and graph, showing a cline of increasing achene size towards the north in subsp. *inodorum* in Great Britain, and the lower density of the achenes of subsp. *maritimum*, was also exhibited; with data showing how the less dense achenes of subsp. *maritimum* float and survive well in sea-water, but survive badly in soil, while the denser achenes of subsp. *inodorum* sink, and survive less well, in sea-water, but survive very well in soil.—Q. O. N. KAY.

CYTOLOGY AND DISTRIBUTION OF *CALTHA*

A distribution map of chromosome races of *Caltha palustris* was shown at the exhibition. This included some earlier British counts by Panigrahi (1955) and counts made on Continental material. On the Continent, tetraploids and high polyploids are common. In Britain, however, no tetraploid has been found. The $2n=56$ race seems the commonest type among the three subspecies of *Caltha* viz. subspecies *palustris*, subspecies *radicans* and subspecies *minor*.

The exhibit also showed some work done on meiotic behaviour of the $2n=56$ race. Bivalents and quadrivalents were the main chromosomal associations with occasional univalents, trivalents and associations higher than quadrivalents. The number of bivalents was also higher than the

quadrivalents. The meiotic behaviour explains the sexual behaviour of these $2n=56$ forms.

REFERENCES

PANIGRAHI, G., 1955, Caltha in the British flora, in LOUSLEY, J. E. (Editor), *Species Studies in the British Flora*, 107-110.

M. KOOTIN-SANWU.

RECENT DISCOVERIES IN *SPARTINA*

An exhibit illustrating the results of a cytological reinvestigation of the origin of *Spartina* × *townsendii* in Southampton Water.

New chromosome numbers are found in a number of species, namely *Spartina maritima*, *S. alterniflora*, *S. glabra* and in their hybrid derivatives. Other species from both European and North American localities have also been examined. Most of these chromosome numbers not only differ from previous counts but are based on 10 and not on 7 which was formerly held to be the basic number throughout the genus. This is of particular significance in the tribe *Chlorideae* where other large genera like *Bouteloua* and *Chloris* have base numbers of 10 and *Spartina* has been outstanding with 7. It was shown that these new chromosome numbers do not deny the hybrid nature of *S.* × *townsendii* or its precise parentage.

The cytological information was linked with other aspects. Changes in *Spartina* species distribution during the present century in Southampton Water have been traced and for the first time a detailed study has been made of the relative distributions of the F_1 hybrid and amphidiploid in a mixed community. These suggest that the two forms in their distribution may each conform to different ecological factors and it may be that the whole community is relatively unstable. The results make it possible to compare the vigour and success of the F_1 hybrid *Spartina* × *townsendii* and its amphidiploid derivative.—C. J. MARCHANT.

VARIANTS OF *CREPIS CAPILLARIS**

Specimens selected from the British Museum herbarium were displayed to show the subspecies variation of *Crepis capillaris* (L.) Wallr. The exhibit showed the great range of variation that exists, and material was divided into three main groups to illustrate 'minor variants'.

J. B. MARSHALL.

AN ALIEN *POLYPOGON*

Herbarium specimens of *Polypogon aegypticum*, a dwarf grass occasionally found as a wool alien, were exhibited.—A. MELDERIS.

HYBRIDISATION IN *ONONIS*

This exhibit stated a problem whose investigation had just started. In the form of a scatter diagram for six characters, it presented the range of variation in samples of three populations of *Ononis* from Cambridgeshire: one pure population of each parent species, and a mixed population

*Notes on British Crepis, No. 2 (see pp. 325), deals more fully with this subject.—ED.

(Orwell) containing hybrids. Three young plants grown from seeds coming from the Orwell population were also shown representing *O. spinosa* (2*n*=32), *O. repens* (2*n*=c. 64) and a hybrid individual (2*n*=c. 48). Finally, two herbarium specimens pointing out the main morphological differences between the parent species were part of the exhibit.—P. Morisset.

A RARE HYBRID GROUNDSEL

A herbarium specimen was shown of *S.* × *viscidulus* Scheele (*S. sylvaticus* × *viscosus*), from a sandpit at Sevenoaks, West Kent. Though apparently widespread in parts of Europe this hybrid seems to have been seen in England only twice before, in Worcestershire and Surrey.—

R. C. Palmer.

MAPPING THE HYBRIDS

Maps of four hybrids and their parents were displayed. These illustrated several kinds of distributed relationship: *Primula veris* × *vulgaris* occurs throughout the area in which both the parents grow, but this is not the normal situation. More frequently the hybrid is very rare or absent in considerable areas where the range of the parents overlap, e.g. *Geum rivale* × *urbanum* is absent from southern Ireland and much of Wales: though *G. rivale* occurs, it is usually a mountain plant in southern Ireland and probably the habitats of the two parents are rarely contiguous.

Occasionally the range of the hybrid extends beyond that of the parents, e.g. *Saxifraga hirsuta* × *spathularis* is found in Galway and Mayo, whereas *S. hirsuta* is confined to south-west Ireland.

A more complex situation is demonstrated by *Stachys palustris* × *sylvatica*: it fades out both westwards and eastwards, and occurs in the absence of *S. sylvatica* in Orkney and Shetland, where, however, it may be an introduction which escapes from gardens.—F. H. Perring.

TUBERARIA GUTTATA: A POSTSCRIPT

In my paper on 'The British forms of *Tuberaria guttata* (L.) Fourreau', (1962, *Watsonia*, **5**, 236-260), I included a table of rank correlation coefficients between seven characters scored or ranked in cultivated plants of this species from different localities in the British Isles. It is possible to carry out a principal component analysis of this correlation matrix to obtain weightings for these characters, so that the populations can be set out graphically to illustrate their relationships one with another. Put simply, the analysis sets out to discover a direction of variation showing the greatest possible correlation with the various characters which have been measured (or, in this case, ranked). This is the first factor. Variation correlated with this factor is then eliminated from the analysis, and the process repeated to give a second factor—epitomising the most important variation not accounted for by the first factor. A third and subsequent factors can be extracted similarly. By this means, the most important variation in a heterogeneous mass of data can be extracted, and studied in a few dimensions.

The model is a three-dimensional graph showing the weightings of the six *Tuberaria* populations in relation to the first three factors. Four of the

populations lie close to a straight line nearly parallel with the first factor axis. This is rather closely correlated with leaf-colour, seed-size etc., and seems to represent the main trend of ecotypic adaptation to exposed sites. The second factor is correlated with bract frequency and other characters, and separates the Holyhead and Inishbofin populations from the others—though the two do not fall close together, as they have a considerable separation on the first factor. Variation related to the third factor is not obviously taxonomically meaningful—indeed, with the rather small number of characters studied it may already be largely random.—M. C. F. Proctor.

PHOTOGRAPHS OF SOME POLLINATING INSECTS

Now that compact, light-weight electronic flash units are readily available, it has become relatively easy to record many aspects of the behaviour of insects at flowers. These photographs were taken over a period of a few weeks in September and October, 1963. This short period accounts for the lack of variety; *Linosyris* figures prominently because a clump was flowering well at the time, and had attracted a variety of insects of various kinds, while many other plants were over. Most of the photographs were taken in and around my own small suburban garden in Exeter; a few were taken in the Botanic Garden of the University, and a few near Crediton. *Technical data*:

Praktica FX 2 single-lens reflex, with 5 cm. Tessar lens, and extension tubes. Pan F or Panatomic X film, developed in Promicrol or Definol. Meccablitz 110 flashgun; exposure 1/50 sec. at F/22, but flash (duration approx. 1/1000 sec.) providing most of the illumination.—M. C. F. Proctor.

LYCOPODIUM SELAGO L. IN E. SUSSEX, V.c. 14

Lycopodium selago was found by me in the autumn of 1963 in a wood on the High Weald of East Sussex. This appears to be the first definite record for Sussex (and indeed for S.-E. England) since 1902, when it was found near Birchgrove on Stumblewood Common (see *Fl. Sussex*), though Mrs. Tristram reported it at Dallington Forest at some unspecified date, possibly as late as the nineteen-twenties.

One large plant only was found, but this bore copious sporangia: a small piece was collected as a voucher and is here exhibited. It grew among the moss *Mnium hornum* on a very steep, terraced bank of a wealden 'gill' or ravine on Ashdown Sandstone. Other species close by included: *Dryopteris aemula, D. dilatata, Vaccinium myrtillus, Blechnum spicant, Calluna vulgaris, Althyrium filix-femina, Solidago virgaurea* and *Hypericum pulchrum,* and the bryophytes *Pellia epiphylla, Diplophyllum albicans, Saccogyna viticulosa, Dicranum majus, D. scoparium, Thuidium tamariscinum.* The tree canopy consisted of *Quercus robur* standards and some *Castanea* coppice.

The association is a markedly "Atlantic" one, different from the usual moorland community in which *L. selago* is usually found in N. Britain.—F. Rose.

RUBUS ARCTICUS

Herbarium material, colour transparencies and paintings of *Rubus arcticus,* seen at approximately 950 metres altitude in the Dovrefjell,

Central Norway, on the B.S.B.I. Scottish Committee's expedition were shown.—Mrs. B. H. S. Russell.

VARIATION AND REPRODUCTION IN SOME BRITISH POTENTILLAS

In Britain, the distributions of *Potentilla tabernaemontani* and *P. crantzii* are discontinuous, and consist of discrete, isolated populations.

As is typical of apomictic species, such populations are morphologically uniform within themselves, but differ from other populations in small but constant characters.

Whereas the large majority of populations can be attributed without difficulty to either *P. tabernaemontani* or *P. crantzii*, a small number have proved to be taxonomically "difficult". Examples, together with their chromosome numbers and origins, were shown in relation to the whole distribution map. Some explanation was given of the embryological and cytological nature of taxonomically "difficult" plants; these can originate by the occasional fertilisation of an unreduced egg-shell in a cross between the two species.—G. L. Smith*.

DRAWINGS OF BRITISH PLANTS BY DOROTHY MARTIN (1882-1949)

Miss Dorothy Martin (1882-1949) was for some 30 years Art Mistress at Roedean School. She painted several hundred sheets of portraits of British wild flowers for her own amusement, many in the Lake District, where the school was evacuated during the Second World War.

After her death the collection was presented to the Lindley Library of the Royal Horticultural Society on condition that they could also be exhibited elsewhere from time to time.—W. T. Stearn.

FRUITS OF *POLYGONUM* SECTION PERSICARIA

Typical specimens of the nuts of these species of *Polygonum* were exhibited and their more useful characters were described. A key to the species based on fruit characters, reproduced below, was given.

A Key to Polygonum Section Persicaria Based on Fruit Characters.

1. Nut surface matt ..... *P. hydropiper*
1. Nut surface shiny.
2. Nuts biconvex or planoconvex (rarely tetragonal), Index 1.25-1.5 (1.6). *P. lapathifolium*
2. Nuts biconcave or planoconcave (rarely trigonous), Index 1.0-1.2 .....
3. Nuts very small, c. 2.0 mm. long ..... *P. minus*
3. Nuts larger than above.
4. Nuts c. 2.5 mm. long ..... *P. persicaria*
4. Nuts more than 3 mm. long ..... *P. mite*

When the perianth is present the following may be used:

1. Perianth glandular.
2. Perianth glands large and black ..... *P. hydropiper*
2. Perianth glands small and yellow ..... *P. lapathifolium*
1. Perianth eglandular.
(3 onwards as above).

J. Timson.

*Gordon L. Smith died on 8th December 1963: see obituary notice on p. 417. It is hoped to publish a paper embodying the main work on cytotaxonomy of the British material which Gordon was able to finish. Enquiries about the work can be made to Dr. S. M. Walters, Botany School, Cambridge.

SENECIO RUPESTRIS WALDST. & KIT. AND *SENECIO SQUALIDUS* L.

The taxonomy of plants closely related to the familiar Oxford Ragwort, *Senecio squalidus* L., is extremely confused. So far as I am aware, there has been no recent revision of those Sections of the genus to which belong the annual species like the common Groundsel, *Senecio vulgaris* L., and short-lived perennial species like *S. squalidus*.

De Candolle's treatment (1837) has *S. vulgaris* in the annual Section Obaejaceae, *S. squalidus* (as *S. chrysanthemifolius* Poir.) in the next annual section Obaejacoideae and *S. nebrodensis* L. (including *S. rupestris* Waldst. & Kit.) in a perennial Section Jacobaeae. Most subsequent treatments seem to have followed De Candolle.

Afzelius (1924), in a detailed cytological and embryological study of *Senecio*, recommends the transfer of *S. nebrodensis* to Obaejacoides; he shows that his material has $n=10$ like the other members of this Section, whereas *S. vulgaris* and the other Obaejaceae have $n=20$. He made the triploid hybrid *S. viscosus* × *nebrodensis* and investigated its cytology. Rosser's *S. cambrensis* (Rosser, 1955) is an allopolyploid species arising from a similar triploid hybrid between the two Sections (*S. vulgaris* × *squalidus*).

