

EXHIBITION MEETING, 1954

An Exhibition Meeting was held in the Lecture Hall of the British Museum (Natural History), South Kensington, by kind permission of the Trustees, on Saturday, November 27, 1954, from 2.30 to 5.45 p.m. 253 members and guests attended, and exhibits were arranged by 35 individuals and institutions. An account of these is given below, with notes supplied by the exhibitors.

THE DISTRIBUTION MAPS SCHEME.

The centre-piece of the exhibit was a map showing the distribution of botanists who had already volunteered to send records for the Scheme. On this certain underworked areas were already apparent, notably Ireland, Scotland, Mid Wales, Devon and Cornwall (excluding the coast). However, even areas in more populated regions of the British Isles had gaps, e.g., Northamptonshire, N. Oxford, N. Buckinghamshire, N. Hampshire, Suffolk and Norfolk. Records for common species from these areas would be particularly valuable.

The map showed that, by the end of November, 615 people had asked for information about the Scheme. Of these 298 had agreed to send records, of whom 175 were members of the B.S.B.I. In all, 900 squares out of a total of 3,500 are being totally or partially covered, for which records have been received from 278.

As a result of the exhibit about 20 new volunteers were enrolled and about 40 squares allocated.

J. E. BAGNALL, AUTHOR OF *FLORA OF WARWICKSHIRE*

No portrait of James Eustace Bagnall (1830-1918) has ever appeared in a botanical publication, and consequently his likeness has been a subject for speculation by those who have followed in his footsteps. The photograph exhibited was an enlargement of one which had lain hidden in a rare, privately circulated memoir; it was used in an exhibition of Bagnall and his work recently held at Birmingham Museum and Art Gallery, to which his collections, comprising some twelve thousand sheets of plants, were presented in 1913.

A clerk in a Birmingham pen factory for over fifty years, Bagnall devoted all his scanty leisure to the investigation of the flora of the central Midlands. His week-end excursions to explore the remoter areas often entailed a railway journey of three to four hours, followed by a slow walk of anything from twelve to thirty miles; he is even reputed to have spent nights in the open, sleeping under hedges. Deeply religious and of a retiring disposition, he was an indefatigable worker and specialised in difficult groups like the roses and brambles. He died unmarried, at the age of eighty-seven.—D. E. ALLEN.

A HYBRID *CAREX* FROM MERIONETH.

Herbarium sheets of the hybrid *Carex binervis* × *punctata* and the putative parents were exhibited together with a table showing their distinguishing characters.

An account of this new hybrid is being prepared for *Watsonia*.—P. M. BENOIT.

SALICORNIA PERENNIS IN WALES.

The discovery of *Salicornia perennis* in Merioneth (v.c. 48) constitutes the first certain record of the species for Wales, and a considerable extension of its known British range. Previously it was considered to be confined in the British Isles to the south and east coasts of England.

The plant has been found in two localities in Merioneth: near Mochras, and near Barmouth. In the Mochras locality it is abundant on the mud-flats where it is associated with *Limonium humile*, *Puccinellia maritima*, *Salicornia stricta* sens. lat., *Suaeda maritima*, etc., and forms large tussocks several feet in diameter. At Barmouth the habitat is similar but the plants exist in very small quantity, suffer through grazing by sheep, and rarely flower. The exhibit comprised a herbarium sheet of the species and a map showing its distribution.—P. M. BENOIT.

CYTOLOGY IN *HERNIARIA*.

Chromosome counts of six species of *Herniaria* show a polyploid series on the base number of 9. The exhibit was chiefly concerned with the "*glabra*" group of the subgenus *Eu-Herniaria* Williams.

H. glabra is diploid, but specimens of *H. glabra* var. *subciliata* from Coimbra, Portugal, gave aneuploid counts near the octoploid. The relationships of the plant are obscure and we should particularly like to obtain material from other localities.

The chief interest of the exhibit centred round the relationship between *H. ciliata* Bab. and *H. maritima* var. *ciliata* Dav. which have previously been considered on the one hand to be identical, and on the other to be distinct taxa. The evidence from chromosomes seems to support the latter view, since *H. ciliata* from the Lizard, W. Cornwall and from Guernsey is octoploid, whereas two stocks of *H. maritima* var. *ciliata* were found to be 12-ploid and Mesquita-Rodrigues records one 14-ploid.

Morphological details from plants growing under similar conditions were illustrated, and were, in general, in support of the results from the chromosomes.

A map of the distribution of these plants in Europe showed that there were French forms from Brittany and the Vendée which were still in need of examination. Material from these areas would be most gratefully received.—Miss K. B. BLACKBURN and Miss A. W. ADAMS.

