Reports

OAK SYMPOSIUM

The Oak Symposium was held at the University of Sussex from the 19th–23rd September, 1973, by kind permission of Professor J. Sutcliffe. The topics discussed ranged more widely outside botany than in most B.S.B.I. conferences, and this range of subjects attracted an audience with varied interests. Thus the 180 participants included foresters, entomologists, mycologists and plant pathologists, ecologists and timber specialists, as well as those concerned mainly with taxonomy or floristics.

The programme included 21 papers dealing with various aspects of British oaks. On the first day Mr A. S. Gardiner (Merlewood) introduced us to their taxonomic history and Dr D. L. Wigston (Coventry) discussed their genetics and cytology. There followed a session on oak history, in which Sir Harry Godwin and Mrs H. Deacon (Cambridge) considered their prehistoric distribution, Dr O. Rackham (Cambridge) their distribution, management and function in historic times, and Dr J. M. Fletcher (Oxford) their history in mediaeval and modern times as reflected in their annual rings. Commercial aspects of oaks were then outlined by Mr M. J. Penistan (Cambridge), who told us how they are grown as a crop, and Mr C. J. Venables (Stafford), whose account of the many uses to which their wood is put was based on a life-time's experience in a sawmill. It was unfortunate that Mr Miles Hadfield was unable to complete the day's programme by talking about the oak and its legends. Instead Dr W. T. Stearn (London) spoke on 'The oak and the arboretum'.

The second day morning session was devoted to ecological and physiological studies. Mr R. C. Steele (Monks Wood) began by discussing the distribution and management of the various types of British oak wood and he was followed by Mr A. H. F. Brown (Merlewood), who dealt with the movement of nutrients in the various parts of the oak wood ecosystem.

Mr M. W. Shaw (Merlewood) then described natural regeneration and other reproductive characteristics of the oak. Mr G. Gradwell (Oxford), on 'The effect of defoliators on tree growth', and Drs K. Longman and M. P. Coates (Roslin), on 'The physiology of the oak tree', completed the morning's programme. In the afternoon there was an excursion to the Open Air Museum, Singleton, near Chichester, where much interest was shown in the examples of old timber-frame buildings and the charcoal-burners' camp that have been assembled there.

On Saturday the oak was considered as a host for other organisms. Dr. R. Watling (Edinburgh) emphasized the importance of fungi in both the breakdown of oak debris and mycorrhizal relationships, whilst Mr J. S. Murray (Aberdeen) discussed their pathogenic effects on oak. Dr F. Rose (London) then described some of the epiphytes, lichens in particular, that live on the oak. The next two speakers dealt with the oak as a habitat for insects, Dr M. G. Morris (Monks Wood) treating the topic in general and Mr A. Darlington (Malvern College) concentrating on their gall-forming activities. Then Dr J. J. M. Flegg (Tring) and Dr G. B. Corbet (London) discussed the importance of oaks and oak woodland as a habitat for birds and mammals respectively. Finally, the local secretary of the Symposium, Mr D. T. Streeter, summed up the proceedings by drawing our attention to some of the conservation problems that arise in oak woods and examined some of the methods employed in dealing with them.

During the excursions on the final day of the meeting, the leaders were able to demonstrate some of the organisms and ecological systems that had been discussed earlier. One party travelled to Saxonbury Hill and divided into two groups. In Eridge Old Park (by kind permission of the Marquess of Abergavenny), Dr F. Rose showed one group one of the most interesting and ancient examples of a deer park in England, enclosed, probably from the primaeval wilderness, some 800 years ago. The relics of ancient woodland in the ravines carry the second richest epiphytic flora for a region of

its size known in England, including many lichens that are rare in the south-east, two of which are there confined to Eridge Park (*Lobularia laetevirens*, on *Acer* and *Fraxinus*, and *Nephroma laevigatum* on *Acer*). The rare epiphytic hepatic *Frullania fragilifolia* was also observed, as well as *Ophioglossum vulgatum* and *Crataegus oxyacanthoides*. The other group, led by Mr D. T. Streeter, visited Nap Wood, a 100-acre oak-wood nature reserve managed for the National Trust by the Sussex Trust for Nature Conservation, where old oak coppice on shallow plateau soils was examined. In this woodland, which is of a type unusual in south-eastern England, themixed populations of *Quercus robur* and *Q. petraea* included numerous specimens showing intermediate characters. A fine colony of *Dryopteris aemula* provided an example of the 'Atlantic' element of the central Wealden woodlands. The two groups rejoined on Saxonbury Hill, where there is a greater proportion of beech and yew in the woodland than in the other areas visited and the massive sandstone outcrops contain such interesting species as *Hymenophyllum tunbrigense*, *Dryopteris aemula* and the hepatic *Bazzania trilobata*.

The other party visited another ancient oak wood known as 'The Mens', where Mrs Ruth Tittensor showed some of the members earthen enclosure banks, birch colonisation, Carex strigosa and some fine beech trees. Later, they saw a huge pollarded 'parkland' oak in Idlehurst Hurst and a large specimen of Sorbus torminalis near Hawkhurst Court. The remaining members, led by Drs R. Watling and M. G. Morris, found much in 'The Mens' to interest them, although the higher fungi were less in evidence than would normally be expected, owing to the late summer drought. In particular the many colourful species of Russula and Lactarius were missing. The mycologists did, however, find several of the species mentioned during the Symposium, including the rather uncommon Boletus pulverulentus and the true Lycoperdon echinatum, and were able to assist Dr R. C. Welch by identifying some of the fungi inhabited by beetles. There were seventeen species of such beetles, and four other species were taken under bark or on dead wood. Fallen leaves and twigs bore galls of the following gall wasps: Andricus fecundator (artichoke gall), A. kolleri (marble gall) and three common spangle galls made by species of Neuropterus. Several species of leaf-hopper were found on oak foliage, while birch, crab-apple and beech respectively yielded the common blackkneed capsid (Blepharidopterus angulatus (Fallén)) and two weevils.

The two most interesting insect records in 'The Mens' were of a Staphylinid beetle (*Atheta pilicornis*) and a Heteropteran (*Tytthus geminus*).