The species of the two Sections make excellent experimental material, and it is obvious that the taxonomic problems can usefully be tackled by cultivation and crossing experiments. The early genetical work of Trow (1913) showed how capitula can be emasculated by carefully removing the disc florets (which are hermaphrodite) and leaving the female ray florets to be pollinated.

The exhibit showed the plant called *S. rupestris* by central European botanists, grown from seed collected in the south Carpathians (Rumania); the distinction between this plant and British *S. squalidus* (also exhibited) seems impossible to make. Rosser's *S. cambrensis* was also shown.

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AFZELIUS, K., 1924, Embryologische und Zytologische Studien in Senecio und Verwandten Gattungen, *Acta Horti Bergiani*, **8**, 123-219.

DE CANDOLLE, A. P., 1837, *Prodromus Syst. Nat. Reg. Veg.*, **6**, 340-352.

ROSSER, E., 1955, A new British species of Senecio, *Watsonia*, **3**, 228-232.

TROW, A. H., 1913, On the inheritance of certain characters in the common Groundsel, Senecio vulgaris L., *Journ. Gen.*, **2**, 239-276.

S. M. WALTERS.

BRITISH PRIMULAS AND THEIR HYBRIDS

There are three British species in the Section *Primula*. The primrose (*P. vulgaris*) is a widespread plant of woodland, occurring in the open on the western fringe of Britain. The cowslip (*P. veris*) is a grassland plant of basic soils and the oxlip (*P. elatior*) occurs in woods on chalky boulder clay in two limited areas of east-central and eastern Enland.

Hybrids often occur where their habitats adjoin. *P. elatior* and *P. veris* meet rarely, and where they do meet hybrids are very scarce. The F_1 is vigorous and partly fertile, but F_2 or backcross plants are rarely, if ever, found in the wild. *P. veris* and *P. vulgaris* often meet on wood margins and in hedgerows, and usually F_1 hybrids occur in small numbers. This

cross, like the previous one, will only succeed where *P. veris* is the female parent. F_2 and backcross plants are rare.

P. elatior and *P. vulgaris* are largely mutually exclusive, but where they do meet "hybrid swarms" occur, with a bewildering array of forms. Either species can act as female parent in this cross, but it is more successful when *P. vulgaris* is the female. Though introgression between these species is occurring, they remain separate over most of their range.

There are thus three stages in isolation illustrated by these species. The pair with the weakest genetic barriers is *P. elatior* and *P. vulgaris;* next comes the pair *P. veris* and *P. vulgaris*; and finally, isolation between *P. veris* and *P. elatior* is almost complete.

Colour photographs, dissected corollas and calyces of the three species and their F_1 hybrids were exhibited, to demonstrate some of their major characteristics.—S. R. J. Woodell.

During the exhibition the following members showed slides in the Lecture Hall.

Mrs. M. Briggs ..... Poisonous plants
Mrs. A. N. Gibby ..... 1963 Field Meetings
Dr. F. H. Perring ..... Orkney plants
Dr. S. M. Walters ..... Czechoslovakian plants
Dr. D. P. Young ..... Cyprus plants

REPORT OF THE COUNCIL FOR 1963

The report and audited accounts cover the period from 1st January to 31st December 1963. Comparative figures for 1962 are given in brackets unless otherwise indicated.

During the year 198 (146) new members joined the Society and we lost 71 (45) by reason of death, resignation and the operation of Rule 29. The total membership at the end of the year was 1544 (1417) with a net gain of 127 (101). We record with great regret the death of two honorary members, G. O. Allen and Professor W. H. Camp.

In the year 1963 our total income exceeded our expenditure by £235. This is the result of a modest increase in our subscription income and in the item for interest received, together with a reduction in some of our outgoings compared with 1962, when we had to face some exceptional expenditure. The largest saving in expenditure arose from the smaller charge in respect of printing and distributing our journals, but this does not reflect any reduction in printing costs; it is due to the fact that progress on the next part of *Watsonia* is a little less advanced than it was a year ago, with the result that the debit in the General Income and Expenditure Account is less than the full cost of the two parts of this journal which we expect to print and distribute in the course of each year.

It will be noted that a new item appears amongst our expenses, being the cost of our stand at the Observer Wild Life Exhibition which was held in London during May 1963. The greater part of this expenditure is in respect of the display stand, but we also incurred modest expenditure in respect of cleaning, chair hire and so on whilst the Exhibition was open to the public.

Since the last Report was issued, the Society has been accepted by the Charity Commissioners for registration under the Charities Act, 1960. This is satisfactory as it removes the risk that we might be faced with a claim for Income Tax on royalties and other untaxed income received.

The transactions on the Publications Fund are set out in that account. During the year, a further £644 was received in respect of royalties on the *Atlas of the British Flora*, making a total so far received from that source of £1,336. Out of this income we have expended £28 in respect of printing the leaflet of corrections which were made in the second impression of the *Atlas*. At the turn of the year, Conference Reports Nos. 7 and 8 had been printed and were in course of distribution, with the result that the account has been debited with the full cost of printing and binding these two Reports, whereas, up to 31st December 1963, the income in respect of the sales of the Reports was only a proportion of what we expect to receive during the few months after publication. As a result of this, despite the additional royalties, the balance on the Fund has in-

creased only slightly during the year. Nevertheless, it has not been thought necessary to make any transfer in 1963 from the General Fund to the Publications Fund.

The year will be remembered by naturalists chiefly as that in which National Nature Week was held. The principal part played in this by the Society was in having a stand at the Observer Wild Life Exhibition in London. The Society's stand was of a semi-permanent nature and can, in consequence, be used for other exhibitions in future years. We are indebted to International Computers and Tabulators Limited for having allowed the machinery used for the Distribution Maps Scheme to form part of our stand and for having provided operators so that those visiting the Exhibition could see the tabulators at work. We are also grateful to Mr. J. F. M. Cannon for having supervised the erection of the stand and collected together the material that made it so attractive and successful.

For the Society itself, the year was noteworthy in the completion of the regional organisation begun four years ago. At a Regional Meeting held at Dublin in July and organised by Miss M. Scannell, the last of the regional representatives was elected to the Council and it was decided to set up an Irish Regional Committee. During the year the first Conference arranged by the Society outside London was held at Durham; Dr. Margaret E. Bradshaw acting as Local Secretary. The subject, the Conservation of the British Flora, proved to be popular and 122 members and friends attended. A Regional Meeting, organised by Mr. J. Ounsted, was also held at Reading and received considerable local support.

In addition to arranging the above meetings, the **Meetings Committee** organised the Annual Exhibition Meeting at the Department of Botany. British Museum (Natural History), which we hope may now be a permanent venue for this important annual event. There were 40 (28) exhibits. Following the meeting a President's Reception was held in the Board Room of the Museum.

Field meetings, which were arranged by the Field Secretary (P. C. Hall), were held at Tring, Hertfordshire; Hereford; Llangollen; Haverfordwest; Burnham-on-Crouch, Essex, for the study of grasses; Putney Heath, Surrey, for the study of brambles; Thirsk; Wooller; Northumberland; and Leamington Spa for the study of elms. Field Meetings were also held after the Conference at Durham and the Regional Meetings at Dublin and Reading. A joint meeting was also held in Kent and Sussex with members of the Société Botanique de France. The total attendance at all of these meetings was 155 (167). As the Distribution Maps Scheme is now reaching the end of its second phase, we thank Dr. Perring for his great assistance during the past ten years in arranging and leading so many field meetings of a different nature from those to which we had previously been accustomed.

The **Junior Activities Committee** arranged a full programme which included a residential meeting in the Western Alps, led by Mr. W. M. M.

Baron and Dr. C. T. Prime, and a visit to the Royal Botanic Gardens, Kew. One-day field meetings were held at Cannock Chase, Staffordshire; Cherry Hinton and Hayley Wood, Cambridgeshire; Monks Dale, Derbyshire; Torbay, South Devon; Norwood Green, Halifax; and Brockenhurst. It is to be regretted that a residential meeting arranged to take place at Alnwick, Northumberland, and two day meetings had to be cancelled through lack of support.

The **Development and Rules Committee** continued its discussions on the expansion of the Society's activities and on the publicity and educational aspects involved. In conjunction with the Junior Activities Committee it submitted proposals to the Council and the Council set up a Special Committee to explore long-term expansion of the Society's activities.

The year was a full one for the **Publications Committee** as two parts of both *Watsonia* and *Proceedings* were published. In addition to these we produced two Conference Reports. A report of the 1961 Conference on Local Floras was edited by P. J. Wanstall, the secretary of the committee; and a report of the Conference held at Durham in April 1963 on the Conservation of the British Flora was edited by E. Milne-Redhead. Sales of the six earlier Conference Reports continue to be satisfactory as are those of our other publications. We continue to be grateful to E. B. Bangerter for his very valuable services in handling the sales of our publications, and to the Trustees of the British Museum (Natural History) for allowing the storage of these publications at the Museum.

Problems of conservation have been prominent in the activities of the Society during the year and the **Conservation Committee** has been very active. Early in the year D. H. Dalby relinquished his office as secretary after a period of very valuable service to us and he has been succeeded by R. M. Harley. The Conference at Durham urged that a working party be set up to consider certain urgent educational and legal problems concerning the conservation of the British flora. In the implementation of this the Society has been instrumental in the formation of a Wild Plant Protection Working Party composed of representatives of the Council for Nature, the Naturalists' Trusts' Committee of the Society for the Promotion of Nature Reserves and our own Society. R. M. Harley, E. Milne-Redhead and Dr. S. M. Walters were appointed to represent the Society on this body. In addition to its own meetings, the Conservation Committee has had two liaison meetings with representatives of the Nature Conservancy. Among the many matters discussed at these meetings have been the need to establish a nature reserve to conserve the *Spartina* communities at Hythe, Southampton Water; the future of Borth Bog; the need to establish synthetic cornfield weed communities; the threats to

Morfa Harlech, Braunton Burrows and Bix Bottom, Oxfordshire and the desirability of conserving sections of disused canals.

The **Maps Committee** has been actively concerned with problems arising out of the final stages of the second phase of the Distribution Maps Scheme. Progress with the task of collecting material for a supplementary volume of the Atlas and other developments of the Scheme are the subjects of a separate report by the Director. We record again our gratitude to the Nature Conservancy for meeting the main burden of the cost of the Scheme, and to Cambridge University for continuing to provide accommodation for the staff and equipment.

The **Local Floras Committee** set up in 1962 has reported to the Council. Its main recommendations were that the Society publish a 'Guide for Local Flora writers', that means be sought to have maps published showing the Watsonian vice-county boundaries and that, when the situation is appropriate, activity in under-worked areas be initiated by the Society. The committee has been asked to continue its work and implement its report, which the Council has accepted and approved.

The **Committee for the Study of the Scottish Flora** arranged a full and interesting programme which included a meeting of a fortnight's duration to Norway, a ten days' visit to the Orkney Islands and meetings of shorter length to Rymer's Glen, Callander, Perthshire; Glen Creran and Ben Sgulaird, Argyllshire; Fort William; and Uamh Beag, Perthshire. An exhibition meeting was also held at the Royal Botanic Garden, Edinburgh. A full account of the work of this committee, the **Welsh Regional Committee** and the **Irish Regional Committee** will appear in *Proceedings*.

The Council thanks the many friends of the Society who have helped it to continue its work. The Society lacks permanent premises and we are grateful to the Nature Conservancy for allowing the Council to meet in its Conference Room; the Linnean Society of London; the Department of Botany, University College, London, and the Botany Department, Imperial College, for allowing our various committees to meet in their premises; the University of Durham for hospitality for our Conference and Annual General Meeting; and University College, Dublin, and the University of Reading for allowing our Regional Meetings to be held there. Finally, we thank our Honorary Auditors, Messrs. Price Waterhouse and Company, and the many members who have contributed to the activities of the Society.

27th February 1964.