STRONTIUM IN PLANTS

Strontium is a widely distributed element in soils and is found in large concentrations near Wickwar and in the Avon Gorge (both v.c. 34, W. Glos.). The element was determined by the radioactivation analysis of plant ashes, and was found to be present in amounts varying from about one to fifty parts per million in the dry weight of normal plants. In plants from strontium-rich areas, however, the amount may rise to as much as 2% of the dry matter. Particularly interesting from the point of view of plant distribution is the finding that some of the rarities of the Avon Gorge (e.g. *Arabis stricta* Huds. and *Bromus madritensis* L.) contain about 1% of the element. It is suggested that plants of Strontium-rich areas, especially the Charophytes, deserve further study. Some autoradiographs of Strontium in native plants were exhibited.—H. J. M. BOWEN.

PREDICTING TIMES OF INSOLATION IN CREVICE PLANTS

A graph was presented showing values of altitude and azimuth of the sun for all times of all days in north-west Yorkshire. The times at which a microhabitat such as a rock crevice is potentially capable of receiving direct sunlight depends on its angular exposure to the sky. The periods at which the sun is in an effective part of the sky could be drawn on such a graph.

This graphical expression is easily comprehended and is being used in conjunction with a sunshine recorder to determine actual times of insolation and to make rapid estimates of averages of actual insolation received.—B. N. BOWDEN.

SOME INTERESTING PLANTS FROM THE EUROPEAN HERBARIUM OF THE BRITISH MUSEUM

1. SPECIMENS CONNECTED WITH PAPERS IN *Watsonia*:

Nuphar intermedia Ledeb.; see Harrison, Y. Heslop, *Watsonia*, 3, 7; from Chartner's Lough, Northumberland, S. (v.c. 67), collected by Fraser Robinson.

Stellaria nemorum subsp. *glochidosperma* Murb.; see Green, *op. cit.*, 3, 122; from Llandogo, Monmouth (v.c. 35).

Carex lepidocarpa subsp. *scotica* E. W. Davies; see Davies, *op. cit.*, 3, 70; type specimen from Creag-an-Lochain, Mid Perth (v.c. 88).

Festuca vivipara (L.) Sm., *Poa bulbosa* var. *vivipara* Koel., *Poa alpina* var. *vivipara* L., *Poa* × *jemtlandica* (Almq.) Richt., *Deschampsia cespitosa* var. *pseudalpina* (Syme) Druce, *Deschampsia alpina* (L.) Roem. & Schult.; see Wycherley, *op. cit.*, 3, 41; examples of grasses showing proliferation of spikelets; also three examples of grasses showing abnormal proliferation due to attack by nematodes (eel-worms), viz., *Lolium perenne* L., *Agrostis tenuis* Sibth. and *Agropyron pungens* (Pers.) Roem. & Schult.

2. TYPE SPECIMEN OF *ARTEMISIA NORVEGICA* FR. VAR. *SCOTICA* HULTÉN*

Type specimen of *Artemisia norvegica* var. *scotica* Hultén from Ullapool, W. Ross (v.c. 105), coll. J. E. Lousley, 1953, described by E. Hultén in *Nytt Mag. Bot.*, 3, 67 (1954).—BRITISH MUSEUM (NATURAL HISTORY).

SOME UNPUBLISHED DRAWINGS AND TEXT FOR *TYPES OF FLORAL MECHANISM*, BY A. H. CHURCH

A selection from the 700 drawings and MSS. by A. H. Church; material for further volumes of his *Types of Floral Mechanism* was exhibited.—BRITISH MUSEUM (NATURAL HISTORY) LIBRARY.

FLOWER VARIATION IN *DIANTHUS GRATIANOPOLITANUS*

The occurrence of *Dianthus gratianopolitanus* in the Cheddar Gorge, its limited habitat and the considerable variation which occur in the petals were illustrated and described. The need for further work before the full significance of the variation can be appreciated was stressed.—S. CHALLENGER.

LABELS AND HANDWRITING, OR 'WHO DUN IT?' (1) EARLY EXAMPLES.—Mrs. H. N. CLOKIE.

SCOTTISH *EUPHRASIAE*

Herbarium sheets were exhibited showing the distribution of the commoner species in Scotland. Plants represented were *Euphrasia brevipila*, *E. confusa*, *E. nemorosa* var. *collina*, *E. micrantha*, *E. scotica*, *E. frigida*, *E. occidentalis* var. *calvescens*, *E. foulaënsis*, *E. marshallii*, and two hybrids.—Miss U. K. DUNCAN.

VARIATION AND ECOLOGY OF *CAREX FLACCA* SCHREB.

The exhibit consisted of three herbarium sheets showing a range of forms of *Carex flacca* from different habitats. In the accompanying notes an attempt was made to correlate the length of the lowest fruiting spike with the base status of soil (pH measurement). Similar variable characters were pointed out including peduncle- and leaf-lengths which showed similar variation to spike length, and the very variable character of fruit colouration. Overall height was found to be an inconsistent character and somewhat independent of soil conditions. One sheet showed a series of fruiting spikes which were more uniform than the specimens on the other sheets, thus demonstrating the danger of drawing conclusions from single specimens.

Transplant experiments are being carried out, the results of which it is hoped will show how much of the variation is due to environmental differences, and how much to the genetical constitution of the plants.—H. J. FLETCHER.

*See also **Plant Notes**.—Ed.