During the Symposium fourteen exhibits, mostly relating to the oak, were staged in Lancaster House, one of the University Halls of Residence. These included: Oak anatomy (For. Prod. Res. Lab., Princes Risborough), Historical oaks (Mr A. F. Mitchell, For. Comm., Alice Holt), The oak in pharmacy (Mrs M. Briggs), Computer model of oak wood management (Nature Conservancy, Merlewood), Ring widths of English oak (Dr J. M. Fletcher, Res. Lab. for Archeol. and Hist. of Art, Oxford), Oak in the landscape (Dept. of Landscape Architects, Thames Polytechnic) and English oak in everyday life (Mr C. J. Venables, Castletown Sawmills, Stafford).

N. K. B. ROBSON

FIELD MEETINGS, 1973

CONTINENTAL EUROPE

JUGOSLAVIA. 14TH–28TH APRIL

This, the first B.S.B.I. meeting to be held in the Mediterranean region, was based on two centres on the Adriatic Coast: Dubrovnik and Budva, both in Jugoslavia. The area within walking distance of Dubrovnik, where the first week was spent, is composed entirely of Cretaceous and Jurassic limestones, and directly behind the city is Mount Srd, 1300 ft (412m) above sea-level.

The party spent the first day on two local rambles, familiarising themselves with the commoner species: *Campanula pyramidalis*, *Cheilanthes fragrans*, *Veronica cymbalaria* and *Theligonum cynocrambe* on the walls and *Pallenis spinosa*, *Orobanche ramosa*, *Scrophularia peregrina* and *S. canina* subsp. *bicolor* at the roadside. A scramble over the rocks by the sea produced last year's flowering spikes of *Crithmum maritimum*, and also *Limonium cancellatum*. On the same day, an area of typical macchie-like scrub comprised an association of plants which was found with minor variations throughout the area, the trees being *Pinus halepensis* and *Cupressus sempervirens*, the latter in both its growth-forms, var. *horizontalis* and var. *pyramidalis*, with intermediates of all shapes. Beneath these was an often dense thicket dominated by *Juniperus phoenicia*, *J. oxycedrus*, *Pistacia lentiscus*, *Phillyrea media*, *Calycotome villosa* and *Erica manipuliflora*. Over and through these plants grew *Smilax aspera* and *Asparagus acutifolia*, while between them were *Phlomis fruticosa*, *Psoralea bituminosa* and the attractive flowers of *Veronica austriaca* subsp. *austriaca*.

The second day, with the wind still keen and the skies dull, it was decided to remain near sea-level, and the whole party walked through the old city, which was to act like a magnet for many of the party in their spare moments, reaching a limestone hill with its strata plunging almost vertically into the sea. A rather scruffy area, used by the local residents variously as a hen-run, weather station and rubbish dump, was covered with a mass of *Euphorbia characias* subsp. *wulfenii*, handsome in its growth-form and in perfect flower. Less conspicuous was the purple-flowered *Arabis verna* growing with *Stachys spinulosa* and a yellow orchid, probably a variant of *Orchis provincialis*. Once the area of human disturbance was passed, the slopes blossomed into a natural rockgarden, and *Iris germanica*, growing in great drifts on the cliffs, provoked much discussion as to its exact status and that of the paler *Iris pallida*. Also very conspicuous were the many silver clumps of *Convolvulus cneorum*, and plants of *Vincetoxicum huteri*, *Argyrolobium zanonii* and the suitably-named *Evax pygmaea* were also seen.

Two excursions were made up Mount Srd where two bulbous plants were locally common: *Fritillaria tenella* and a form of *Tulipa australis*. The naming of these attractive species is still somewhat uncertain, but these names were eventually given by Mr V. Pulević of the Botanical Institute in Titograd, whom we met later, and who is making a study of these genera. Our local contact in Dubrovnik was Dr Lav Rajevski, Director of the Botanic Garden on the island of Lokrum in Dubrovnik Bay. He and his assistant, Mr Birać, showed us the collection of tree species they are getting together on the island, particularly of Australian genera. The Botanic Garden occupies one corner of the island, the rest being a nature reserve with a dense macchie cover in which grow most of the typical plants of the area.

A coach excursion was made one day to Mount Orjen (1895m) and the party was dropped at the snowline, where the first plant we saw was *Crocus dalmaticus* showing through recently-fallen snow. Leaves of *Globularia cordifolia* and flowering plants of

Anemone appenina and Primula veris subsp. columnae grew amongst the boulders and under the scrubby oak wood (chiefly Quercus pubescens). Across the valley the facing slopes were covered with fine beech woods, while above us, where the snow still lay very deep, were distant conifer woods. A second visit inland by a small group of members produced records of the endemic Helleborus multifidus and Arum nigrum.

For the second week, our headquarters were at Budva on the Montenegrin coast. Here sands and shales as well as limestone gave a much more varied flora. The macchie was dominated by *Erica arborea*, *Arbutus unedo* and *Spartium junceum* on the most acidic rocks, while where there was heavy grazing the vegetation was practically garigue. Owing to the lateness of the season, few plants were yet flowering in the hills, but the meadows around the town proved very rich, often with rare British natives, highlights being a ditch full of *Ranunculus ophioglossifolius*, *Orchis laxiflora* growing in a meadow with *Serapias lingua* and *S. vomeracea*; *Trifolium molineri* and *Ononis reclinata*. Less familiar were the small *Asterolinon linum-stellatum*, *Cytinus hypocistus*, *Dorycnium pentaphyllum* and *Carex grioletii*, which appears not to have been recorded before from Jugoslavia.

One very wet day was spent visiting Titograd, pausing first on a wooded hill where the ground under the trees was carpeted with *Cyclamen repandum*, *Erythronium denscanis*, *Cardamine bulbifera* and many other early-flowering plants. A brief stop was made at Virpazar by Lake Skadar, and *Cymbalaria pallida* and *Orchis cornuta* were seen, while fruits of *Trapa natans* were fished out of the lake. At Titograd, a short tour of the Botanical Institute was made with Mr Pulević, and in his company the party visited Cijevna Gorge, a narrow, but deep cleft in the rocks with a fast-flowing river at the bottom. It was cut into a wide conglomerate flood-plain which was itself several feet below the level of the surrounding countryside. Torrential rain made the exploration of the slippery rocks none too easy, but *Paronychia kapela*, *Matthiola fruticulosa*, *Viola kitaibeliana* and *Thymus striatus* were seen.