J. E. Lousley, *President.*

J. G. Dony, *Secretary.*

GENERAL INCOME AND EXPENDITURE ACCOUNT

for the year ended 31st December 1963

1962				1962			
	Cost of Printing and Distributing:			£1,913	Subscriptions received ...		£2,099 12 11
	Proceedings, Vol. V, Part 1 (balance), Part 2 and provision for Part 3 ...	£653 9 11		192	Interest received		251 7 1
	Watsonia, Vol. V, Part 5 (balance), and provision for Part 6 and Vol. VI, Part 1 ...	969 10 11			Proceeds from Sales:		
£2,210			£1,623 0 10		*Proceedings* ...	£104 8 11	
50	Grant to Maps Scheme ...		50 0 0		*Watsonia* ...	181 14 7	
195	Printing Notices of Meetings		156 1 6		*Old B.E.C. Reports* ...	83 5 3	
75	Expenses of Council and Committee Meetings ...		64 11 3	445			369 8 9
305	General printing, stationery, postages, telephone and petty expenses		264 7 8	327	Excess of expenditure over income debited to General Fund		—
42	Field and Exhibition Meetings expenses, less fees received		46 15 2				
—	National Nature Week Exhibition expenses		280 9 10				
—	Excess of income over expenditure credited to General Fund		235 2 6				
£2,877			£2,720 8 9	£2,877			£2,720 8 9

PUBLICATIONS FUND

Transactions in 1963

1962				1962			
	Cost of printing and binding Conference Reports:			£1,651	Balance from 1962		£2,477 15 6
	Local Floras ...	£350 9 8			Sales:		
	Conservation of British Flora	360 3 5		95	*Conference Reports*	£249 7 4	
—			£710 13 1	7	*British Herbaria*	11 7 6	
£17	Prospectuses and publicity		38 17 2	23	*List of British Vascular Plants* (half share) ...	22 3 9	
—	*Atlas of the British Flora* (first list of corrections)		28 0 0	27	Other Publications ...	15 19 9	
2,478	Balance to 1964:						298 18 4
	General	£1,335 1 1		692	Royalties received on *Atlas of the British Flora* ...		644 0 0
	Atlas Royalties less outgoings	1,308 2 6					
			2,643 3 7				
£2,495			£3,420 13 10	£2,495			£3,420 13 10

BALANCE SHEET as at 31st December 1963

1962					1962				
	General Fund:					Investments:			
	Balance 1st January 1963	£1,434	9	7		4½% Defence Bonds	£1,000	0	0
	Add: Excess of income over expenditure for year	235	2	6		5% Defence Bonds	4,000	0	0
£1,434				£1,669	12	1	4,500		£5,000	0	0
2,478	Publications Fund			2,643	3	7		Cash at Bank:			
40	Benevolent Fund			39	11	0		Deposit Account	£1,000	0	0
975	Creditors for Printing and General Expenses			1,966	14	0		Current Account	443	1	8
137	Subscriptions received in Advance			124	1	0	564		1,443	1	8
£5,064				£6,443	1	8	£5,064		£6,443	1	8

J. C. GARDINER,
Hon. Treasurer.

Audited and found correct.
6th March 1964.

PRICE WATERHOUSE & CO.,
Hon. Auditors.

DISTRIBUTION MAPS SCHEME

TENTH ANNUAL REPORT TO 31st DECEMBER 1963

The last full year in the life of the Maps Scheme has now come to an end, but during it there have been developments which ensure that the work of the Scheme can continue into the future; that new records on the distribution of the British flora can be integrated with those already published in the *Atlas of the British Flora*.

As a result of the Conference on Distribution Studies which was held in Cambridge in November 1962, the Nature Conservancy has agreed that a Biological Data Centre should be set up as part of the new Experimental Station at Monks Wood, Abbots Ripton, Huntingdonshire. The Maps Scheme will have its new address early in 1964 and work will continue full time on the Vascular Plants until the B.S.B.I. scheme comes to an end on 31st March 1964. From then on the study of the distribution of vascular plants will be but one of the many concerns of the new organisation which I shall be in charge of. With an increased staff and the probable introduction of more up-to-date data-processing equipment, a comprehensive service will be established to give advice to biologists on methods to adopt in studying problems related to the populations and distribution of all organisms, and to encourage naturalists to take part in schemes so that a record as complete as possible can be built up of the diversity, abundance and range of biota which occur in the British Isles. The staff will also make a start on collecting together the wealth of information which at present lies scattered in museums and the literature, so that it can be consulted with ease by interested biologists.

The work of the centre is to be supervised by a small Committee appointed by the Scientific Policy of the Conservancy and drawn from the Conservancy and the main Societies or organisations which will be contributing information or using the machinery. In view of the pioneer role of the B.S.B.I. in this field, it is perhaps fitting that its Chairman should be Professor A. R. Clapham, Secretary of the Maps Committee for 14 years, and that Dr. S. M. Walters, for five years the director of the Maps Scheme, should also be a member.

The first impression of 3,000 of the *Atlas* was sold out early in the year and a second impression of 1,500 copies was issued. This included a number of additions and corrections. A pamphlet listing these corrections was prepared and has been sent to all members. Unfortunately, it is impossible to keep the *Atlas* up-to-date by issuing periodical lists of additions, as there are already over 100,000 of these. However, individual maps can be brought up-to-date on demand. Our hope is to produce a second, definitive, edition of the *Atlas* in about 1980.

The work of the Maps Scheme was one of the main attractions of the B.S.B.I. stand at National Nature Week in May. We were extremely fortunate in receiving the full cooperation of the suppliers of the punched-card equipment, International Computers and Tabulators, and we were liberally supplied with assistance—almost overwhelmed by it when the Duke of Edinburgh visited the stand towards the end of the week. I would like to express my thanks to John Cannon who, by the end of the week, was developing into a promising punched-card operator.

The same exhibit will be mounted at the International Botanical Congress in Edinburgh next August.

Records of critical groups have continued to flow into the Cambridge office and, where the data have proved adequate, maps have been prepared. Work on the critical genera *Alchemilla* and *Euphrasia* has been completed: that on *Hieracium* continues. Maps of most of the widespread hybrids have been prepared, including a number of *Mentha*. Valuable help in searching herbaria has been given by Dr. J. Milne of Edinburgh, Dr. B. Seddon of Cardiff, and Miss M. Scannell of Dublin, to all of whom I am most grateful.

General recording in underworked areas has not ceased: the field meeting to Orkney and the work of the Andersonian Naturalists of Glasgow in Lanarkshire have both made major contributions.

It has been a difficult year for staff. Mrs. B. Pascoe stayed with us until August, and Miss M. Brown until the middle of October, and I am grateful to both of them for their hard work and cheerful cooperation. Neither has been replaced by permanent staff; this cannot be done until the move to Monks Wood is made.

F. H. Perring,
Director.

DISTRIBUTION ATLAS ACCOUNT

for the year ended 31st December 1963

1962				1962			
	To Balance from 1962:				By Mechanisation Equipment:		
	Current Account £356 5 7				Equipment purchased ... £600 0 0		
	Deposit Account 250 0 0				Rental Charges and Maintenance 409 9 7		
£609			£606 5 7		Stationery ... 15 2 6		
3,685	,, Grant from Nature Conservancy		4,320 15 0	£543			£1,024 12
50	,, Grant from B.S.B.I. ...		50 0 0	82	,, Postages and Telephones		65 12 1
30	,, Interest Received		26 19 4	139	,, Printing and Stationery		101 13
35	,, Sales of Record Cards and Maps, etc.		72 6 6	2,844	,, Salaries, Wages and Clerical Assistance		2,811 1
				133	,, Travelling Expenses ...		156 11
				16	,, Insurance		1 0
	J. C. GARDINER,			9	,, Repairs		—
	Hon. Treasurer.			37	,, Other Expenses		1
				606	,, Balance to 1964 (being total funds in hand):		
					Current A/c. £415 12 6		
					Deposit A/c. 500 0 0		
							915 12
£4,409			£5,076 6 5	£4,409			£5,076 6

Audited and found correct.
6th March 1964.

PRICE WATERHOUSE & CO.,
Hon. Auditors.

COMMITTEE FOR THE STUDY OF THE SCOTTISH FLORA

NINTH ANNUAL REPORT TO 31st DECEMBER 1963

The Committee met twice, at Perth, in June and September, and held an Exhibition meeting in conjunction with the Botanical Society of Edinburgh on Saturday, 9th November, at the Royal Botanic Garden, Edinburgh, by kind permission of the Regius Keeper.

Five field meetings were arranged: Glen Creran and Ben Sgulaird, 1st and 2nd June, led by A. A. P. Slack (11); Fort William, 6th to 13th July, led by Miss E. P. Beattie (13); Norway, 3rd to 17th August, led by R. Mackechnie (20); Rymers Glen and Uamh Beag, near Callander, joint meetings with the Perthshire Naturalists' Society, 26th May and 8th September respectively (18 and 20). In addition, Dr. F. Perring kindly allowed members to assist him in Orkney, 14th August—24th August (15). The figures in brackets refer to numbers of members and friends present at each meeting.

The Norway meeting was undoubtedly the highlight of this programme and was very successful, providing a most interesting comparison with the Scottish mountain flora.

The Exhibition meeting was attended by about 75 people of whom 65 were present for the whole of the afternoon and evening. Dr. Derek Ratcliffe of Nature Conservancy gave a lecture entitled "Scottish Mountain Plants", which drew attention to the need for protection of this section of the Scottish flora. The following exhibits were shown:

Exhibits of plants from Norway (R. Mackechnie, A. McG. Stirling and Mrs. A. H. Somerville).
Scottish Aliens (Miss E. P. Beattie).
Scottish Records for 1963 and Aliens from Borthwick (Miss M. McCallum Webster).
Fife Aliens (G. Ballantyne).
Umbelliferae (Miss U. K. Duncan).
Colour photographs of Alpine plants and British plants (pressed) (D. and M. Parrish).
Alisma lanceolatum (B. W. Ribbons).

During the evening, following a buffet supper, colour slides were shown by various members of the party which visited Norway.

The principal Committee business during the year concerned the revision of the constitution to be comparable with that of B.S.B.I. Committees, the duties of which the C.S.S.F. has been carrying out in Scotland for the past two years. Both parent Societies agreed to make their financial contribution to the Committee available in advance, thus allowing easier management of monetary affairs. This move is much appreciated.

It was agreed to have a fairly restricted programme of field meetings

during 1964 owing to the International Botanical Congress in Edinburgh; it was felt that it would be difficult to find leaders during the period of the Congress as most of the botanists in Scotland will be involved in one way or another. One meeting of a week's duration has been arranged and four one or two-day meetings. The autumn Exhibition meeting is to be held in conjunction with the Andersonian Naturalists of Glasgow.

It was with great regret that the Committee learned of the death of the Field Secretary, Mrs. F. M. Elder, who had recently completed arrangements for the 1964 field meetings. Mrs. Elder was elected to the Committee in 1958, since when she had been responsible for organisation of all the field meetings, and the Committee were aware of the great debt they owed her. Mrs. Elder's death will be felt as a personal loss by all those who had the pleasure of working with her.

It is a pleasure to express thanks to the officers of the B.S.E. and B.S.B.I. and to those who have generously helped the Committee in carrying out its activities.—D. Ratcliffe.

WELSH REGION REPORT FOR 1962-63

The Welsh Region Committee came into being on 20th October 1962, when a meeting was convened by Dr. W. S. Lacey to consider the possibilities of forming a Welsh Region Committee of the Botanical Society of the British Isles. The Committee has met at Aberystwyth on four occasions and is grateful to Professor P. F. Wareing for allowing them to meet in the Department of Botany. The first meeting was concerned with drawing up a constitution for the Welsh Region, and the other meetings have been devoted to various aspects of publicity, planning of surveys, function of recorders and conservation.

Publicity.—Various ways of increasing membership in Wales have been discussed. Early publicity, using notices in journals, the B.B.C., and publicity leaflets were rather unsuccessful. It was found that personal contact produced far more satisfactory results than sending notices to teachers and other persons who were regarded as likely candidates for membership. It is felt that the only satisfactory way to increase membership is to be able to offer prospective members an attractive programme of meetings, surveys and publications. Plans are in hand to provide such a programme and it is intended to organise an extensive publicity campaign when it is possible to offer new members participation in a number of varied activities.

Meetings.—Five outdoor meetings have been arranged during the summer of 1963. These were to Newborough Warren, Llangorse Lake, Loggerheads, Borth Bog and Kenfig Burrows-Aberthaw Marshes. All meetings were reasonably well attended, particularly the one to Borth Bog which was supported by 30% of Welsh members, who turned out on a rather cool, wet, September day. A lecture morning was organised by Dr. B. Seddon at the National Museum of Wales on 27th September 1963. Lectures were given by Dr. Seddon on "Plants of Welsh Lakes"; Professor R. C. McLean on "Reflections on Botany"; and Dr. J. P. Savidge on "Experimental studies on the evolution of plant species". This meeting was attended by 24 members and visitors. The A.G.M. was held on the afternoon of 27th September at the National Museum of Wales. Dr. Savidge was elected as Chairman; Mrs. H. R. H. Vaughan as Vice-Chairman; Dr. Seddon as Secretary, and T. A. W. Davis as Field Secretary. P. M. Benoit, W. Condry, Dr. W. S. Lacey, L. Larsen, R. F. May, R. H. Roberts, Dr. A. J. E. Smith and C. Sinker were elected as Committee members. After the A.G.M. a discussion on the theme "Aims and Methods in Field Botany" was held. The main item of the discussion was a demonstration by Dr. Savidge and A. E. Wade on the use of a punch-card index for the storage, sorting and retrieving of information for the construction of keys to critical species and plant records.