SOME PLANTS FROM THE 'N' HORIZON IN THE ESTHWAITE BASIN

Photographs of pollen grains and a part of a pollen diagram from Out Dub's Tarn, Esthwaite, were exhibited.

The photographs were of *Plantago lanceolata*, Gramineae type, Chenopodiaceae type, Caryophyllaceae *Scleranthus* type, Urticaceae type, Umbelliferae type, *Hedera helix* and Compositae *Tubuliflorae* type.

These were compared with modern grains of *Plantago lanceolata*, *Deschampsia flexuosa*, *Pastinaca sativa*, *Hedera helix* and *Eupatorium cannabinum*.

It was suggested that the presence of *Plantago lanceolata* and other ruderals, together with the overall changes in vegetation as shown in the pollen diagram, provided some evidence for regarding the 'N' Horizon as a product of the first human settlement in the area.—J. W. FRANKS.

THE FORMS OF *GALIUM PUMILUM* IN BRITAIN

Five distinct taxa are included in the species known as *Galium pumilum* in this country. The exhibit illustrated their morphology and distribution.

1. The common northern form, a tetraploid whose closest allies occur in Scandinavia and Iceland.

2. A western form, found on the Irish limestone, in Snowdonia and at Inchnadamph. Morphologically similar to the northern form, but a diploid.

3. The montane form, intermediate between the northern form and *Galium saxatile*. A very variable plant; some individuals appear to be hybrids cytologically. Found only on the Breadalbane range.

4. The southern chalk form, an octoploid found in small isolated populations. Very different morphologically from the forms above, and more closely related to the central European forms.

5. The Cheddar form, an octoploid found only in the vicinity of Cheddar Gorge. Closest to the southern chalk form, but with a different habit. Perhaps identical with a plant found on chalk cliffs of the Seine.

The relative status of these five taxa, and hence their nomenclature, is not yet certain.—K. M. GOODWAY.

SOME WATER MINTS

The "varieties" of the polymorphic species *Mentha aquatica* L. were shown, with a few intermediates, in order to illustrate how they may be determined apart for convenience in large collections. It was made clear that no scientific value was placed on these varieties". In general, the exhibit provided an illustration of the recent paper on water mints in *Watsonia*.

In addition, a specimen was exhibited of a mint, recently discovered in Cornwall by Miss B. M. Sturdy, which appeared to be *M. × maximiliana* F. Schultz (*M. aquatica* × *rotundifolia*), a hybrid not pre-

viously recorded for Britain. A final determination must await fresh material next year, when, if the presumption is confirmed, the mint will be again exhibited.—R. A. GRAHAM.

BRITISH *CYPRIPEDIUM CALCEOLUS*

The exhibit consisted of a photograph, taken some years ago, of a flowering plant *in situ*. In addition, a fragment was shown that had been collected this spring, having been eaten off by slugs.—R. A. GRAHAM.

STELLARIA NEMORUM L. SUBSP. *GLOCHIDOSPERMA* MURB. IN BRITAIN

Two herbarium specimens of *Stellaria nemorum* L. subsp. *glochidosperma* Murb. and a typical specimen of subsp. *nemorum* were exhibited. The two former specimens had been gathered: (1) "at the falls, Llandogo, Monmouthshire, 36.6.29" (Ex Herb. F. Farre); (2) "Llyfnant Valley, Cardiganshire, July-August 1954, Miss Sine MacLachlainn". The specimen of subsp. *nemorum* was from Roslin Glen, Midlothian, 26th June 1902, W. Edgar Evans.

In addition seeds of the two subspecies were exhibited and a map showing the vice-comital distribution of *S. nemorum* L. sens. lat., marked with the known localities of subsp. *glochidosperma*.—P. S. GREEN.

THE CYTOLOGY AND ECOLOGY OF BRITISH *OROBANCHACEAE* AND SEMI-PARASITIC MEMBERS OF THE *SCROPHULARIACEAE*

The genus *Orobanche* has been divided into two sections, *Osproleon* Wallr. and *Trionychon* Wallr. Photographs and drawings of chromosome counts for eight of the nine British species in *Osproleon* Wallr. were demonstrated. These species were *Orobanche minor* Sm., *O. maritima* Pugsl., *O. elatior* Sutton, *O. reticulata* Wallr., *O. picridis* F. Schultz, *O. hederæ* Duby, *O. rapum-genistæ* Thuill. and *O. caryophyllacea* Sm., all possess $2n=38$ chromosomes, indicating a basic number $x=19$. One of the two British members of *Trionychon* (*O. purpurea* Duby) has been examined; it possesses $2n=24$ chromosomes, which were illustrated by a photograph and drawing. Drawings of *O. caryophyllacea* and *O. purpurea* demonstrated the single bract characteristic of the section *Osproleon*, and the two bracteoles which occur in addition to the bract in *Trionychon*.