A second expedition was made first to the ruined Turkish fortress-town of Stari Bar, now abandoned for almost a hundred years. The ruins were almost covered in vegetation: peach, fig and apricot trees grew in the old courtyards, while a carpet of *Geranium* brutium and Vicia hybrida covered the ground. Vicia narbonense, a possible forerunner of the modern broad-bean, was seen; and Hedypnois rhagadioloides and Erysimum sylvestre were on the walls. From Stari Bar a very rough road led southwards, and the coach made a brief stop at Zoganje, where the hillsides were bright with Petteria ramentacea, an endemic shrub, and Helleborus cyclophyllus, Smyrnium rotundifolium and Anogramma leptophylla grew along the margins of the Carpinus orientalis woods. Ulcinj beach at first looked unremarkable with its grey sand, but on closer inspection great clumps of Pancratium maritimum and Alkanna tinctoria were seen, and also many plants new to the party, notably Bellevalia romana, Psilurus incurvus, Echinophora spinosa, Onobrychis caput-galli and Pseudorlaya pumila. The scrub behind the beach contained Quercus coccifera.

Perhaps the most lasting benefit gained by members of the party during the fortnight was the habit of looking closely at *all* the plants, even those apparently well known and which would have been passed with only a cursory glance in Britain. Only in that way was it possible to identify correctly some of those species which are very close to those seen at home. *Vicia hybrida*, not *V. lutea*; *Bryonia cretica* not *B. dioica*; and *Trifolium patens* as well as *T. campestre* are obvious examples. Altogether a total of 650 species was seen and identified during the fortnight.

G. BECKETT

LAPLAND. 6TH-17TH AUGUST

Abisko stands at 385 m altitude on the southern shore of Lake Torneträsk, some 200 km north of the Arctic circle, in Sweden. Fourteen of us arrived by rail at the turiststation there, having variously travelled the 1600 or so kilometres from the south of Norway

or Sweden by sea, land or air to commence the fourth C.S.S.F. foreign field meeting on Tuesday 7th August. The turiststation is set in the Abisko National Park within the subalpine forest which is dominated by Betula pubescens subsp. tortuosa. There is a wealth of botanical interest on its doorstep and our first day was spent within 1 km of the turiststation, in the National Park and on both sides of the railway towards and beyond the chairlift station. Naturally, specimens were not collected but a long list was made and many photographs were taken. Among the British plants were Equisetum variegatum, E. pratense, Cystopteris montana, Salix reticulata, S. myrsinites, Potentilla norvegica, Alchemilla subcrenata (introduced), Astragalus alpinus subsp. arcticus, Cornus suecica, Diapensia lapponica, Orthilia secunda, Phyllodoce caerulea, Andromeda polifolia, Empetrum nigrum subsp. hermaphroditum, Linnaea borealis, Carex capillaris, C. rostrata, C. vaginata, C. atrata, C. atrofusca, C. aquatilis, C. nigra and Phleum alpinum. All these were common. Not so common were Gentiana nivalis, Carex saxatilis, C. limosa, C. chordorrhiza, C. curta and C. dioica. The following non-British species were common: Equisetum scirpoides, Salix glauca, Astragalus frigidus, Viola biflora, Cassiope tetragona, Rhododendron lapponicum, Juncus arcticus, Luzula parviflora, Carex angarae, C. capitata, C. brunnescens, Calamagrostis purpurea and C. lapponica; the following were less common: Alnus incana and Silene wahlenbergella.

The ascent of Mt Njulla (1168 m) and thence to Björkliden Station to return to Abisko by rail was the itinerary for Wednesday. The first part of the route, up to about 700 m, was through the birch forest, succeeded by thickets of *Salix glauca* and *S. lanata* up to about 850 m. Many of the species given above were seen again together with the British *Saxifraga rivularis, Luzula spicata, Carex norvegica* and *Hierochloe odorata* and the non-British *Salix polaris, Pinguicula alpina, Carex macloviana* and *Trisetum spicatum*.

Above 900 m there was some melting snow, and dwarf-shrub communities of Dryas octopetala, Rhododendron lapponicum, Cassiope tetragona and Empetrum nigrum subsp. hermaphroditum appeared. Perhaps the most strikingly beautiful sight of the day was, on emerging from the willow scrub, an area below a snow patch covered in the brilliant yellows of Trollius europaeus and Viola biflora. Members scattered to various parts of the hill and took lunch either near the chair-lift station or below the summit. Beyond the top the boundary of the National Park was passed and specimens of some of the Common plants were taken for closer examination during the evening. Among the British species seen for the first time were Botrychium lunaria, Saxifraga cernua and Carex rupestris; and among the non-British were Ranunculus pygmaeus, R. nivalis, R. glacialis, Cardamine bellidifolia subsp. bellidifolia, Saxifraga tenuis, S. cotyledon, Cassiope hypnoides, Pedicularis lapponica, Erigeron uniflorus, Chamorchis alpina, Eriophorum scheuchzeri, Agropyron mutabile and Hierochloe alpina.

On Thursday there was an opportunity to cross Lake Torneträsk by motor boat to Jieprenjåkkstugan on the northern shore. It was a rough crossing and we quickly understood the need for the covered-in boat, but the weather on shore was bright and warm for most of the day.

The route was through birch forest, rather more luxuriant than at Abisko, following the western side of the Jieprenjäkka to the lower slopes of Mt Snuritjäkka at about 900 m. The return, during which a large herd of reindeer was seen, was by the eastern side of the stream. In the herb-rich forest were the British Equisetum hyemale, Cicerbita alpina, Polygonatum verticillatum, Paris quadrifolia, Carex vaginata and Milium effusum, and the non-British Carex juncella and Calamagrostis purpurea whilst in a mire within the forest were Tofieldia pusilla, Carex flava and Scirpus hudsonianus. Above the forest the mountain slopes revealed a flora to the attractiveness of which flowering Astragalus frigidus, Lychnis alpina, Ranunculus glacialis, Saxifraga oppositifolia, Dryas octopetala, Viola biflora, Cassiope tetragona, C. hypnoides, Phyllodoce caerulea, Veronica fruticans, Bartsia alpina and Erigeron uniflorus contributed. Unfortunately none of the following, mentioned in Dr Erik Asplund's guide to the area prepared for the Fifth International Botanical Congress, were seen: Matteucia struthiopteris, Koenigia islandica and Ranunculus sulphureus.