Surveys.—A number of surveys have been organised in an attempt to find out more about certain aspects of the Welsh flora. The surveys

have been planned to cater for all types of members and most of them will run for several years.

RECORDERS.—The function of recorders has been the topic at several meetings. As a result of much discussion a scheme has been drawn up which should lead to a much more satisfactory organisation of plant recording in Wales.

CONSERVATION.—The Committee has taken a keen interest in conservation and has paid particular attention to Borth Bog, Llangorse Lake, Cors-y-Sarnau and Ynyslas Dunes.—J. P. SAVIDGE.

IRISH REGION REPORT FOR 1963

The Irish Regional Committee is now fully constituted. It consists of 10 members, all but one being members of the Society. The Chairman is Professor D. A. Webb and the Hon. Secretary Fr. J. Moore.

A field meeting is being arranged, to be held in West Cork from 15th to 22nd July 1964.

It has been decided to produce a Flora of Connemara and the Burren. This will depart from the traditional pattern by including one vice-county and parts of two others, but it is felt that the high botanical interest of the area justifies this step. Publication after four seasons of field work is aimed at. Some members of the committee are already engaged in planning practical details.—J. J. Moore.

ANNUAL GENERAL MEETING, 25th APRIL 1964

The Annual General Meeting of members of the Society was held in the Rooms of the Linnean Society, Burlington House, Piccadilly, London, W.1, on Saturday, 25th April 1964, at 12 noon.

The President (Mr. J. E. Lousley) was in the Chair, and 54 members were present.

The Minutes of the last Annual General Meeting, as printed in *Proceedings*, Vol. 5, Part 2, page 189, were adopted.

REPORT OF THE COUNCIL. The Report of the Council together with the accounts for the year 1963 had been printed and circulated to all members. There were no queries and the Report and accounts were adopted unanimously.

CHANGE OF RULES. Administration of Region V, North, had proved difficult because the Pennines formed a barrier which hindered easy communication between members on either side and it had been agreed by Council that this Region should be divided into two. This necessitated an additional Regional Representative and consequent changes in Rules 3 and 11. The Development and Rules Committee had proposed that the term of office of the President be reduced from four to two years. Council therefore recommended that the Rules be amended as follows:

(a) Rule 3. For 'nineteen' read 'twenty'.

(b) Rule 9 to read 'The President shall be elected to serve a term of two years and shall not be eligible for immediate re-election and the Vice-Presidents shall be elected to serve a term of two years and then be eligible for re-election for a further two years but not then eligible for immediate re-election: the other . . . .'.

(c) Rule 11. For 'seven' read 'eight'.

The adoption of these changes was proposed by Dr. Pritchard; seconded by Dr. West and carried unanimously.

ELECTION OF OFFICERS

The Council had nominated Dr. S. M. Walters (for re-election), Dr. J. G. Dony and Mr. Mackechnie as Vice-Presidents. They were elected unanimously. The Chairman expressed the thanks of the Society to the retiring Vice-Presidents, Miss C. M. Rob and Dr. E. F. Warburg. Dr. Warburg had completed eighteen years continuous service on Council, as Editor of *Watsonia* and then as Vice-President.

The Chairman expressed the gratitude of the Society to Dr. Dony who was retiring after eight years as Honorary General Secretary following seven years as Honorary Meetings Secretary. This was agreed with acclaim. Mr. E. B. Bangerter had been nominated by Council as Honorary General Secretary and his election was agreed unanimously. The Council

had nominated Mr. J. C. Gardiner for re-election as Honorary Treasurer, Mr. D. H. Kent and Dr. M. C. F. Proctor for re-election as Honorary Editors, Mrs. M. Briggs for election as Honorary Meetings Secretary (consequent on the retirement of Dr. H. M. J. Bowen after six years service in this office), Mr. P. C. Hall for re-election as Honorary Field Secretary and Mr. P. F. Hunt for re-election as Honorary Junior Activities Secretary, and they were elected unanimously.

Election of Members of Council

In accordance with the Rules, Dr. A. Melderis, Mr. R. S. R. Fitter, Miss M. McCallum Webster and Mr. T. G. Collett retired and three members were to be elected, the fourth place to be filled by a Regional Representative. Dr. R. M. Harley, Mr. D. McClintock and Dr. B. Seddon had been nominated and were elected, their seniority having been decided, in the order shown, by lots drawn by the Chairman.

Election of Honorary Members

The Council had nominated Dr. J. G. Dony, in recognition of his long service as an honorary officer, and Professor R. Nordhagen, in recognition of his services to botany generally and, in particular, of his assistance to members visiting Norway. Dr. Dony and Professor Nordhagen were elected with acclamation.

Election of Auditors

The Council recommended the election of Messrs. Price Waterhouse & Co. who had kindly agreed to continue this work on an honorary basis. This was agreed.

Other Business

Dr. Seddon drew attention to the *Bulletin of the Welsh Region*, of which copies of the second issue were available. The Chairman said that the Region's effort in producing this publication was much appreciated and set a precedent which might well be followed in other Regions.

Miss Brooke suggested that members throughout the country should make a habit of reporting meetings to the local Press. This would result in good publicity for the Society.

The Chairman asked for members' suggestions for storage of the Society's publications since the British Museum (Nat. Hist.) would shortly require the space which they had so kindly allowed the Society to use. Volunteers to help with the despatch of publications were also required.

The Chairman expressed thanks to Dr. Bowen and others for the morning's refreshments and declared the meeting closed at 12.42 p.m.

J. F. H.

ASSISTANT SECRETARY'S REPORT FOR 1963

During 1963, 198 new members joined the Society, this being 52 more than in 1962, and 107 more than in 1961. Of the new members 118 were Ordinary members, 58 Junior members, 15 Subscriber members and 7 Family members.

Losses were 71, this being 26 more than in 1962 and 16 more than in 1961. Of these 51 members resigned, 10 ceased to be members on the operation of Rule 29, and we deeply regret having to record the death of the following 10 members:—G. O. Allen, Miss M. I. Brown, Professor W. H. Camp, G. W. Coxhead, Mrs. H. R. Davies, H. S. King, J. McDonald, W. E. Palmer, H. Rowntree and G. L. Smith.

New Ordinary members are:—R. D. Addy, R. A. Alderson, Mrs. A. S. Alexander, D. J. Allen, E. J. Baldrey, F. J. Barker, Mrs. M. Barnes, Mrs. E. Beckett, Mrs. D. Beswick, B. R. Bleazard, Mrs. B. Bosanquet, A. J. Bourne, Miss P. J. Boyle, M. T. Brook, P. J. Brown, R. B. Burbidge, Miss R. Burdett, D. Burke, Miss L. B. Burt, R. H. Carpenter, Mrs. M. L. Castellan, E. J. Clement, W. Condry, R. J. Cotes, J. E. Cousens, R. J. Cundall, M. J. d'Alton, D. Davies, Miss S. B. Dickinson, Miss B. Dodds, Miss V. H. Dorrington, Miss G. E. Drennan, Mrs. B. D. Eagle, Dr. C. M. Fenn, C. H. Fisher, Miss D. M. Fletcher, J. H. Foster, Mrs. M. C. Foster, K. Fowler, Dr. A. R. Fraser, Miss L. S. Garrad, I. J. Gibson, G. F. Glover, Mrs. W. M. Gow, E. F. Greenwood, Mrs. B. Hammond, Mrs. P. M. Henning, S. W. Hewetson, R. F. S. Hooker, J. E. Hopkin, L. W. Howard, T. W. Howes, H. J. Hudson, A. W. Jones, C. Jones, P. A. R. Jones, Mrs. S. Jones, Miss F. Kearns, M. R. Kelly, J. G. Keylock, A. D. King, Miss A. E. Ladbrooke, L. N. H. Larter, R. M. Lee, K. A. Lye, G. A. Maclean, W. W. Mapleson, C. J. Marchant, Mrs. F. C. Miller, Rev. Fr. J. J. Moore, L. J. Moore, P. D. Moore, Miss K. P. Moran, Mrs. V. Morgan, J. E. G. Morris, Miss Y. L. Moscati, Mrs. P. J. Mudie, T. R. Musson, G. R. Naylor, L. Nesbitt, Miss B. A. Noddle, J. E. O'Donovan, W. H. E. B. Page, Mrs. D. E. M. Paish, Mrs. A. A. Farris, Miss O. M. Peck, L. H. Pinkess, N. Popplewell, J. Potter, A. W. Punter, Miss C. F. A. Rayner, Dr. D. G. Rowlands, Mrs. M. E. Russell, A. J. Skinner, G. Smith, J. B. Smith, Mrs. M. J. Standen, J. Taplin, Miss M. E. Thomas, R. E. Thomas, M. G. V. Thompson, Dr. A. Todd, Miss S. J. Vine, Mrs. B. Waite, Dr. T. G. Walker, C. W. Ward, Mrs. N. K. Webb, M. Wenham, A. J. White, S. Williamson, C. W. Willink, Miss J. F. Wilson, Miss G. M. Wood, Mrs. R. M. Wood, Mrs. F. L. Woodman, Mrs. M. Wraith (rejoined), Lady Sarah Wright, G. Wynne.

New Junior members are:—M. Anderson, G. K. Baggott, F. A. Bisby, Miss J. Bowen, D. Bridgen, Miss R. F. Brighouse, J. A. Bryant, Miss R. Carpenter, T. Carr, Miss F. R. Carter, R. Cook, D. J. Crossley, A. J. Davy, Miss J. Dodd, Miss B. S. Field, A. J. Gaston, C. Gibson, Miss A. Groom, R. E. Groom, Miss V. D. Groom, C. P. Harding, A. T. Herbert, F. Horsman, M. J. Hutchinson, D. Jenkins, R. E. Jones, A. J. Knight, Miss M. J. Lindsay, A.

J. C. Malloch, Miss J. Mapleson, D. Morris, A. J. Morton, B. Moss, T. Oldham, Miss V. S. J. Paish, D. J. Pearce, Miss M. Perks, P. H. Pitkin, A. J. Popplewell, R. Popplewell, D. J. Price, Miss S. C. Quarterman, G. P. Richards, Miss C. A. Robinson, T. C. Rochford, A. J. Silverside, Miss P. J. Simpson, G. R. Stewart, R. J. Swindells, Miss A. M. Thomas, I. S. Tribe, G. H. C. White, P. Wilkinson, J. Williams, P. T. Williams, J. B. Wilson, Miss J. Wiseman, B. Wurzell.

New Subscriber members are:—Bembridge School; Bilston Girls' High School; Priestlands School, Brockenhurst; Cannock Grammar School; Derby School; The Lady Eleanor Holles School, Hampton; Ilford County High School for Girls; Lowestoft and North Suffolk Field Naturalists' Club; Bibliotheque de la Faculte de Pharmacie, Paris; Stanbridge School; Sunderland Public Libraries Museum and Art Gallery; Twickenham County School; Maria Grey Training College, Twickenham; Welwyn Natural History Society; William and Mary College Library, Williamsburg.

New Family members are:—Mrs. J. H. Chandler, A. C. M. Duncan, Mrs. R. F. S. Hooker, Mrs. P. F. Hunt, Mrs. W. W. Mapleson, Mrs. N. Popplewell, Mrs. J. Taplin.

D. H. KENT.

January 1964.

FIELD MEETINGS, 1962*

†MAY 12th and 13th, and JUNE 23rd and 24th, 1962. LANARK.

Leaders: W. A. Scott and R. Mackechnie.

The Lanark meetings of May and June, 1962, were organised in response to a suggestion from Dr. Perring that, by comparison with the Lanark square itself, some of the neighbouring squares might be expected to produce additional records. At the request of the Committee for the Study of the Scottish Flora the Andersonian Naturalists of Glasgow included the meetings in their excursion programme for the year, thus renewing a collaboration which proved as happy and fruitful on this occasion as it had in the past.

The meetings extended over four full days; the two leaders were present on each of them. Attending on two days were Miss McClure, Miss Third, Mrs. Scott and Messrs. Bell, Rieley, Stirling and Todd, while Misses Cook, Kirk, McFarlane and Stewart, with Mrs. Elder, Mrs Mackie and Messrs. Recry, Rodway and Wylie were each present on one day.