Rhinanthoideae in Britain may be classified cytologically into two groups on the basis of the resting nucleus. One group, comprising *Rhinanthus* and *Euphrasia*, possesses a prochromosomal resting nucleus; the stainable material in this type of nucleus is concentrated into a variable number of large bodies. The second group contains the remaining British genera; in these the resting nucleus shows irregular small stained regions (chromocentres), or diffuse staining properties with occasional aggregation of stainable material. *Rhinanthus* has been shown to possess the basic number $x=11$ which is the same basic number as that of *Euphrasia*; this point has not previously been noted

as a number of small chromosomes (8 in a diploid complement of 22) appear to have been overlooked, except by Fagerlind (1936)¹, who gave $2n=22$ as the number for *R. major*. Photographs and drawings of the chromosomes of British *Rhinanthus minor* Ehrh.², and Finnish *R. major* Ehrh. (both $2n=22$) were exhibited.

For comparison with these, P. Yeo kindly provided illustrations of *Euphrasia* chromosomes which do not show such marked size differentiation within the complement (the largest chromosome being about twice as large as the smallest). The photographs were of *E. anglica* Pugsl., $2n=22$, *E. hirtella* Jord., $2n=22$, *E. pseudokernerii* Pugsl., $2n=44$ and *E. marshallii* Pugsl., $2n=44$. All are members of the Section *Semicalcaratae*.

Members of the non-prochromosomal *Rhinanthoideae* possess different basic numbers:—*Pedicularis* $x=8^3$, *Melampyrum* $x=9^4$, *Odontites* $x=10^4$ and *Bartsia* $x=12^4$. Photographs and drawings of the chromosomes of *Pedicularis palustris* L., $2n=16$ (material from Kent), *Melampyrum cristatum* L., $2n=18^2$ (from Essex) and *Parentucellia viscosa* (L.) Caruel, $2n=48^2$ (from Kent) were demonstrated. This last count is interesting in view of the fact that 48 is a multiple of 12, the basic number for *Bartsia*, the genus to which this species was assigned by Linnaeus.

Herbarium specimens of British *Rhinanthus minor* were exhibited for comparison with *R. major* from Switzerland. Preserved specimens of *Orobanche minor*, *O. maritima* and *O. caryophyllaceae* were exhibited.

REFERENCES.

1. FAGERLIND, F., 1936, *Hereditas*, **22**, 189-192.
2. HAMBLER, D. J., 1954, *Nature*, **174**, 836.
3. WARBURG, E. F., 1952, in Clapham, A. R., Tutin, T. G. and Warburg, E. F. *Flora of the British Isles*.
4. WITSCH, H., 1932, *Österr. Bot. Zeitschr.*, **81**, 108.

D. J. HAMBLER.

SOME OBSERVATIONS ON *SALICORNIA*

There is an erect form of *Salicornia*, similar to *S. appressa* (Dum.) Dum. except in habit, which has not yet been described. This plant differs from *S. ramosissima* Woods in its dingy crimson colour, more delicate cylindrical branches and in its habitat preferences. *S. appressa* is apparently genetically distinct from its erect counterpart as the forms may grow side by side. The decussate nature of the branching is partially obscured in the prostrate form where successive branch-pairs lie in the same plane. Erect forms may be trampled, or flattened by other environmental factors, or prostrate forms may become semi-erect. These intermediate forms may cause confusion but in general it seems possible to distinguish plants with negatively geotropic shoots, as the apices of stem and branches of such plants are not appressed to the substratum, and successive branch-pairs are obviously decussate.

Photographs and habit specimens illustrated these points.

A *Salicornia* like *S. smithiana* Moss possesses prostrate and erect forms. Quadruple branching occurs at the nodes in this taxon (as in *S. dolichostachya* Moss) which is very variable on the Medway Estuary; extreme forms, with long (up to 6 cm.) tapering fertile spikes, which resemble *S. dolichostachya* Moss in habit, also occur. A series of photographs illustrated this variability.

A living specimen of *Salicornia perennis* var. *radicans* Moss & Salisbury was exhibited together with a photograph and drawing of its somatic chromosomes ($2n = 18$). The somatic chromosomes of *S. ramosissima* Woods ($2n = 18$) were also illustrated, together with a habit photograph. All material was from the estuary of the River Medway.—D. J. HAMBLER.

RUBUS ARCTICUS IN BRITAIN

Specimens of *Rubus arcticus* were exhibited from Ben Lomond and from Ben-y-Glo; kindly lent by the British Museum (Natural History). A third specimen, from Ben Lawers, recently located in Herb. J. C. Melvill at Harrow School, was also exhibited.—R. M. HARLEY.

PLANTS OF CALDEY ISLAND, PEMBROKESHIRE

A list of the plants of Caldey Island has already been published (Hepper, F. N., 1954, *Proc. B.S.B.I.*, 1, 21-36) and the exhibit supplemented that paper with other information on the island and its flora. Two maps indicated the geology and the vegetation respectively and a series of photographs helped to give an impression of the scenery. A few specimens were also shown, including the more interesting species occurring on Caldey in relation to Pembrokeshire (v.c. 45), and *Carex polyphylla* Kar. & Kir., which was a new vice-county record.—F. N. HEPPER.