In the evening it was a pleasure to attend a lecture arranged by the turiststation on the mountain flora of Abisko given by Mr Hans Lundberg of the University of Stockholm.

Small groups visited three areas on Friday, viz. between the turiststation and Lake Torneträsk, the slopes above Björkliden Station and the calciphilous mountainside above Kopparåsen halt. The ascent from Kopparåsen was by the Raikenjira stream, which emerges from a lake at 902 m by an underground outlet. The birch forest and the willows *S. glauca* and *S. lanata* occupied successive and quite narrow zones and contained most of the species already seen in similar vegetation. *Alopecurus pratensis* (introduced) was noticed. The steep slope up to the lake yielded *Selaginella selaginoides*, *Betula nana*, *Minuartia biflora*, *Carex misandra*, *C. bigelowii* and *C. parallela* among many others. During the walk from the lake eastwards over the flat valley at 890 m and later, down the exposed ridge to Björkliden station in a cold wind with many snow patches on the surrounding slopes, *Woodsia glabella*, *Campanula uniflora*, *Petasites frigidus*, *Carex lachenalii* and *Agrostis borealis* were among the species observed.

On Saturday we walked out of the National Park to Abisko Östra station and spent the morning examining the vegetation in the birch forest and especially around a small lake a short distance to the south. Here the main interest was in the monocotyledons, including *Carex paupercula*, *C. lasiocarpa*, *C. adelostoma*, *C. buxbaumii*, *C. microglochin* and *C. capitata*.

The Abisko Natural Science Station, whose Director, Dr Gustav Sandberg, gave helpful advice in advance of the meeting, was occupied with an international symposium during the period of our visit, but the well-appointed and exceptionally well-run turiststation proved adequate for our needs.

The party split up on Sunday 12th August. Those who remained at Abisko for the day found *Carex vesicaria* and the ruderal *Cardaminopsis arenosa*. Another weed, *Arabidopsis suecica*, closely related to *C. arenosa*, was later found in abundance outside Kiruna airport terminal buildings. Other members went by rail to Narvik en route for Tromsø and those travelling by motor car returned by rail to their vehicles at Kiruna. In sunshine there was a drive of 180 km via Vittangi to Karesuando, a ferry over the river Muonio to Kätkäsuvanto in Finland, followed by 100 km of bumpy, but metalled, road northwards on the Finnish side of the river Könkämäeno.

Upon arrival at Kilpisjärvi, in the one mountainous area of Finland, Mr Seppo Lahti, Keeper of the University of Helsinki's biological station, and his colleague Mr Björn Federley received us most hospitably, even to the extent of specially heating their sauna for the benefit of our lady members brave enough to sit in it and plunge into the waters of Lake Kilpisjärvi afterwards. At 8.00 (our time) on Monday Mr Federley led us to Saana, a mountain rising to 1029 m on the east side of our hotel. *Poa alpina* grew beside the hotel and in a marsh close-by were *Carex lasiocarpa*, *C. rotundata* and *C. rostrata*. As at Abisko there is no pine forest, *Betula pubescens* subsp. *tortuosa* being the only forest-forming tree. In the forest a list of 105 species was made. Permafrost was present in the soil at a depth of 50 cm. In the alpine region above 600 m some 60 species were noted including *Betula pubescens* subsp. *tortuosa* (merely 30 cm in height) and *Chamorchis alpina*.

On returning through the birch forest tufts of the lichen *Parmelia olivacea* were conspicuous at a height of about 1 m on the birch trunks, indicating the normal depth of snow in winter. Mr Federley has described the plant cover of the Kilpisjärvi area in *Acta Soc. Pro Fauna et Flora Fennica*, **80** (1972). We are indebted to Professor Aarno Kalela of the Department of Botany, University of Helsinki for kindly arranging our visit to the biological station.

After lunch we left Finland and, in Norway, descended Skibotndalen in 55 km to the Lyngenfjord, often considered to be the most picturesque fjord in northern Norway. From Skibotn we drove a further 120 km to Tromsø, 'Capital of' or 'Gateway to' the Arctic'. The fern *Matteucia struthiopteris* became increasingly abundant in the slopes of the roadside woodlands in the course of the journey. Tromsø seems to regard the huge

Heracleum laciniatum auct. scand., non Hornem, introduced about 1850 and seen frequently in the town, with civic pride. The publicity brochure says 'The Tromsø palm grows with an almost tropical luxuriance and can reach the height of 2.5 m'.

Dr Ola Skifte of the Botany Department at Tromsø Museum gave us directions for an excursion to Fløyfjellet, a mountain rising to 671 m above Storsteinnes on the mainland across Tromsesund. For the first half of the day, Tuesday, there was heavy rain and strong wind but everyone eventually went on to the mountain, some ascending by cable-car after the rain ceased. Just above the wood limit *Carex maritima* was found growing in turf beside the path. The rocks below and to the south of the upper cable car station bore a rich flora and we noted some seventy species, and afterwards about thirty others growing in the area around and just above the cable-car station at c 430m.

Higher up at about 500 m near an outcrop of limestone rocks *Carex nardina* grew. A search near the summit for *Arnica alpina* was unsuccessful. Most of us were able to visit the Tromsø Museum with its exhibits beautifully displayed in a modern building on the outskirts of the town.

Wednesday was devoted to the journey of 260 km to Narvik, where, on the following morning, Dr Skifte arrived by sea to take us to Skjomen, a small fjord some 20 km to the south. We left at 8.00 and enjoyed the voyage amidst the scenery of mountains and fjords, landing by dinghy at Klubbvik and then walking up to about 1000 m. Here we saw *Calluna vulgaris* for the first time in any quantity since leaving home! This excursion with Dr Skifte was particularly helpful in solving doubts and puzzles of identification that had assailed us during the course of the meeting. Unfortunately, notwithstanding his otherwise impeccable arrangements for us, Dr Skifte was unable to prevent the rain which began during the afternoon and became heavier and heavier until after nightfall. Naturally we explained that we were not unused to botanizing in similar weather at home. The day was remarkably productive and we recorded no fewer than 175 species of vascular plants, although we may have been shown more! *Carex glacialis* and *C. nardina* were of especial interest.