In the Lesmahagon district (26/73) the Logan Water and Birkenhead Burn areas were visited; these bleak upland pastures proved richer than they looked, and provided several interesting species:—*Apium nodiflorum, Salix phylicifolia, Chrysosplenium alternifolium, Sedum villosum, Saxifraga granulata, Carex laevigata, Gymnadenia conopsea, Carex paniculata* and *Vaccinium oxycoccos.*

The gorge of the River Calder at Canderside Mill, near Stonehouse (26/74), provided a striking contrast; the lush vegetation of this sheltered valley contained a larger number of species but fewer were of special interest:—*Campanula latifolia, Pimpinella saxifraga, Mimulus guttatus* and *Cardaria draba.*

Millheugh, on the River Avon near Larkhall, and the nearby wooded policies of Morgan Glen (26/75), yielded *Stellaria nemorum, Salix phylicifolia, Hypericum dubium, Ononis repens, Valerianella locusta, Circaea intermedia, Conium maculatum* and *Carex sylvatica.*

Near Gieldshields, in the Carluke square (26/85) a pond in a damp pasture produced *Potamogeton alpinus,* while the upper reaches of the Mouse Water, in the Carstairs square (26/94), added *Ranunculus fluitans, Mentha* × *verticillata, M.* × *niliaca* and *Alchemilla filicaulis,* subsp. *vestita.*

On the shores of White Loch, in the same square, several local species appeared:—*Antennaria dioica, Galium mollugo, Genista anglica* and *Viola canina.*

It was left to the last day in Lanarkshire to produce the major surprise of the meeting—a small patch of *Lycopodium alpinum* on the outskirts of the mining village of Wilsontown (26/95). Here, by the uppermost

*Field Meetings arranged by the Committee for the Study of the Scottish Flora are indicated by †.

reaches of the Mouse Water, *Botrychium lunaria* and *Origanum vulgare* were also seen. There were no more fireworks on this dull cold day when rain never seemed far away; most of the day was occupied in walking southward into the Carstairs square (26/94), to the persistent accompaniment of a strong north-west wind.

The final result of the Lanark meeting is worth noting. Prior to May 1962 the aggregate of records for the six squares visited was about 1230; during the four days of the meeting some 330 were added. Those members who have themselves had experience of the difficulty of making a substantial number of additions in a square where recording has already taken place will appreciate that the leaders feel well satisfied with this result. It says much for the energy and enthusiasm of the recorders that so satisfactory a total was achieved. In particular we are especially grateful to Mrs. Elder, Mrs. Mackie, Miss McClure and Mr. Stirling for putting their cars at our disposal; without their generous help the amount of cross-country movement we accomplished would not have been possible.—W. A. Scott and R. Mackechnie.

It seems appropriate to add a personal note. Planning the routes to be followed was largely the work of Mr Scott; his detailed knowledge of local geography ensured that, for the most part, we visited the relatively unrecorded areas and also that movement from one point to the next was undertaken with the minimum expenditure of time. In addition, the very generous hospitality of Mr. and Mrs. Scott to myself during these two week-ends not only saved me much time and trouble but also added greatly to my enjoyment of the meetings.—R. Mackechnie.

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†MAY 18th to 21st, 1962. KINTYRE.

Leader: A. A. Slack.

The party assembled at about 9.00 p.m. at the Argyll Arms Hotel in Campbeltown and soon dispersed after arranging to meet next morning at the Westbank Guest House where most of the members were staying.

Next morning the weather was dry but breezy and the party went to Machribanish to see whether the tentative arrangements made to go by boat to the bay below Largybaan were feasible. The sea was too rough, however, and, slightly disappointed, we put the alternative plan into action. The party drove by the rough steep road to Largybaan and walked to the edge of the cliffs. Some members were content to explore around here where *Saxifraga oppositifolia* and *S. hypnoides* were seen with some other interesting plants (altitude about 1,000 ft.). Several, however, faced the descent of the cliffs, which is rough but not dangerous, to a point about 300 ft. above the sea where Mr. Kenneth had found the second colony of *Oxytropis* in this area. Several of the clumps of the *Oxytropis* were in flower and it was at once seen that the prevailing colour was a sort of buff, with yellow streaks on the standard and a purple keel as in typical *O. campestris*. There were, however, some clumps in which the purple colour was considerably more diffused, spreading on to the standard, but nowhere forming the deep purple standard typical of *O. halleri*. After

taking photographs we returned to join the cliff-top party in a snack lunch partaken in what was now a cold wind from the Atlantic. We then migrated about half a mile to the next cliff-top from which we could look look down on the other *Oxytropis* station which I had discovered a little over a year before. A few plants were in bud, but to see the locality properly, another descent of the cliff was necessary. On the way, a colony of *Dryas octopetala* was seen near the cliff-top fully half a mile from the other station for this plant found last year. Some of the party returned to Largybaan but others explored the base of the rocks on which the *Oxytropis* grows and collected flowering specimens from here also.

Sunday, 20th May was spent in the Southend district, the party splitting up into several groups. One group drove to the Gap near the Mull Lighthouse and explored two small bays south of the lighthouse. *Anagallis tenella* and *Spergularia rupicola* were seen and also the only known colony of *Arctostaphylos uva-ursi* in Kintyre. *Taraxacum laevigatum* appears to be the common dandelion here. On the way back *Salix herbacea* was noted on the summit near the Gap.

Other parties explored the sand and gravel around Carskey Bay and Southend Bay. *Mertensia maritima* is still doing well here, as is the *Spergularia rupicola* beside St. Columba's Footsteps. Unfortunately, two members of the party got their cars stuck in sand and gravel and our evening reunion was slightly disorganised. We should like to take this opportunity of thanking those of the party who stayed at the Westbank Guest House for entertaining us each evening.

On Monday, 21st May we made our way up Kintyre's east coast, stopping at intervals to explore some rocky sections and a wooded part. Little was added, however, and the rock on which *Asplenium obovatum* grows could not be found. Finally, we stopped for a short time a few miles south of Ardrishaig to see a great abundance of *Hymenophyllum tunbrigense* in a wooded ravine.—A. A. Slack.

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†JUNE 2nd, 1962. MOFFAT

Leader: A. McG. Stirling

The party numbering fourteen assembled on the parking ground at the Grey Mare's Tail and was soon en route to examine the flora in the vicinity of the fall. The interesting species seen here included *Saxifraga oppositifolia, S. hypnoides, Cochlearia alpina, Oxyria digyna, Thalictrum minus Vicia sylvatica* and *Asplenium viride.*

Returning to the cars, lunch was taken, despite determined efforts by some of the local sheep to deprive us of our sandwiches. The party then proceeded by car to Capplegill from which point the course of the Blackhope Burn was followed for about one mile, the following plants being seen during the walk: *Saxifraga stellaris* (at the remarkably low altitude of 700 ft.), *Salix nigricans, Rubus saxatilis, Leontodon hispidus, Prunus padus* and *Carex laevigata. Ajuga pyramidalis,* reported from this locality in 1889 by J. T. Johnston, eluded us, however.

Some of the more energetic members of the party now ascended the

south-west slope of the valley by a gully in which were seen *Silene maritima* and *Oxyria digyna*, and eventually reached the summit of Swatle Fell where we rested amid a typical mountain-top community containing *Carex bigelowii* and *Salix herbacea*. During the return nothing of interest was noted until a steep-sided rocky valley was reached just above and to the east of Capplegill. Here *Vicia sylvatica* and *Silene maritima* were again seen together with *Helictotrichon pratense* and *Pimpinella saxifraga*. *Cryptogramma crispa* was common in scree just above the road.

The party reassembled at the cars and had tea, after which members went their various ways, having spent a very pleasant day in favourable weather. It was regretted that the limited time available did not allow us to visit some of the more classic localities of the Moffat hills.

The Distribution Maps Scheme benefited to the extent of thirteen common species added to the list for square 36/11 and ten common species for 36/01.—A. McG. Stirling.

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†JUNE 30th to JULY 7th, 1962. GLEN AFFRIC and EAST ROSS

Leader: Miss U. K. Duncan

When the party assembled at the Conon Hotel, it was found that those arriving early had not wasted their time. While exploring the banks of the River Conon near the hotel, Mr. Hunt, Mr. Stirling and Mr. Summerhayes had discovered the N. American alien, *Physocarpus opulifolius*, well naturalised there. *Euphorbia dulcis*, known for seventy years by this river (*Ann. Scot. Nat. Hist.*, **9**, 59, 1894) and *Festuca rubra* var. *megastachya* were also seen. It was resolved to return here later in the week for a thorough exploration of the flora.

July 1st was devoted to the Black Isle, a fertile peninsula between the Beauly and Cromarty firths in East Ross. The dry, rather cold weather with exceptionally clear views of the mountains of Inverness-shire, Ross-shire, Sutherland and possibly Caithness made energetic botanising a pleasure, and two localities on the east coast were tackled with enthusiasm. At Munlochy Bay over thirty species were added to the grid square, including *Eriophorum latifolium* and *Carex capillaris* in a base-rich bog, the latter unexpectedly in a locality only just above sea level. *Corallorhiza* was re-visited and some fairly fresh flowers seen, as well as fruiting plants of both this and last season. *Dactylorchis maculata* subsp. *ericetorum* and *D. purpurella* were common, and Mr. Summerhayes pointed out some hybrids. Other plants noticed were *Alchemilla filicaulis*, *A. glabra*, *Botrychium*, *Cochlearia anglica*, *Gymnadenia conopsea*, *Platanthera bifolia* and *Trientalis*. In wetter spots *Eleocharis uniglumis* and *Blysmus rufus* were typical of the vegetation of the landward side of salt marshes in north-east Scotland. A rose collected here by Miss Duncan turned out to be *Rosa rubiginosa* × *sherardii*, and on another visit later in the week Mr. Mackechnie found *Glyceria declinata*.

After a picnic lunch the party proceeded north-eastwards to the mouth of the Ethie Burn, a spot well known to geologists for its fossils,

Here *Oxytropis halleri* was seen after some awkward scrambling, together with *Astragalus danicus* (of which there was one plant with white flowers), and some rather dead *Potentilla tabernaemontani* in its most northerly British locality. Mr. Stirling started on a collection of *Hieracia*, finding *Hieracium anglicum*, *H. euprepes*, *H. caesiomurorum* and *H. iricum*, and at least a dozen plants of *Atropa belladonna* were discovered ranged along the shore just above high water mark, giving the impression that seed had been washed up as the result of wrecks (of which much evidence was to be seen in the remains of spars and barrels). However, as it required some imagination to visualise kegs of the berries of this poisonous plant, no further time was wasted on discussion as to how it got there and the party dismissed the matter, after photographs had been taken. Also seen on the cliffs and shore were *Carduus tenuiflorus*, *Carlina vulgaris*, *Cynoglossum officinale*, *Geranium sanguineum*, *Helianthemum chamaecistus* and *Schoenus nigricans*, showing the calcareous nature of the sandstone.

Messrs Slack and Stirling returned to the cars by way of the bed of the stream, which required even more skill to negotiate than had the face of the cliff, adding several species to the grid square in this unusually sheltered habitat, among them *Phyllitis scolopendrium*, *Carex sylvatica* (both apparently new to East Ross), *Vicia sylvatica*, *Rubus saxatilis* and *Circaea intermedia*. (The other common *Carices* required, *C. caryophyllea* and *C. hirta*, were not found during the week.) In the evening, Mr. Stollery, a member of the Inverness Botany Group who had accompanied us during the day, showed us *Dianthus deltoides* in quantity, though only just coming into flower, on a steep bank at North Kessock. Can Druce have known of this particular locality when he included it for this vice-county in the *Comital Flora*, and bracketed it as possibly not native?

As one of the objectives of the meeting was to assess the damage, if any, done to the flora of the Loch Affric area in the neighbouring vice-county of Easterness, following the building of the dams at Lochs Mullardoch and Affric by the North of Scotland Hydro-Electric Board, it was resolved to spend July 2nd at Mullardoch in Glen Cannich. Professor Clapham had kindly made available the notes written after the visit in 1947 of a larger B.S.B.I. party (see also *Year Book*, 1949, pp. 36-40), and we were fortunate to have with us one member of the previous expedition, Miss E. J. Gibbons, whose memories of the area as it was at that time (before the construction of the dams) were invaluable to us. On the present occasion we numbered only seven, and of these two set out to investigate the southern side of Loch Mullardoch and two the northern, while the remaining three struck north-westwards to the cliffs above Loch Tuill Bhearnach (which lie in East Ross). On attaining a height of 3,000 ft. and higher, the long-distance party was hampered by snow which projected in huge drifts over the upper cliffs. The cold spring and summer had allowed little growth at these altitudes, and one member who reached the summit of Sgurr na Lapaich (not to be confused with the mountain of the same name about six miles away in Easterness) reported only *Silene acaulis* and *Luzula spicata* in flower. Lower down *Epilobium anagallidifolium*, *Sibbaldia*, *Sedum rosea*, *Hieracium*

holosericeum and *Juncus trifidus* were seen, but not *Alchemilla glomerulans* which had been noted there by the 1947 party. *Loiseleuria*, *Arctous* and *Chamaepericlymenum* were found by the Allt Taige. More useful work, perhaps, was done by the lower parties (who had to endure a bitter north-east wind all day). *Hammarbya* was re-found and *Leucorchis albida* observed in several places on the hillside. Mr. Summerhayes also collected *Dactylorchis incarnata* subsp. *pulchella*. As expected, aquatic vegetation seemed to be absent, plants such as *Calluna vulgaris* and *Myrrhis odorata* extending right down into the water (where they appeared to be thriving). It was generally agreed that it would be years, if ever, before a truly littoral flora was re-formed. Not only had the construction of the dam raised the general water level by 113 feet (according to data supplied by the previous B.S.B.I. party), but this level appeared to fluctuate in a single season by at least 20 feet, judged by the "flotsam" seen along the margin. In fact the keeper's wife (from whom we gleaned some information in the absence of her husband) told us that in February of this year the water had come right over the top of the dam. The most interesting plants noticed were *Sherardia arvensis* and *Epilobium nerterioides*, both evidently introductions during the construction of the dam. The latter may be expected to spread widely in stony rills in the vicinity. As far as amenity value is concerned, Loch Mullardoch has been spoilt, not by the dam, but by the hundreds of dead trees on the south side. This damage had been caused by a fire since 1947 but we were unable to find out how it happened.