A VARIEGATED FORM OF *POA ANNUA*

A variegated form of *Poa annua* was found in a shrubbery at the Royal Botanic Gardens, Kew, during the past summer, growing with the normal green form. The original small plant was divided to produce 16 separate plantlets which rooted and branched from the lower nodes, each giving rise to several vegetative shoots and a few flowering culms. These plants had the habit of one of the short-lived perennial variants of the species. In many leaves the green tissue was confined to the midrib, whilst in others there were 2-4 longitudinal strands of green, the remainder of the leaf being white. From panicles flowering in the late summer two batches of seed were collected and sown a few days later when dry. In the first batch all the seedlings appear to have been green, but in the second there were two albinos out of the 15 seedlings.

Plants with variegated leaves have been found in several grass-species found in the British Isles. In these the leaves were longitudinally striped with green and white, cream or yellow. Such

variegated forms are known in *Alopecurus pratensis*, *Arrhenatherum elatius*, *Dactylis glomerata*, *Glyceria maxima*, *Holcus mollis*, *Melica uniflora*, *Molinia caerulea*, *Phalaris arundinacea* and *Phragmites communis*.—C. E. HUBBARD.

AN INTERGENERIC GRASS HYBRID NEW TO BRITAIN*

Intergeneric hybrids between genera of the tribe *Hordeae* are not of common occurrence in nature, although there are numerous instances of them being produced artificially. Among the natural hybrids found in Europe are two between species of *Agropyron* and *Hordeum*. These hybrids must be comparatively rare since they have been recorded only from Denmark and the south coast of France.

The Danish hybrid, *Agropyron repens* × *Hordeum secalinum* was first gathered by P. Nielsen at Stubberup near Skjelskov in the south-west of the island of Sjaelland in 1865, in a coastal meadow, where it persisted until 1877 or later. Nielsen named it *Agropyron repens* var. *hordeacea*, but at the same time observed that it might be a hybrid between *Agropyron repens* and *Hordeum secalinum*, a suggestion with which the Danish botanist, J. Lange, agreed. This rare hybrid was first discovered in the British Isles by Mrs. C. I. Sandwith in August 1945, in brackish pasture by the river Avon at Shirehampton, W. Gloucestershire. It was refound there last August and September, as a single large patch of about a square yard, with both parent species.

The French hybrid ?*Agropyron pungens* × *Hordeum secalinum* (× *Agropyron rouxii* Gren. & Duval-Jouve, *Rouxia* × *hordeoides* Husn., *Agropyrohordeum* × *rouxii* G. Camus, *Agrohordeum* × *rouxii* G. Camus) was discovered first by Salzmann in August 1819, in brackish meadows at Villeneuve, and later in June 1859 by Blaise and Roux near Marseilles. It has since been recorded from various coastal localities in the départements of Hérault, Bouches-du-Rhone and Var.—C. E. HUBBARD & N. Y. SANDWITH.

VARIATION IN THE *CAREX NIGRA* COMPLEX

Variation in herbarium specimens of this species complex was shown under three main categories. Specimens whose variation in colour of the female glumes and utriculi had attracted the attention of early botanists have been collected from most parts of Britain. In forma *chlorostachya* Reichb. (*C. chlorocarpa* Wimm.) the black female glumes are much smaller than the green utriculi and almost hidden in the compacted spikelet. Forma *leucolepis* Meinsh. has both glumes and utriculi of a very light fawn, whereas in forma *badia* Sanio the utriculi are as above but the glumes assume a chestnut-brown colour. The extreme is seen in forma *fuliginosa* A.Br. (*C. melaena* Wimm.) where both glumes and utriculi are of a sooty black.

Three anomalous forms were exhibited showing a variation which can be seen in many species of *Carex*. A woodland form in which

*See also **Plant Notes.**—Ed.

the leaves are narrow and the spikelets distant, short and few-flowered compares with Kükenthal's forma *subsetacea*. An almost unisexual plant only occasionally with female flowers at the base of the otherwise all-male spikelet corresponds to forma *polyandra* (Schkuhr) Kük. (*C. polyandra* Schkuhr). Some living material from a grazed flush on being brought into the greenhouse produced flowering spikes in which the lowest spikelet was pedunculate and originated almost from the rootstock itself—forma *basigyna* Reichb.

Kükenthal (in Engler, *Das Pflanzenreich* IV, 20, 1909) gives ten forms of *C. goodenoughii* Gay a varietal status; three of these were exhibited. Var. *strictiformis* L. H. Bailey (*C. limula* A. Gray) is a tufted form in which the leaves and flowering stems grow up to a height of 75 cms. The utriculi are markedly stipitate and nerved. Var. *recta* Fleischer is a type with a Scandinavian and Central European range and is probably present in Britain. The plant is more robust than the type and the leaves overtop the spike. The spikelets are lax and 4-5 cms. long and the utriculus is oblong-elliptical. The specimen exhibited was from Långskär, Sweden. A further variety which we have in this country is var. *stolonifera* (Hoppe) Aschers. (*C. stolonifera* Hoppe). According to Kükenthal the geographical range of this plant extends to Chile and Bolivia. It has a very short, rigid and often curved stem; the basal sheaths are shiny and of a reddish-brown. The leaves are channelled and somewhat falcate; the whole plant suggests very close affinities with *C. bigelowii* Torr.