Thus ended, on Friday 17th August, a day of Mediterranean-like weather, a meeting which had stretched considerably the botanical experience of all who were there and which had undoubtedly sharpened our eyes for the future detection of hitherto unrecorded or unconfirmed species in Scotland *Carex capitata* perhaps? *C. parallela*? or *Salix polaris*?

Some members returned south by way of Uppsala, where they visited both the old (that of Linnaeus) and new botanic gardens, Linnaeus's estate at Hammarby and his tomb in Uppsala Cathedral.

B. W. RIBBONS

ENGLAND

EPPING FOREST, ESSEX. 9TH JUNE

The purpose of this meeting was to examine the effects of past management and present recreational use of Epping Forest, as well as its botanical interest.

Ten members met at the Epping Forest Conservation Centre, High Beach, where the Warden outlined the geology and history of the area. The group then looked at the impact of pollarding on beech and hornbeam in the vicinity, and problems of succession and regeneration were discussed.

The party then proceeded to Strawberry Hill, seeing relics of both wet and dry heath threatened by scrub invasion, and examined water areas. Amongst the more notable species recorded were *Hottonia palustris*, *Genista anglica* and *Pedicularis palustris*; none of these would, perhaps, be remarkable but for their situation. In a rather different category was a small colony of *Iris versicolor*.

At the end of the day, the discussion over tea at the Conservation Centre revealed that a total of 188 species had been recorded: a satisfying total for a small area no more than twelve miles from St Paul's Cathedral!

P. A. MOXEY

HOLSWORTHY, DEVON. 15TH-17TH JUNE

This meeting was organised in conjunction with local recorders to obtain records from tetrads in the vicinity of Holsworthy, for the new Flora of Devon. A total of twenty people attended for at least one of the three days.

On the evening of 15th, an introduction to the Flora project was given, with maps and diagrams to illustrate progress to date. On the remaining two days, the party was distributed over a number of areas, especially to the south, though others went as far north as Welcome Mouth, on the Cornish border. In general, recorders were asked to record as many species from a tetrad as they could in one day, with no particular attention being paid to habitat.

In all, over 3,000 records were obtained. This is a basically agricultural area, with small woods and plantations, on the Culm Measures, and floristically rather poor. Perhaps most noteworthy was the rather frequent occurrence of *Hypericum undulatum*, generally in wetter places, and these also provided records for a number of other interesting plants, including *Potentilla palustris*.

Accommodation for the meeting was provided by the White Hart Hotel at Holsworthy, which not only allowed a convivial atmosphere but also placed a room at our disposal for evening sessions, which was particularly appreciated since many of those attending were not resident.

R. B. IVIMEY-COOK

CHEVENING, KENT. 23RD JUNE

By kind permission of Sir John Winnifrith, the agent, Mr P. G. Burton and the tenant farmer, Mr H. Stevens, the fifteen members who attended this meeting were able to explore the Chevening Estate, looking at the grass flora. The morning was spent in the grounds of the house, which lies at the foot of the downs. Many species typical of meadow and woodland habitats were found in the rough grassland around the lake and under the trees. From the grounds the party walked up on to the chalk downs behind the house, resting for lunch before investigating the chalk downland grasses.

No species of great rarity were found although over fifty different grasses were seen. After finding \times *Festulolium loliaceum* in the morning, a steady flow of specimens were presented to the leader throughout the day illustrating every possible intermediate between *Festuca pratensis* and \times *Festulolium loliaceum*.

Later in the afternoon, the party visited the River Darent at Shoreham, where several species were found characteristic of low-lying, wet ground.

S. A. RENVOIZE

KIRKBY STEPHEN, WESTMORLAND. 29TH JUNE-1ST JULY

In mostly fine, warm and sunny weather, twenty members, friends and a party from the Eden Field Club attended the meeting. On Saturday 30th June the party explored the wooded Swindale valley above Brough and a small limestone gorge further upstream. For this excursion the party was fortunate in having the expert guidance of Mr L. Henderson, who lives nearby. Of particular interest were *Equisetum hyemale*, *Gymnocarpium robertianum*, *Pyrola minor*, *Vicia sylvatica*, *Hordelymus europaeus* (new to v.c. 69) and *Melica nutans* in the woodlands, with *Epilobium alsinifolium* and *Myosotis stolonifera* in flushes in the gorge.

On Sunday the party explored the banks of the abandoned Tebay – Kirky Stephen railway in Smardale. Part of the line ran through woodland with more open areas of

limestone grassland and rocky outcrops. *Pyrola minor* was abundant along the thickly wooded parts and was growing especially well on the bed of the old railway track. Amongst the other more interesting plants seen were *Ophrys insectifera*, *Carex orni-thopoda* and *Brachypodium pinnatum* (2nd record for v.c. 69).

Dr G. Halliday joined the party for the excursion to Smardale and outlined the plans for a projected Flora of Cumbria. With this in mind the party had, on both days, compiled records on a tetrad basis.

E. F. GREENWOOD

STOURHEAD GARDENS, WILTSHIRE. 14TH JULY

This meeting, attended by sixteen members and children, had the great advantage of the guidance of Mr Graham Thomas, Gardens Adviser to the National Trust, to whom the property now belongs. It was at first a misty and wet morning, but with promise of a cool day later, which gave reasonable conditions for the considerable amount of walking involved. Mr Thomas stressed that the meeting was in the line of the 1972 Conference which brought together gardeners and field botanists. This meeting was indeed of great interest along horticultural lines, for the gardens were designed in the eighteenth century to show off the series of special features, temples and the like, by vistas through plantings of beech, fir and other trees. To these were added by successive generations plantings of exotic trees and shrubs so that the grounds have now something of the character of an arboretum with the charm of a classical English landscape.

Mr Thomas has produced an official list of the trees and shrubs, but it was fascinating to follow him round and hear his explanations of the differences between closely related species, with references to specimens to be seen in other parts of the country. The planning involved in planting for generations yet to come was clearly brought out, and the whole is designed to preserve as far as possible the atmosphere intended by the former owners.