Returning home down Glen Cannich (v.c. 96) several short stops were made. Perhaps the most unexpected plant seen was *Scirpus fluitans* and Mr. Stirling found *Hieracium schmidtii* on roadside rocks near Kilmorack. *Mycelis* was common in this area, and an island in the river was covered with a *Lupinus* (probably *L. nootkatensis*).

On July 3rd attention was centred on the little-explored area west of Garve (in v.c. 106) where there were several underworked squares. Among additions were *Pinguicula lusitanica*, a rare plant in the north-east but detected by Mr. Slack in several localities in the vice-county, and *Alchemilla glomerulans* and *A. wichurae*, of which fine specimens were brought in, also by Mr. Slack, from a new station on the Fannich rocks. Mr. Hunt found *Lathyrus montanus* var. *tenuifolius* and *Carex pauciflora* near Loch Achanalt, and *Sparganium minimum* in a bog by Loch Achonachie. *Frangula alnus* occurred in quantity by Loch Achilty, where it was first discovered by F. Buchanan White in 1868, while *Betula nana* persisted at Loch a' Bhealach, south of Lochluichart, where *Arctous* was also seen.

The weather remaining dry on the following day, it was resolved to visit the head of Glen Affric (approximately six miles south of Mullardoch and also in Easterness). Three additional members having arrived, our party now numbered 10 with four cars, so we were able to cover more ground. Too much snow still lay on the high summits for Mam Soul to be attempted, so members concentrated on Lochs Affric and Benevean. The former, having been preserved from "desecration" by the Hydro-Electric Board, still retained its natural beauty as well as its water plants. The aquatic vegetation consisted of abundant *Juncus bulbosus* f.

fluitans as well as *Myriophyllum alterniflorum*, *Potamogeton natans*, *Lobelia dortmanna*, *Isoetes lacustris* and *Nitella opaca*. Two members embarked in a dinghy that had travelled conveniently on the top of Mr. Slack's car, but which it had not been possible to use on Loch Mullardoch owing to the choppy surface. Arriving at the west end of the loch, Miss Duncan noticed *Carex aquatilis* and Mr. Slack *Utricularia neglecta*. The east end of Loch Affric was meanwhile explored by the rest of the party who re-found *Goodyera*, *Listera cordata*, *Polygonum viviparum*, *Drosera* × *obovata*, *Carex paupercula* and *C. pauciflora* (the last three by Mr. Mackechnie). Here Mrs. Elder and Mr. Ribbons noticed *Vaccinium microcarpum*, of special interest because it had appeared in the 1947 lists merely as *Oxycoccos*, leaves only having been found. *Ranunculus bulbosus* was an unexpected find by Affric Lodge, and *Carex curta* was also seen there.

It was not possible to do justice to Loch Benevean, whose area had been greatly extended by its conversion into a dam. Its surface had been nearly doubled and the old road replaced by a new one higher up. Miss Gibbons noticed that the promontory on which she had found *Goodyera repens* and *Listera cordata* in 1947 had become a small island, scarcely visible above the water, and it seemed hard to believe that this loch had been raised by only 25 feet, so greatly had its character changed. Mr. Summerhayes, investigating the wood above the new road, found *Trollius europaeus* and *Geranium sylvaticum*. On the way back *Bromus thominii* as well as *B. mollis* × *thominii* were collected by Mr. Hunt on the roadside by Dog Fall.

In considering the trees of the Cannich area, one line of research may be suggested. In the notes made by the 1947 party the dominant trees are given as *Pinus sylvestris* subsp. *scotica* and the northern form of *Betula pubescens* (*B. pubescens* subsp. *odorata*). But Mr. Wilmott also noticed the hybrid *B. glutinosa* (*pubescens*) × *pendula*. Members of our own party to Glen Affric noticed that some trees seemed to approach *B. pendula*. Is it not likely that a large part of the *Betula* population of central and north Scotland which is not clearly referable to either species is in fact the hybrid?

The next day (July 5th) the party set off to visit the Tain area. A stop was made at the little village of Hilton to see *Mertensia*, *Ligusticum scoticum*, a handsome pink form of *Dactylorchis purpurella*, *Thalictrum minus* subsp. *arenarium*, *Catabrosa* and *Agropyron junceiforme* × *repens* var. *caesium* (reported at Kew to be an interesting hybrid). Hilton was found to be a delightfully weedy spot, and *Anthriscus caucalis* and *Descurainia sophia* were among the plants seen on rubbish-heaps, which seemed to be more numerous than habitations. Continuing in the direction of Tain, Loch Eye appeared so attractive that it was agreed by general assent to make a halt there, but nothing more interesting was seen than *Baldellia* and four species of *Eleocharis* (*quinqueflora*, *multicaulis*, *palustris* and *uniglumis*).

Our determination to explore the large area of sand and mud flats near Tain was thwarted by the alarming sight of red flags indicating bombing practice, though in fact this did not begin till a couple of hours later. The strip of dune adjoining the golf course was adjudged to be safe, and in a small enclosure fenced off by the Forestry Commission (and

consequently ungrazed) several interesting plants were found. These included *Equisetum variegatum*, *Thalictrum minus* subsp. *arenarium*, *Draba incana* and *Rumex tenuifolius*, together with *Botrychium lunaria* and *Pinguicula vulgaris*, growing among what one of the party described as "wind-grazed" bushes of juniper. The first three had been noticed near Tain (no doubt in this locality) by E. S. Marshall and later by G. C. Druce (*Ann. Scot. Nat. Hist.*, **48**: 227, 228 and 234, 1903), but for some reason Druce omitted to include the *Equisetum* in the *Comital Flora*. Its original finder may have been a Mr. Stables, as a specimen of his (undated, but probably before 1840) from this locality can be seen in the herbarium of Glasgow University. It was sad to think that this pleasant little oasis would eventually be covered by Scots pine which we saw everywhere, most of the trees still only about 6 inches high. Miss North noticed a small pale yellow form of *Anthyllis vulneraria* and the glandular form of *Cerastium holosteoides* was seen by Mr. Summerhayes nearby. While the main party was thus occupied, the rest visited Tarbat Ness where *Carlina*, *Carex distans* and *C. lepidocarpa* were found near the lighthouse. A detour on the return journey to Cononbridge gave us *Goodyera repens* with flowers just about to open, at Kimrive near Invergordon, and *Listera cordata*, discovered here by Mr. Summerhayes in groups of up to twenty-four plants.

Our last complete day, July 6th, was given up to the banks of the River Conon near our hotel, with a brief visit to the Dingwall and Black Isle areas. By the river *Physocarpus opulifolius* was seen in perfect condition but another alien, *Rudbeckia laciniata*, was unfortunately not quite out. *Hieracium argenteum* was found on the shingle and *Rubus nemoralis* on the bank. In this sheltered locality plants grew to a large size, *Cirsium heterophyllum* attaining a height of five feet and *Agropyron caninum* three. Other species seen here were *Veronica montana*, *Callitriche intermedia* and *Carex vesicaria*. A nice find near by was made by Miss Gibbons and Mr. Ribbons in the shape of *Lamium maculatum* (form with unspotted leaves), and it was felt that such aliens would in future spread greatly and form a considerable part of the flora near villages. A short diversion was then made to Dingwall where Miss Gibbons had discovered a wood with *Dactylorchis fuchsii* and *Listera ovata*, both seeming rather scarce in this vice-county. Not far away she had another plant to show us, this time *Catabrosa aquatica*, abundant in a ditch. Other species seen in the neighbourhood of Dingwall were *Hypericum hirsutum* in what may be its most northerly station in Britain, and *Dryopteris carthusiana*.

The main part of the day was spent in investigating an extensive stretch of bog and loch at Easter Kinkell, following a report that interesting orchids were to be seen there. Although no new species was in fact found, *Dactylorchis purpurella*, *Platanthera bifolia* and *Gymnadenia conopsea* were seen in their hundreds, together with a small quantity of *Goodyera* and *Pyrola minor*. *Genista anglica* was also noticed here, and some native-looking *Ribes nigrum*. Some of the party who went on to Kilmuir did some useful space-filling for the Maps Scheme, with good finds in *Hieracium langwellense* and *H. cravoniense*, collected by Mr.

Stirling. A bramble from the roadside near Tore is thought by Mr. Edees to be *R. nessensis.*

The backward season was a disadvantage to us at higher altitudes, but in the lowlands resulted in a wonderful display of spring plants that continued to flower at the same time as the summer ones. Particularly admired was the abundant blossom on the *Sarothamnus* bushes, which was certainly not expected in the month of July.—URSULA K. DUNCAN.

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†JULY 7th to 14th, 1962. EAST SUTHERLAND

Leader: J. ANTHONY

The meeting at Helmsdale was attended by twelve members with headquarters at the Belgrave Arms Hotel. The purpose of the meeting was to explore some of the lesser known areas in the hills of East Sutherland (v.c. 107). The weather was favourable and as a result many additions were made to the distribution of common species and the following new vice-county records were noted:—On Ben Griam More, *Salix myrsinites* (old record confirmed), *Galium sterneri, Luzula spicata* and *Epilobium anagallidifolium;* on Ben Griam Beg, *Orthilia secunda, Asplenium viride, Rhinanthus borealis, Salix myrsinites* and *Polystichum lonchitis;* on Strath Carnie, *Eriophorum latifolium;* and in Glen Loth, *Chamaepericlymenum suecicum, Sedum rosea, Saxifraga stellaris* and *Lycopodium alpinum.*

The following list notes some of the less common plants found in v.c. 107. In Glen Loth (29/91) the most notable species were *Ajuga reptans, Carex dioica, Chrysosplenium oppositifolium, Eleocharis pauciflora, Lemna minor, Listera cordata, Dactylorchis incarnata, Ranunculus ficaria, Trientalis europaea, Sparganium angustifolium* and *Polygala oxyptera.* At the head of Glen Loth stands Ben Uarie (2046ft.) where mountain species noted were *Alchemilla alpina, Chamaepericlymenum suecicum, Festuca vivipara, Rubus chamaemorus, Salix herbacea, Saxifraga hypnoides, S. stellaris, Sedum rosea, Selaginella selaginoides, Solidago virgaurea* and *Thelypteris dryopteris.* In the north of this square (29/91) at Torrich many marsh plants were recorded—*Crepis paludosa, Drosera anglica, Hammarbya paludosa, Myosotis secunda, Nymphaea alba, Polygala vulgaris* and *Veronica scutellata.*

On the Caithness-Sutherland border stand the Knockfin Heights (1418 ft.), an area composed of innumerable bog pools. Here some 47 species new to square 29/93 were recorded. Amongst these were *Ajuga pyramidalis, Crepis paludosa, Eleocharis pauciflora, Epilobium obscurum, Hippuris vulgaris, Orthilia secunda, Rubus saxatilis, Solidago virgaurea, Veronica scutellata* and *Utricularia intermedia.*

On Ben Griam More interesting species were *Ajuga reptans, Alchemilla filicaulis, Epilobium anagallidifolium, Galium sterneri, Luzula spicata, Oxyria digyna, Salix myrsinites, Trollius europaeus, Vaccinium uliginosum* and *Veronica humifusa.* Ben Griam Beag yielded *Asplenium viride, Galium boreale, Leucorchis albida, Lycopodium clavatum, L. alpinum, Polystichum lonchitis, Potentilla crantzii, Orthilia secunda, Rhinanthus borealis, Rubus saxatilis, Salix myrsinites, Saussurea alpina* and

Trientalis europaea. In Strath Carnie (28/97) among the species noted were *Agrimonia eupatoria*, *Ajuga pyramidalis*, *Apium inundatum* (a new vice-county record), *Galium odoratum*, *Eleocharis uniglumis*, *Eriophorum latifolium*, *Glyceria maxima* (a new vice-county record), *Hippuris vulgaris*, *Melica nutans*, *M. uniflora*, *Orthilia secunda*, *Sorbus rupicola* and *Viburnum opulus*.