A fine specimen of the hybrid between the type *nigra* and a near relative *C. elata* All. was kindly lent by Mr. E. A. Ellis for exhibition. This is a very large form (= *C. goodenoughii* var. *turfosa* Aschers.) whose characters are intermediate between those of the parents.—A. C. JERMY.

ORCHIS TRAUNSTEINERI SAUT. IN WALES

Specimens of *Orchis traunsteineri* Saut. collected by the exhibitor from Cors Geirch, near Pwllheli, Caernarvonshire (v.c. 49), in June of 1953 and 1954 were shown. Hitherto this species has been known in the British Isles from scattered localities in Ireland and south-east England. The discovery in Wales helps to fill a gap in its markedly discontinuous distribution. Maps were provided showing the distribution of the species, together with photographs of the new locality in Wales, and a short list of associated plants. A fuller account is published elsewhere in this journal.—W. S. LACEY.

WILD PLANTS OF JERSEY, CHANNEL ISLANDS

Herbarium specimens of the following Jersey plants were exhibited:—*Dianthus gallicus*, *Kohlruschia prolifera*, *Lythrum hyssopifolia*, *Eryngium maritimum*, *Centaurea aspera*, *Erica cinerea* (albino form), *Limonium lychnidifolium* and *Euphorbia paralias*.—Mrs. K. LE SUEUR.

EPIPOGIUM APHYLLUM IN OXFORDSHIRE

Epipogium aphyllum was first found in Oxfordshire "in a wood near Henley" in 1924, and was seen again in this wood in 1926. In 1931 Miss Vera Smith (now Mrs. Paul) found it in a wood "near Peppard", where it reappeared in 1933 and 1953. It did not flower in either of these localities in 1954, but on September 4 I found it in a new wood in the parish of Rotherfield Greys, where there were five flowering spikes. Photographs taken there were exhibited.—J. E. LOUSLEY.

A SYNTHESISED PLANT OF *ASPLENIUM* × *BREYNI*

An exhibit was shown at the 1953 Exhibition Meeting concerning the synthesis of the well-known hybrid fern, *Asplenium* × *breynei* (*Proceedings B.S.B.I.*, 1, 97 (1954)). It was not possible then to display one of the artificial hybrids, but on the present occasion a live synthesised example was exhibited, together with a small explanatory demonstration.—J. D. LOVIS.

ASPLENIUM ADULTERINUM AND ITS PROBABLE PARENTS

Asplenium adulterinum Milde is only known from serpentine and other similar ultra-basic rocks in Central Europe and Fenno-scandinavia. It is intermediate in morphology between *A. viride* Huds. and *A. trichomanes* L. and is usually found growing with one or both of these species. On account of these facts *A. adulterinum* aroused considerable speculation as to its true status amongst German authors in the last century.

A. adulterinum is now known to be a tetraploid species with $2n=144$, and cytogenetic investigation shows it to be an amphidiploid, with *A. trichomanes*, diploid form ($2n=72$) and *A. viride* ($2n=72$), as its probable parents. Meiosis in *A. adulterinum* is regular, 72 bivalents being formed. Triploid hybrids between *A. adulterinum* and *A. viride* (= *A. × poscharskyanum*) occur in the wild and have now also been synthesised by myself in Leeds. Analysis of meiosis in both wild and synthesised hybrids shows 36 bivalents and 36 univalents to be present. The other backcross, between *A. adulterinum* and *A. trichomanes* diploid form, has also been synthesised, and also shows 36 bivalents and 36 univalents in meiosis. These results indicate a high degree of homology between the chromosomes of *A. adulterinum* and the two diploid species, which may therefore be regarded as the probable parents of *A. adulterinum*.

It is possible that *A. adulterinum* may yet be found on rocks of the serpentine group in the more remote parts of Scotland, and it is suggested that botanists might bear this in mind when in such areas.

The exhibit was supported by (1) herbarium specimens of the three species concerned, and of both wild and synthesised hybrids between them, (2) photographs of meiosis in both species and hybrids, (3) photographs of *A. adulterinum* and of *A. × poscharskyanum* growing wild in Norway.

A full account of this investigation will appear elsewhere.—J. D. LOVIS.

NORWEGIAN MATERIAL OF SOME OF THE RAREST BRITISH MOUNTAIN PLANTS

This exhibit consisted mainly of herbarium specimens, mostly collected at Finse, in Norway. The species shown were some of which recent British specimens in luxuriant growth are not, or *should* not, be available to-day, e.g. *Woodsia alpina*, *Phyllodoce cverulea*.

Colour transparencies of vegetation at Finse were also on display.