Some of us hoped to see unusual weeds, but soon realised that continual mowing keeps these to a minimum. There were ferns, mainly *Dryopteris filix-mas* or *D. pseudo-mas*, and there was an interesting wet area with a variety of bog plants, but most of us will have brought away memories of the wonderful specimens of *Fagus*, *Picea*, *Tsuga* and Wellingtonia, and none will forget the explanation of the peculiar leaf-shape of the Tulip Tree, *Liriodendron tulipifera*.

R. ENGLISH

THE OUSE WASHES, CAMBRIDGESHIRE. 25TH AUGUST

Twenty-one members and friends assembled in Indian summer weather at Welches Dam. In the past, a good selection of aquatics have been recorded in this area. Many of the smaller ditches on the Washes have, however, become silted up and, for the benefit of motor-cruising and angling enthusiasts, the main drains are regularly cleaned out, while the use of agricultural fertilizers has tended to lead to the eutrophication of the water. The main object of the meeting was to assess whether these changes had been detrimental to the aquatic flora.

It was disappointing not to see Alisma gramineum where it was first recorded in 1972, but this was probably due to recent dredging and boating activities. A nearby dyke, however, provided four species of Potamogeton, Groenlandia densa, Hottonia palustris and non-flowering Utricularia vulgaris. Nymphoides peltata decorated the surface of the Counter Drain, but in its deep clear water Potamogeton lucens and P. perfoliatus were among the few aquatics which competed successfully with the luxuriant growth of Myriophyllum spicatum and two species of Chara. It was useful for comparison to have Alisma plantago-aquatica and A. lanceolata growing side by side. Ceratophyllum demersum was the predominant aquatic in a dyke that traverses the Washes, but where it was absent there were both Zannichellia palustris and Potamogeton pusillus.

The cattle-trampled margins of dykes produced both *Rorippa sylvestris* and *R. palustris* (there was also *R. amphibia* nearby), *Rumex maritimus* and *R. palustris*, *Polygonum mite* and a single plant of *Impatiens capensis*, a new plant for the Ouse Washes.

Thalictrum flavum was abundant in the small, ungrazed Washes near Welches Dam. In a small marsh near the dam there were *Ranunculus lingua*, *Stellaria palustris*, *Samolus valerandi* and *Scirpus tabernaemontani*, all of which have a very restricted distribution on the Washes. In the neighbouring arable fields, the peaty soil aroused the envy of the gardeners in the party and the botanists picked out *Chenopodium ficifolium* and *Galeopsis speciosa* as weeds. Some bold members demonstrated that some plants of *Urtica dioica* are stingless (var. *subinermis*).

Potamogeton berchtoldii was recognised by a small group who visited Stonea. The meeting finished by an examination of a stretch of Counter Drain near Mepal, where *Oenanthe aquatica* was growing profusely beneath the water's surface. *Callitriche intermedia* was detected and the most abundant of the four pondweeds present was *Potamogeton trichoides*. On the bank, patches of *Trifolium fragiferum* were still in flower.

It is worth noting that of the aquatics recently recorded from the Ouse Washes and neighbourhood, *Myriophyllum verticillatum*, *Potamogeton gramineus*, P. \times *zizii*, P. \times *salicifolius*, P. *alpinus*, P. *praelongus* and P. *friesii* were not observed on this meeting.

C. J. CADBURY

SCOTLAND

RHINNS OF KELLS, KIRKCUDBRIGHT. 30TH JUNE-1ST JULY

On the first day a party of seven assembled at Dalry and proceeded to Forest Lodge by car, thence on foot by the forestry road past Burnhead in the direction of Meikle Millyea and Loch Dungeon. *Ranunculus bulbosus, Meum athamanticum* and *Polygonum convolvulus* were noted by the roadside. The acid moorland terrain held few botanical items of more than ordinary interest, but one small patch of *Carex pauciflora* was noted, with *Thalictrum alpinum* and *Drosera anglica* nearby. A few plants of *Listera cordata* were found by searching under long heather. Low cloud discouraged examination of the rocks at higher levels, but a few montane species were found on crags south of Loch Dungeon at around 1,250 ft. These included *Lycopodium selago* and *L. alpinum*, *Juniperus communis, Sedum rosea* and *Galium boreale*. The most interesting and surprising plant seen here, however, in view of the general acid nature of the rocks, was a single plant of *Asplenium viride*, thus confirming an earlier record.

Our route now lay by the shores of Lochs Dungeon, Minnoch and Harrow, where *Isoetes* sp., *Drosera anglica*, *Lobelia dortmanna* and *Phragmites australis* were noted, then on to a rocky gully in the Folk Burn where *Trollius europaeus* and *Rubus saxatilis* were the only noteworthy species. The Lumford Burn was now followed to its junction with the Polharrow Burn, *Lycopodium clavatum*, *Gymnadenia conopsea* and the hawkweeds *Hieracium argenteum*, *H. vulgatum* and *H. sparsifolium* being found on the banks of the former. The forestry track to Forest Lodge via Fore Bush was now joined and an uneventful return made to the cars.

Sunday dawned extremely wet and the opportunity was taken to check the identity of specimens collected on the previous day and also to complete record cards. However, by mid-day the rain had ceased and it was decided to record near Balmaclellan with a party reduced to five. A tributary stream of the Garple Burn produced Viburnum opulus, Galium odoratum and Festuca gigantea, while marshy ground nearby had Trollius europaeus, Carum verticillatum, Galium uliginosum, Dactylorhiza maculata subsp. ericetorum, D. purpurella and their putative hybrid, and Briza media. By the margin of Barscobe Loch Lobelia dortmanna, Apium inundatum, Potamogeton gramineus, Scirpus lacustris and Carex curta were noted, and on dry knolls nearby Gentianella

campestris, Antennaria dioica and Gymnadenia conopsea occurred. Rubus saxatilis appears to be a regular feature of upland stream banks in this part of the vice-county; it was seen again in a rocky stretch of the Garple north of Barscobe Loch accompanied by Melica nutans, Hieracium duriceps, H. vulgatum and H. sparsifolium. A roadside bank by the A702 road near the junction with the road to Lochinvar had Meum athamanticum in considerable quantity and in a damp hollow nearby a fine colony of Rumex alpinus was seen.