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†AUGUST 18th to 25th, 1962. GARTH, PERTHSHIRE.

Leader: Mrs. FLORA M. ELDER.

This Junior meeting, with headquarters in Garth Youth Hostel and Field Study Centre, was international in its composition. There were thirteen members present. Dr. Alois Patzak, from the Botany Department of the Museum of Natural History in Vienna, was in Scotland for the first time and was especially interested in ferns and the Labiates.

Two young men from Holland, Freddy Tjallingii and Caspar Lambrecntzen, now in New Zealand doing soil conservation, were also on their first visit. From Uppingham, England, John Ironside Wood was very interested in the plants of the Garth area, particularly in the mountain flora.

The others taking part were schoolgirls from Rutherglen attending their first field meeting, who appreciated very much the help given to them by the more experienced botanists. Dr. Patzak with his wide knowledge was most helpful in identifying specimens and giving details of their distribution and also earned the thanks of the whole party by supplying us with fruit and chocolates on more than one occasion.

The international character of the meeting was most stimulating to all those taking part. Throughout the week the weather was poor but in spite of this all the expeditions planned were carried out.

On Sunday we walked to the Keltney Burn and then up by the side of the burn, visiting Garth Castle. Mist prevented the exploration of Garth Moors as had been planned. The most noteworthy plants seen were *Cirsium heterophyllum*, *Gentianella campestris* and *Campanula latifolia*.

On Monday, although we reached Creag An Lochain, mist prevented us from climbing to the top and we had to work round the base of the cliffs. In spite of this we were fortunate enough to see late flowers of *Silene acaulis* and *Saxifraga oppositifolia*, as well as *S. stellaris*, *S. hypnoides*, *S. aizoides*, *Coeloglossum viride*, *Cerastium alpinum*, *Thalictrum alpinum*, *Draba incana*, *Carex bigelowii*, *C. capillaris*, *Asplenium viride*, *Polystichum lonchitis* and many other mountain plants.

Aberfeldy was visited on Tuesday and on the roadside between Garth and Aberfeldy a large clump of *Ononis repens* was seen on top of a wall. The "Birks of Aberfeldy" was found to be most interesting and the Falls of Moness were seen to the best advantage after all the rain, although conditions under foot were not so good. The most interesting plants seen were *Sambucus racemosa*, *Vicia sylvatica*, and a good selection of woodland grasses including *Milium effusum* and *Festuca altissima*.

Ben Lawers, one of our main objectives, was visited on Wednesday and many more rare mountain plants were noted. As well as those already seen at Creag An Lochain we saw *Cherleria sedoides, Woodsia alpina, Saxifraga nivalis, Luzula spicata, Poa alpina, Gnaphalium supinum* and *Potentilla crantzii.*

A visit to Glen Lyon on Thursday brought many roadside and woodland plants, including *Poa nemoralis, Carex sylvatica, C. laevigata, C. remota, Thelypteris phegopteris* and *Epilobium nerterioides.*

The party split into two groups on Friday, one going over Drummond Hill to Kenmore where many garden escapes were seen; the other group found interesting plants on the banks of the River Lyon. Masses of *Lupinus nootkatensis* were seen and *Cichorium intybus* and *Alchemilla alpina* were also recorded.

To the field botanist the Garth district is a most interesting one, containing in a small area a wide variety of habitats and plant communities.—F. M. Elder.

BOOK REVIEWS

Gustav Hegi Alpenflora, 18th enlarged edition. Edited by HERMANN MERXMÜLLER. Pp. 112 + 42 plates and folded map. Carl Hanser Verlag, München, 1963. Cloth, 15.80 DM.

There is now a long tradition of excellent popular guides for the identification of the more attractive flowers of the Alps, and to these the 18th edition of Hegi's *Alpenflora* edited by Dr. Merxmüller is a most worthy addition. The 34 plates in colour are superb, and illustrate 272 species with accuracy seldom equalled in inexpensive books. A further 34 species are shown in black and white with less success. The text is based on the plates and includes short but adequate descriptions and notes on ecology and distribution. The whole work has been thoroughly revised and an important feature of this edition is the addition of maps showing the distribution of 52 species in the Alps.

An unusual and pleasing feature of the work is the emphasis placed on plant conservation. Two pages early in the book are devoted to extracts from the Naturschutz-Ergänzungsgesetz of 29th June, 1962, and full or partial protection under the laws of Germany, Austria and Switzerland is indicated under the species concerned. Two of the colour plates are devoted to protected flowers. It is hoped that visitors from other countries will study these lists and respect them.

Few popular handbooks have attained such a high level of scientific accuracy as this and Dr. Merxmüller is to be warmly congratulated on his revision. The new *Alpenflora* is strongly recommended as a dependable guide for visitors to the Alps and one which contains much to interest experienced botanists as well as the beginners to whom it is primarily directed.—J. E. LOUSLEY.

A monographic study of the fern genus Cystopteris. By R. F. BLASDELL. *Mem. Torrey Bot. Club,* **21** (4): ii + 102 pp., 23 pls. (10th January 1963).

The author has investigated anatomy, morphology and cytology, has grown dozens of plants and has studied 5,000 herbarium sheets. His line-drawings and silhouettes are presented at the same scale, item for item, which makes comparison far easier. One starts off with high hopes.

The jackpot question is what to do with the *Cystopteris fragilis* complex which, we are told, is what initiated this monograph. The author refers to "taxonomists in the past who have simply lumped together all populations which superficially resembled *C. fragilis*", but one feels he himself has also "sidestepped" the issue. He has examined few type-specimens, his concepts being based mostly on comparison of original descriptions with herbarium specimens. "Several species for which authentic material has not been obtained have been omitted [*C. tasmanica* Hooker, *C. mairei* Brause] or temporarily referred to other taxa on the basis of the original description". The sources of his chromosome figures

are not given in the "Taxonomic Revision" and it is from "Chromosomes and Spore Size" that one has clues to whether they were counted or whether they were inferred, the author using spore size extensively as a measure of degree of ploidy. The main separations of the "Diagnostic Key" are those over which there has been so much divergence of opinion, viz. glandulosity and position of vein endings but, having thus segregated, the author links up the most controversial elements with statements of introgression and hybridity (and elsewhere of gene exchange between sympatric species) to allow for intermediates which will not key out cleanly and which are placed at the end of the "Taxonomic Revision".

After much deliberation the author deals with the *C. fragilis* complex by maintaining "species status for the three extremes" (*fragilis, diaphana, protrusa*); under his "extreme" *fragilis,* however, we find 45 synonyms (including *Cystopteris baenitzii, C. dickieana, C. polymorpha, Polypodium anthriscifolium, P. dentatum*) which "reflects the diversity of *C. fragilis* var. *fragilis*" and wherein "some of the binomials . . . may actually represent plants in which introgression with *C. diaphana* has occurred"; the reason given for their inclusion is because "authentic specimens have not been available"; it would have been better to have followed up typification more diligently before making lists implying opinions of affinity. *C. dickieana* is sunk into *C. fragilis* as a "spore form" on the grounds that "intermediate conditions have been observed between . . . rugose . . . and echinate"; *baenitzii* is not claimed to have spores anything but rugose, but is sunk into *C. fragilis* nevertheless; in the description of *C. fragilis* the spores are given only as echinate; *C. apiiformis* and *C. huteri* are accorded varietal status under *C. fragilis* because of differences in glandulosity and frond-dissection. At the end of the "Taxonomic Revision", under "Hybrids", *C. alpina* is given hybrid status, partly because of its hexaploidy and partly because the author's imagination has been stimulated by the line-drawing of *fragilis* × *montana* Christ [= *C. christii* Hahne] but it "needs more study before a decision is made as to its authenticity"; *C. regia* is designated an introgressant under a "blanket formula" entitled "*diaphana* × *fragilis* complex".

Compared with the *C. fragilis* complex, the other taxa dealt with are relatively straightforward, but they have suffered much the same treatment.

One feels considerable lack of confidence in an author who has seen only a small proportion of type-material; when he says "the type-specimen shows no obvious difference" from another type he has *not* seen and "the specimens at hand agree closely with the original description which I have seen"; when he explains "the deltoid [deltate] outline results from the fact that the basal pinnae are longer than the subsequent pinnae"; and when there are many inaccuracies in the nomenclature. It is a pity vein endings are not clearer in the drawings and that plants and collectors are not indexed. The value of all the work put in by the author is in the evidence made available from his examinations of a large range of material; one should be, however, very sure before publishing taxonomic interpretation and one fears that his venture on this aspect may be a hindrance rather than a help.

The following new names and changes of rank are made: Subgen. **Acystopteris** (Nakai pro gen.) Blasdell, Sect. nov. **Emarginatae** Blasdell, **Cystopteris diaphana** (Bory pro spec. *Polypodii*) Blasdell, **C.** × **laurentiana** (Weatherby pro var. *C. fragilis*) Blasdell, **C. protrusa** (Weatherby pro var. *C. fragilis*) Blasdell, **C. sudetica** var. **moupinensis** (Franchet pro spec.) Blasdell.—J. A. CRABBE.

The Young Botanist. By C. T. PRIME. Pp. xi + 210 + 14 plates. Nelson. London and Edinburgh. 1963. Price 18/-.

This is the latest addition to Nelson's series of *Practical Books*, in which men of great distinction in various fields introduce their subject to the junior reader in such a way as to help him become actively engaged in it. It would make an admirable present for any child of secondary school age who is to take an interest in plant life beyond the collecting stage. It would also be of great value to any teacher, either of specialist biology or of nature-study, who was seeking new ideas for field studies to be carried out by pupils of various ages.

Dr. Prime introduces the whole field with an attractive simplicity and clarity of style which will make the book easy for the younger reader without ever "writing down" to him. The emphasis is on common plants and the opportunities for original work and discoveries which many of them still present. He begins with wild flowers of his own locality, but goes on to chapters on bryophytes, seaweeds, lichens and fungi, being careful in the last section not to confine himself to the Basidiomycetes. There are also good sections on farming, soil and plant biochemistry. A surprising omission is the freshwater algae which are much more accessible to most people than are seaweeds, and on which some very instructive observations can be made.

The book makes it clear that field work can be done everywhere, not merely in "the country"—it describes, for example, the ecology of a wall-top, plant observations in town parks and gardens and a walk through the main street of Croydon on which 17 species of flowering plant were recorded. The importance of conservation and of measurement is stressed, there are useful practical details and warnings about how things may go wrong, and most chapters include lists of further books to read as well as "things to do".—JOHN OUNSTED.

Self-Help for Learned Journals. Notes compiled for The Nuffield Foundation by FRANK MORLEY, D.Phil. Pp. 45. The Nuffield Foundation, London, 1963. Price 3/6.

All who aspire to write for or who are concerned with the editing or publication or welfare of the journals of a learned society should read this booklet, which brings together the experience gained by The Nuffield Foundation in their valuable work of assisting the publication of learned journals. With a lightness of touch, a sense of humour and an enviable tact, Dr. Morley draws attention to our faults and tells us relentlessly how to mend our ways. Thus his purpose is to make us help ourselves and not to encourage us to seek assistance from outside.

The importance of a strict time-table with each issue on time, of

discipline over proof readers and of speed of publication, are rules with which no one can disagree after reading about the consequences of transgression. Lessons are provided on such diverse matters as the organisation of the editorial office, improving the format, increasing the circulation, advertising revenue, separates or offprints and the use of publishers.

Whether we must all agree with the economics and policy described for the pricing of journals is a different question. Some of this is reminiscent of the reply alleged to have been tendered by the makers of an expensive motor car who, when asked if they were nervous of competition, replied in the negative and explained that if it were to be encountered they would meet it by raising their prices! Nevertheless, even allowing for the fact that learned journals are published so that those who benefit most from them can have ready access to what is written in them (and not primarily to adorn the shelves of wealthy overseas institutions), there is indisputable logic in Dr. Morley's arguments.

We are indebted to Dr. Morley and the Nuffield Foundation for giving us this practical and readable booklet of sound advice. As a treasurer, I repeat—please read it and take it to heart.—J. C. Gardiner.

A Flora of Cambridgeshire. Edited for the Cambridge Natural History Society by F. H. Perring, P. D. Sell and S. M. Walters, with a section on *Bryophyta* by H. L. K. Whitehouse. Pp. xvi + 366, with 9 plates, a map and 4 distribution maps in the text. Cambridge University Press. 1964. Price 30/-.