It was pointed out that our British mountain flora can be regarded as essentially an impoverished sub-arctic flora, and its closest affinity is with the flora of the Scandinavian mountains. There are very few high mountain species in Britain which do not occur in Scandinavia. Moreover, many of the rarest British mountain plants are relatively common in Norway, e.g. *Carex atrofusca*, *Carex vaginata*, *Arabis alpina*, *Gentiana nivalis* and *Luzula arcuata*.—J. D. LOVIS & J. V. LOVIS.

RECENT WORK ON THE GENUS *SENECIO*

Specimens were exhibited of *Senecio vulgaris*, *S. squalidus*, the synthetic hybrid *S. vulgaris* × *squalidus* and the synthetic allopolyploid which had been produced by colchicine treatment of the hybrid.

These were accompanied by a plant of the naturally occurring allopolyploid from north Wales.—DEPT. OF BOTANY, MANCHESTER UNIVERSITY.

A HYBRID BETWEEN *FESTUCA RUBRA* AND *VULPIA MEMBRANACEA*

An intergeneric hybrid new to science, *Festuca rubra* × *Vulpia membranacea* was collected from two localities during summer 1954:—(1) at Southport, S. Lancs. (v.c. 59) by Mr. and Mrs. P. C. Hall and Mrs. B. Welch, and (2) at Sandwich, E. Kent (v.c. 15) by Miss M. McCallum Webster.

In appearance this hybrid resembles a long-awned form of *Festuca rubra* with rhizomatous growth and dark-brownish lower leaf-sheaths. The structure of the spikelet is similar to that of *Vulpia membranacea*, having pedicels thickened upwards, and narrow keeled glumes, though these gradually taper, and the lower glume is distinctly longer than that of *V. membranacea*. The size of the lemma and the length of the awn in the hybrid is intermediate. All specimens examined were completely male-sterile, having narrow, indehiscent anthers with badly developed pollen grains.

This intergeneric hybrid has not been recorded before either in Britain or on the Continent, but it was collected earlier on Guernsey, Channel Islands, by Francis Druce and C. E. Hubbard. In the herbarium of the British Museum there are some specimens belonging to this hybrid which were cultivated in Curtis's Botanic Garden and dis-

tributed erroneously under the name "*Festuca cambrica*" which is a form of *F. rubra*.

Festuca rubra × *Vulpia membranacea* has in its external morphology a remarkable resemblance to *Vulpia sicula* Link which grows in Sicily, Sardinia, Tunis and Algeria. This species may also have arisen from hybridization between *F. rubra* and *V. membranacea*. As the pollen grains in *V. sicula* are well-developed, it seems that the duplication of chromosome sets of species involved might have taken place in that case.

Specimens of this hybrid with its putative parents and *V. sicula* were demonstrated in this exhibit. A description and full account of this hybrid is being prepared for publication.—A. MELDERIS.

THE DISTRIBUTION OF *CIRSIUM ACAULE* AND *ASPLENIUM VIRIDE* IN THE BRITISH ISLES

Many northern plants reach their south-eastern limit, and many southern plants reach their north-western limit along a line running diagonally across central England. There seems little doubt that this phytogeographical boundary is also an important climatic boundary and maps were exhibited to show that to the south-east, over lowland England, the climate is more continental, annual rainfall is lower and hours of sunshine and summer temperatures are higher, than to the north-west, where the reverse is the case. *Asplenium viride*, selected as an example of a northern type, was compared with *Cirsium acaule*, a southern type, and the distribution maps demonstrated that these two species meet along this boundary but never overlap. In Derbyshire, which lies on the boundary, *Asplenium viride* is always confined to north-facing rocky slopes where limited observations show that summer temperatures are very low and, probably of greater significance, relative humidity correspondingly high. *Cirsium acaule*, on the other hand, is generally on south-facing slopes, and studies of the reproductive capacity in these habitats show that this is greatly reduced.—C. D. PIGOTT.

HELIANTHEMUM CANUM IN BRITAIN

Helianthemum canum occurs very locally in Britain in five rather small areas on Carboniferous Limestone; the Gower Coast, North Wales, Teesdale, near the head of Morecambe Bay, and the Burren in Ireland. Taxonomically these populations fall into three groups: (a) the well-known and scarcely variable plant from Teesdale with small dark green leaves. (b) The remaining populations in England and Wales; rather large and often grey-tomentose plants. (c) The much coarser Irish plants; like the Teesdale form in their lack of stellate tomentum on the upper leaf-surfaces, but differing in their much larger hairier leaves.

These were illustrated with herbarium sheets and cultivated material, and by diagrams showing the results of analysis of leaf length and length/breadth ratio measurements. Also exhibited were a number of photographs of *H. canum*, and some of its British habitats.

A more detailed account is in preparation for publication elsewhere.
—M. C. F. PROCTOR.

COLOUR PHOTOGRAPHS OF ALPINE PLANTS.—M. C. F. PROCTOR.