To sum up we found the mountain flora of the Kells range disappointing and species-poor. Dr H. J. Young, who explored the higher levels approaching from the west side on the first day, reported nothing more interesting than *Saxifraga stellaris* and a small patch of *Rubus saxatilis*. However, some useful mapping work was done on a 5km square basis and most members saw species which were new to them.

Seven persons participated in this meeting which was held jointly with the Andersonian Naturalists of Glasgow.

A. McG. STIRLING

LOCH AILORT, WESTERNESS. 7TH-14TH JULY

On Sunday 8th July the sun shone on a party of eight toiling up the Allt na Criche track to Loch Beoraidh. This is in quadrant 17/78 SE and during the day 180 records reached the cards, including *Platanthera chlorantha*, *P. bifolia* and *Carex laevigata*. After lunch above Loch Beoraidh the party divided; some went to 17/78 NE, others to 17/88 SW, where the only *Pseudorchis albida* of the week was seen, and one to 17/88 NW where *Salix herbacea*, *Carex bigelowii* and *Epilobium anagallidifolium* were seen at the rather low level of 2000 ft.

Next day, 9th July, half of the party went to Morar and worked back towards Loch Ailort, finding the basic dykes and dunes of the Atlantic coast very interesting. A number of plants very unusual in Westerness were found, including *Listera ovata*, *Urtica urens*, *Juncus maritimus*, *Elymus arenarius*, *Medicago lupulina* and *Trisetum flavescens*. The remaining half of the party worked their way from Loch Ailort to Arisaig, finding less. However, *Dryopteris aemula*, *Eriophorum latifolium* and *Ligusticum scoticum* provided some interest. The two parties met towards evening, having visited six quadrants between them.

The members of the Morar party were so impressed with the flora of the basic dykes that they wished to visit another similar area on Tuesday 10th July, so this became 'dyke day'. Four members selected the car with the greatest clearance and made for the rough road to Rhu Arisaig, inspecting as many dykes as possible on the way. Their tenacity was rewarded for on one dyke they found *Calamagrostis epigeios* and *Carlina vulgaris* and in a near-by damp area *Dryopteris carthusiana* and *Drosera intermedia*. Meanwhile the remainder of the party was carrying out a similar but less successful exercise on the other side of the Sound of Arisaig. *Gentianella campestris* on a prominent dyke and *Osmunda regalis* on a wet cliff were the most notable plants. Five quadrants were visited altogether that day.

On Wednesday 11th July one of the party had to leave. The remainder worked three quadrants around Kinlochmoidart. In 17/67 SE were well-developed oak-birch-hazel woods with some *Carex laevigata*, *Dryopteris aemula*, *Eupatorium cannabinum*, and *Viburnum opulus*. In 17/77 SW is an interesting salt-marsh on which was found *Ruppia maritima* in a few places. *Hammarbya paludosa* was found near Captain Robertson's Cairn along with *Dactylorhiza incarnata* and *Platanthera bifolia*. A brief visit to 17/66 NE on the borders of Westerness and Main Argyll confirmed the continued existence of *Lycopodium inundatum* there.

Thursday 12th July was organised by the 'weather clerk' as a wash-out. Unfortunately his signs were misread and half the party, joined by our member from Fort William, set off to climb Sgurr nan Coireachan (3171 ft). Hurrying through the low ground, quadrant 17/98 NW was reached before the rain commenced in earnest. To add to the

discomfort, over 90% of the vegetation appeared to be *Molinia caerulea*, augmenting with its tufty wetness the monotony of the trudge up to Coire Tholaidh. In Coire Tholaidh there was little change in the vegetation and the steepness of the corrie walls combined with the dangers of separation posed by the enveloping mist obliged everyone to keep together. Under these conditions an inadequate exploration yielded *Lycopodium alpinum*, *Dryopteris abbreviata*, *Thalictrum alpinum*, *Alchemilla alpina*, *Epilobium anagallidifolium* and *Carex bigelowii*. Meanwhile, the rest of the party on the lower ground had done little better. *Carum verticillatum* was confirmed in 17/98 SW and *Platanthera bifolia* seen.

Friday 13th July was the last day for many of the party, who had to start their return journey the next day. Further investigations were undertaken in the Glen Moidart area, all four quadrants of 17/77 being visited. 17/77 SW yielded a second station for *Hammarbya paludosa*, found by the same member as before – twice in three days! Curiously enough this station was also near a military cairn, General Ross's Cairn. 17/77 NW produced a few arctic-alpines from Coire na Cloiche, viz. *Oxyria digyna* and *Thalictrum alpinum*. 17/77 SE (Glen Forsian) had a gully on the face of Sgurr Gorm with *Trollius europaeus*. 17/77 NE was only summarily dealt with. In the last half-hour of the day the whole party visited Dalelia in 17/76 NW to see if the *Lycopodium inundatum* extended to there. No *Lycopodium* was seen but 117 records reached the card.

On the 14th July the three remaining members visited Arisaig again, working woods and lochs in 17/68 SE and 17/68 NE. Veronica scutellata, Carex limosa and Carex paniculata were noted. After lunch another member started home and the remaining two visited the sand-dunes at Camusdarroch. Thalictrum minus, Teesdalia nudicaulis, Anthyllis vulneraria, Vicia angustifolia, Campanula rotundifolia and Agropyron junceiforme were seen.

A very profitable week was spent recording for the Inverness-shire Survey, and it is appropriate at this point to offer our thanks to landowners who allowed us to 'trespass' at will.

A. A. P. SLACK

NEWTONMORE, EASTERNESS. 14TH-21ST JULY

Fourteen members attended this meeting which had the object of visiting quadrants new to the Inverness-shire Survey in the upper Spey valley. Seventeen new quadrants were visited and additions were made to five visited previously.