John Ray's *Catalogus Plantarum circa Cantabrigiam nascentium*, published in 1660, is the earliest example of a comprehensive British local flora, while further floras dealing with the county were published by Relhan (1785), Babington (1860), and Evans (1939), thus Cambridgeshire is one of the best botanically documented counties in Britain. The latest work, for which the Cambridge Natural History Society were most fortunate in finding such eminent editors, summarizes the data contained in the earlier volumes and with the addition of many hitherto unpublished records compiled by members of the Natural History Society presents an up-to-date picture of the flora of Cambridgeshire.

The book commences in the traditional fashion of British local floras with an account of the historical study of Cambridgeshire botany, details of topography, climate and geological areas and their vegetation. In the main text, however, completely new ground is broken. Gone are the familiar lists of localities in which the various species may be found and in their place are concise lists of Ordnance Grid References to 10 km. squares in which the species have been recorded. This, of course, is vastly saving on paper, print and time, but whether it is a good thing or not is very much of a personal choice. A further point is that although units of 10 km. squares were considered adequate to show the distribution pattern of a species in the British Isles for the Atlas, are not these units too large to be adapted to a single vice-county? Fortunately localities are provided for the more local and rare species and careful attention is paid to the historical aspect of the records.

Some authors of local floras have included casual alien species in a separate appendix at the end of the book on the grounds that they do not

form an integral part of the Flora of the county. In the work under review casual species are included in the main text in the same type as native and established plants. A reduction in type size for casual species would have readily assisted the reader to place them in their proper perspective.

The high standard of correctness in the nomenclature and the careful treatment of critical groups is all that one would have expected of the editors, and sets an example which would-be compilers of local floras might follow.

A useful feature of the book are keys to the identification of some of the more difficult genera, e.g. *Chenopodium, Epilobium, Myosotis, Juncus, Eleocharis, Carex,* etc., while much interesting taxonomic data on diagnostic characters between species, and between species and varieties is also given. In many local floras it is usual to provide evidence or otherwise of the occurrence of the various species in adjacent counties. The present editors have gone further by giving brief details of distribution in the British Isles as a whole.

A study of the flora reveals the great changes that have taken place in the flora of the county since John Ray's time, and of the 1,258 species of flowering plants and vascular cryptogams recorded 74 are now considered to be extinct. The losses include many plants of acid heath, e.g. *Drosera rotundifolia, D. intermedia, D. anglica, Erica tetralix, E. cinerea* and *Solidago virgaurea,* as well as a number of species of wet places, e.g. *Potentilla palustris, Limosella aquatica* and *Mentha pulegium.* More surprising extinctions are *Polygonum bistorta* and *Peplis portula,* while I feel sure that a careful search of rubbish-tips would lead to the re-discovery of *Lepidium ruderale,* last seen in the county in 1914.

As elsewhere, however, the story is not entirely of loss for Cambridgeshire has its share of recently established aliens, e.g. *Calystegia silvatica, Veronica filiformis, Senecio squalidus,* etc.

The book is of a size which will readily slip into a large pocket, and will undoubtedly become a "best seller" among the ever growing throng of enthusiasts who are interested in the flora of our islands.—D. H. Kent.

OBITUARIES

The Hon. Mrs, Guy Baring, who died at Empshott Grange near Liss, Hants., on March 5th, 1964, was one of Dr. G. C. Druce's more intimate friends. She was Olive Alethea Smith, widow of the Hon. Guy Victor Baring, M.P. for Winchester, who was killed in action in France in September 1916. Her name first appears on the membership list of the Society for 1914. On May 9th, 1932, she was elected a member of the General Committee appointed to carry on the Societys' activities after Druce's death early in that year. She served on this until March 1938, resigned her membership of the Society at the outbreak of the late War, but rejoined in 1946. Mrs. Baring was a popular and influential figure as the hostess and companion of Dr. Druce's inner circle of amateur botanical friends during his last years. She was one of the two ladies who organised the presentation of the bookplate and other gifts to Druce at Sir George Holford's mansion, the old Dorchester House in Park Lane, on June 26th, 1925; and his eightieth birthday party at the Great Central Hotel, Marylebone, on May 23rd, 1930.—N. Y. Sandwith.

Gordon Levesley Smith (1937-1963). The death of Gordon Smith on December 8, 1963, at the age of 26, was a severe shock to his many friends and colleagues who had known nothing about the leukaemia from which he suffered, and a very sad event for those who, knowing the situation, yet hoped that he might be spared for a longer life.

Gordon was born at Stamford on April 8, 1937, and was a pupil at Stamford School. At an early age he had a great interest in wild flowers, an interest which he developed at school, joining the B.S.B.I. as a Junior Member in 1955. In the sixth form he also extended this interest in Botany, and in Geology and in painting and art in general.

After two years' National Service, he came up to Emmanuel College, Cambridge, in 1958 to read Natural Sciences, and gained first class honours in Part II Botany in 1961. He was obviously a man of outstanding ability, and I was pleased when he decided that he would like to pursue some topic of experimental taxonomy. He was awarded a Nature Conservancy Studentship and began his research in the Michaelmas Term 1961, having selected the *Potentilla verna* aggregate for his investigation. He began work on the problem with quiet efficiency, and had soon established certain areas of the general problem of the micro-evolutionary relationships within the group which he intended to tackle. He had a quite exceptional range of skills; his field and laboratory notes were neat and accurate, he was remarkably competent at all practical and experimental techniques, and his artistic talent was outstanding. By the end of the first year of his research, he had already laid the foundation for a work of great promise.

In February 1962, when he was attending a Cambridge clinic as a blood donor, it was discovered that he had leukaemia. His reaction to this

news, after the initial shock, was profound and, to those few who were privileged to know, extraordinarily impressive. His Christian faith took on obviously a new meaning and depth, and he lived and worked with an extra intensity; he asked those who knew not to spread the information, preferring that his colleagues should not feel that they had to think of him or treat him any differently. His research progressed with remarkable speed, so that by the end of his second year, he had a body of detailed information, particularly on the complex embryological phenomena relevant to the apomixis of the group, which was ready for publication. He accordingly wrote up this part of his work, and submitted it as a thesis for a Fellowship in Emmanuel College, and as two papers for the *New Phytologist*. In the Michaelmas Term 1962 he accepted an invitation from Professor A. Löve of the University of Montreal to work there with a N.A.T.O. Studentship on cytological techniques and then application to taxonomic problems. Emmanuel College elected him to a Research Fellowship in May 1963.

The two papers* embodying the first results of his research were published in November, only a few weeks before his death. His final illness was quite short, and he was working actively in the field up to September. Characteristically he left information on chromosome numbers of *Potentilla* material collected by him in July 1963 on the Botany School Excursion to Slovakia all clearly and neatly documented, and the current (1963) series of test crosses of experimental material were perfectly labelled. I hope that much of this information, particularly that on the cyto-taxonomy of British members of the *Potentilla verna* aggregate, will be published in the near future.

This is, I feel, an inadequate tribute to a remarkable man. I can do no better than conclude by saying with all sincerity that it was a privilege to know Gordon; in a very real sense the experience taught me—and others—that it is the *quality* of a life which is all-important.—S. M. Walters.

*Studies in *Potentilla* L. I. Embryological Investigations into the Mechanism of Agamospermy in British *P. tabernaemontani* Aschers, *New Phytol.*, **62**, 264-282 (1963).
Studies in *Potentilla* L. II. Cytological aspects of apomixis in *P. crantzii* (Cr.) Beck x Fritsch, *New Phytol.*, **62**, 283-300 (1963).

PERSONALIA AND NOTICES TO MEMBERS

VICIA ANGUSTIFOLIA L.

Dr. C. A. Stace, Dept. of Botany, The University, Manchester 13, is anxious to obtain seed of wild *Vicia angustifolia*, particularly the narrow-leaved variety (var. *bobartii*). Notes on habitat and locality, and a specimen of the parent plant would be additionally welcome.

GIANT *HERACLEUM*

Most of the larger herbaria of this country have a very inadequate representation of the giant naturalised species of *Heracleum* which are now spreading in many parts of the British Isles. Several species have been recorded as naturalised in different European countries and further knowledge of such plants in this country is desirable. Dr. R. K. Brummitt, The Herbarium, Royal Botanic Gardens, Kew, Richmond, Surrey, would be very glad to receive any herbarium material to facilitate work on the taxonomy and distribution of the genus in Europe. Good specimens will usually fill several herbarium sheets, and a single leaf may occupy three or four sheets. Flowers and fruit from the same plant or colony would be particularly valuable.

FLORA OF HUNTINGDONSHIRE

A "Flora of Huntingdonshire" by John L. Gilbert is expected to be available during the late months of 1964, at a price not exceeding 7s. 6d. It is being published by the Peterborough Museum Society, and those wishing to receive copies should notify H. F. Tebbs, 46 Grange Avenue, Dogsthorpe, Peterborough, who is anxious to know the number likely to be required.

B.S.B.I. DISTRIBUTION MAPS SCHEME

All correspondence about the Botanical Society's Distribution Maps Scheme should now be addressed to Dr. F. H. Perring, Biological Information Section, Monks Wood Experimental Station, Abbots Ripton, Hunts. This section will welcome records of the distribution of British vascular plants.

The following items are available from Dr. Perring, address as above:—

(1) 35 mm. film strips of 100 selected pairs of maps from the *Atlas of the British Flora*, price £2 per set.

(2) Regional Record Cards, price 15/- per hundred.

ATLAS OF THE BRITISH FLORA

Copies of corrections to the first issue of the *Atlas of the British Flora* are available from Dr. F. H. Perring, Biological Information Section,

Monks Wood Experimental Station, Abbots Ripton, Hunts., and will be sent on receipt of an application together with a stamped addressed envelope.

ARCHIVES OF THE SOCIETY

It has been decided by Council that the Society should collect together pamphlets, articles, photographs and other materials relevant to its history and organization. Any member who possesses items which may be of interest in this connection is asked to contact D. E. Allen, Botanical Society of the British Isles, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

BACK NUMBERS OF "WATSONIA" and "PROCEEDINGS"

Part of the Society's revenue is obtained from the sale of sets of *Watsonia* and *Proceedings* to booksellers and libraries.

Unfortunately, certain parts of both periodicals are now in short supply and it will soon become difficult to prepare complete "runs". The numbers concerned are *Watsonia*, Vol. 2, Parts 5 and 6, and Vol. 3, Part 5, and *Proceedings*, Vol. 2, Part 4. Members who have any of these parts which they no longer require are invited to assist the Society by sending them to Mr. E. B. Bangerter, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7.

B.S.B.I. BOOK SERVICE

Many county Floras and other botanical books are out of print and difficult to obtain and the officers of the Society receive many enquiries from members as to where they may be obtained.

A card index of members' desiderata has now been prepared with the object of assisting them to obtain books they need to carry out their studies.

The index has been prepared by the Hon. Assistant Secretary, D. H. Kent, 75 Adelaide Road, London, W.13, and members desiring to make use of this facility are invited to write to him giving details of the books which they are anxious to acquire. A stamped addressed post-card, for reply, should be sent for each book required. It must be pointed out that some botanical works are very scarce indeed and it may be some time before they can be tracked down; every effort will, however, be made to trace copies of books required.

Members who have botanical books for disposal are also invited to write to Mr. Kent giving details of the volumes concerned and their prices.

THREATS TO BRITISH FLORA

Members are urged to report to Dr. R. M. Harley, Dept. of Botany, The University, Bristol, 8, 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 SPRAY DAMAGE

Any damage due to the spraying of roadside verges with toxic chemicals should be reported immediately to the Secretary of the B.S.B.I. Conservation Committee (Dr. R. M. Harley, Dept. of Botany, The University, Bristol, 8), who will send a form listing the detailed information required by the Nature Conservancy. These forms have been prepared after discussions between the B.S.B.I. and the Conservancy, and when completed will be forwarded to the Conservancy who are carrying out active work on this subject.

TRANSPLANT AND INTRODUCTION EXPERIMENTS

The Secretary of the Conservation Committee (Dr. R. M. Harley, Dept of Botany, The University, Bristol, 8) would be glad to hear from anyone who is carrying out any experiments involving the transplanting of species from one locality to another, or who is engaged in the introduction of species by seed or any other means. It is becoming very necessary to keep a central record of experiments of this nature, and it is hoped that this request will meet with active support. The Secretary will gladly send a short list of the information required in the recording of such experiments.

ADVERTISEMENTS

A limited number of relevant advertisements will be accepted for the Society's publications as space permits. Enquiries should be addressed to D. H. Kent, 75 Adelaide Road, London, W.13.

Continued from inside front cover.

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*Appointed by the Botanical Society of Edinburgh.
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