FERNS ON A RAILWAY PLATFORM

On the eastern face of one of the platforms at Leagrave Station, Bedfordshire (v.c. 30), beside the railway track, is a remarkable colony of ferns (see also Dony, J. G., 1953, *Flora of Bedfordshire*). This platform face is of cemented bricks, the cement crumbling in many places, and the ferns grow from the crevices between them. The steam from passing trains, though emitted on the off-side, is a fairly continual source of moisture. A map showed the distribution of the train services through Leagrave Station, and four photographs illustrated some of the ferns there. A list of species seen there two months ago was displayed, showing that calcicole ferns consort with calcifuge. An interesting problem is whether the colony owes its existence primarily to the transport of spores by the trains or to the favourable conditions afforded by that particular platform face.—T. D. V. SWINSCOW.

SYMPHYTUM IN BRITAIN

Specimens were exhibited of *Symphytum officinale*, *S. asperum*, *S. tuberosum* and *S. orientale*. The origin of *S. peregrinum* was examined. T. G. TUTIN.

THE USE OF 'SUB-SPECIES' IN TAXONOMY

The recent increase in knowledge of variation within species of the British Flora has resulted in the suggestion of a number of different taxonomic treatments for particular cases. These may roughly be grouped as follows:—

A. The extreme genetical view, which would attempt to work a species-concept based primarily on sterility, and would claim that, below the level of species, orthodox taxonomic categories are undesirable. This view, in its extreme form, is likely to be upheld only by workers who are not faced with the practical necessity of producing a workable taxonomy.

B. A less extreme view, which, whilst aiming at a genetical species-concept, concedes the practical difficulties by devices such as the use of 'aggregate' (agg.), but which on the whole thinks the orthodox infra-specific categories of little value.

C. A view which concedes the desirability of incorporating new knowledge (and particularly that usually called 'experimental taxonomy') into the orthodox taxonomy, but which holds that the latter must remain

- (a) based on observable and describable morphological differences.
- (b) practicable for the *general* purposes of the science of Botany as a whole.

If, to satisfy these conditions, it is necessary to use the existing categories for what are genetically speaking different types of situation, this is neither inconvenient nor undesirable. The *taxon* is *morphologically* definable; what it is equivalent to genetically or in terms of evolving population studies is a matter requiring a separate terminology. (Such a terminology, involving the use of the suffix '-deme', has been suggested and elaborated by Gilmour, Gregor, Heslop Harrison and others).

The case in favour of adopting the third view was set out, in the exhibit, with reference to the use of the category 'subspecies' for particular examples. In current practice (e.g. in Clapham, Tutin & Warburg's *Flora*) three main types of situation (from the experimental taxonomic viewpoint) underlie the use of this category:—

(1) 'geographical subspecies', morphologically more or less definable from the 'type' subspecies with an assumed interfertility, at least partial, e.g. *Veronica spicata* L. subsp. *hybrida* (L.) E. F. Warb.

(2) 'cyto-subspecies', insufficiently clearly definable on morphology (the differences being usually quantitative and statistical), but, usually, with more or less complete sterility barrier between it and the 'type', e.g., *Galium palustre* subsp.

(3) subspecies definable to some extent morphologically, ecologically and geographically, but about the nature of whose variation there is insufficient evidence for a satisfactory taxonomic treatment, e.g., *Ranunculus aquatilis* L. subsp. *radians* (Revel) Clapham.

Clearly the refusal of *specific* rank to examples of type (2) is a decision based on purely practical considerations. No logical boundary can be drawn between species and subspecies, nor should one attempt to find one. In practice, *specific* rank should be given where it is possible to assign, say 90% of reasonably complete specimens to one or the other *taxon*. If this is not practicable, then the subspecific category should be used, so that the *unqualified* binomial is available for general-purpose taxonomy.

Evidence was given in favour of treating the three cytodesmes of *Polypodium vulgare* L. as subspecies (type (2)), not as separate species.

Type (3) cases will presumably continue to trouble us; but no-one need feel dissatisfied with this, which is merely a convenient taxonomic device.—S. M. WALTERS.

SOME HYBRIDS IN THE BRITISH FLORA—EXISTENT AND NON-EXISTENT.—
E. F. WARBURG.

ARTIFICIAL INTERSPECIFIC HYBRIDS IN *EUPHRASIA*

The hybrids shown were *Euphrasia occidentalis* × *salisburgensis* var. *hibernica* and *E. pseudokerneri* × *occidentalis*. Dried specimens of the hybrids and their parents were exhibited. In addition flowers and leaf silhouettes were shown.

E. occidentalis and *E. pseudokernerii* are placed in Subsection *Ciliatae*, Series *Nemorosae*, and *E. salisburgensis* is placed in Subsection *Angustifoliae*. All have the same chromosome number.

The hybrids were intermediate between the parents in most respects. An exception was seen in the flowers of *E. occidentalis* × *salisburgensis* which were larger than those of either parent.

The percentage production of normal-looking pollen and of good seed was normal or almost so in *E. pseudokernerii* × *occidentalis*. In *E. salisburgensis* × *occidentalis* only about 20% of normal-looking pollen was produced and seed-production averaged one to two good seeds per capsule, as compared with nine per capsule in *E. salisburgensis*.—P. F. YEO.