The 14th started very wet and it was not until late afternoon that a party ventured to the woodland and hillside along the north side of Loch Ericht. Here we recorded 145 species in 27/58 SE and 17 additions to 27/68 SW (now 193). We were fortunate in finding a colony of *Potentilla crantzii* in full flower on a base-rich outcrop. This was accompanied by *Trollius europaeus*, a carpet of *Viola lutea* and *Helictotrichon pratense*. Nearby *Cryptogramma crispa* and *Chamaepericlymenum suecicum* were plentiful, the former both on scree and in cracks of rock outcrops. The rock outcrops were often in the dense shade of planted conifers and the parsley fern still throve in its altered environment.

The weather was fine on the 15th when we formed two parties. The first party went to the Drumochter Pass where they recorded 174 species in 27/67 NE and 27/68 SE. *Carex rariflora* was locally abundant in both quadrants. *Lycopodium annotinum, Dryas octopetala, Carex saxatilis* and *Carex atrata* were also recorded; the *Dryas* had finished flowering. The second party visited the upper reaches of the River Mashie in 27/58 NE where a large area of coniferous forest was encountered which was not shown on the O.S. map. Once through the forest and across the moor we found *Polystichum lonchitis* and *Melica nutans* on some small cliffs, and a few plants of *Betula nana* were seen on the moor. *Sanicula europaea*, not a common plant in this area, was in flower in a birch wood. 177 species were recorded with 44 additions to 27/59 SE (now 181).

On the following day, the mountains at the west end of Glen Banchor were visited. Here we recorded 176 species in 28/60 SW and 130 in 27/69 NW, including *Vaccinium microcarpum*, *Carex rariflora* and *Alopecurus alpinus*. The rocks varied considerably in composition, *Cryptogramma crispa* and *Athyrium distentifolium* being plentiful in places, while nearby *Asplenium viride*, *Rhinanthus borealis*, *Saussurea alpina*, *Juncus triglumis* and *Carex lepidocarpa* subsp. *scotića* were prevalent. On the higher ground, *Sibbaldia procumbens*, *Loiseleuria procumbens*, *Gnaphalium supinum* and *Juncus trifidus* were on exposed places and *Isoetes lacustris* was recorded in Loch Dubh.

Garva Bridge was the starting place on the 17th, from where we went out to make 325 records in 27/49 SE and 27/59 SW. Most of the recording was on north-facing slopes and corries reaching to 3000 ft. *Alopecurus alpinus* and *Phleum alpinum* were both found locally in the higher grassy flushes. Other species recorded included *Parnassia palustris, Salix lapponum, Listera cordata* and *Carex vaginata*.

On the 18th a party of twelve set out on the long trek to Ben Alder: thankfully the day was cool and cloudy. While crossing over part of Westerness, *Betula nana* was seen in fruit in a spongy bog, and lunch was taken in the company of *Phyllodoce caerulea*, which regrettably had just finished flowering. With everyone's eye trained for spotting *Phyllodoce* we then set to work recording in Easterness once again. In 27/47 SE we saw *Cerastium cerastoides, Veronica alpina, Coeloglossum viride, Carex saxatilis* and *Poa alpina*. After a brief stop on the misty summit, on which there was still snow, we descended into 27/57 SW where we climbed Beinn Bheoil. Here Mr Groom made the find of the week – Easterness's first confirmed colony of *Phyllodoce caerulea* on the southeastern slopes. This certainly made the long walk well worth while. *Drosera anglica* was noted in the bogs on the way home. 177 species were recorded for the two quadrants.

Thursday was a foul day of rain and mist, yet three parties set out willingly. One party aimed to climb Geal Charn in 27/59 NE but were prevented from doing so by a swollen river and so recorded in Glen Markie instead, where they noted 137 species including *Polystichum lonchitis, Sedum rosea, Galium boreale, Oxyria digyna* and the saxifrages *S. hypnoides, S. aizoides* and *S. oppositifolia*. A second party recorded in 27/59 NW near Garva Bridge, a rather boggy square which yielded *Betula nana* with a fungal infection, probably *Dothidia betulina*, also *Rubus chamaemorus, Vaccinium uliginosum* and *Carex pauciflora*. The third party visited several lowland sites, the only party to do so all week. Among the plants they saw were *Nuphar pumila*, *Cicuta virosa*, *Sorbus rupicola* and interesting-looking *Callitriche* and *Circaea*.

On the 20th we visited the little-worked square 27/78 and were fortunate in having access right to its centre at Gaick Lodge. Here we split into four parties, one into each quadrant. There were 650 records, involving 243 species, from the four quadrants. The geology and terrain varied considerably and many plants were recorded from only one or two of the quadrants. A soil sample from one site had a pH of 7.0. Among the more interesting species seen were *Equisetum pratense* at a little over 2000 ft, *Asplenium viride, Polystichum lonchitis, Dryopteris abbreviata, Draba incana* and *Arabis hirsuta*, the latter a very rare plant on the mountains of Inverness-shire. *Silene maritima* was in full flower on scree at 2500 ft. Also noted were *Dryas octopetala, Salix myrsinites, Orthilia secunda, Carex rariflora* and *Carex atrata*.

Approximately 308 species were seen and 2300 records added for the Inverness-shire Survey. Quite a large number of critical species were collected and are not included in these totals. I wish to record my thanks to the various landowners who were very helpful regarding access to the more remote mountain areas visited.

R. J. D. MCBEATH

INVERMORISTON, EASTERNESS. 21ST-28TH JULY

Perfect weather made the week especially enjoyable for the ten people attending (some part-time) for the purpose of recording the plants in the quadrants on the northern and western sides of Loch Ness for the C.S.S.F. Inverness-shire Survey.

July 22nd: The party split up to work the quadrants of 28/31. The Inverwick Forest gave the best results where Miss V. Gordon and Miss E. Young found a large colony of fruiting and regenerating *Betula nana*. *Pyrola media*, *Orthilia secunda* and *Arctous alpinus* were also seen by them, the first-named with the only flower found during the week though sterile plants were quite frequent among heather. *Tofieldia pusilla*, thought to be scarce in the district at the time, was subsequently found to be quite common in the richer flushes. Mr A. Copping and Mr R. Minor found a flush in the Dundreggan Forest with about fifty plants of *Eriophorum latifolium*. One of the quadrants (in the Portclair Forest) was not visited until the next day owing to the long distance involved, but when two of our energetic walkers, Dr R. Corner and Mr J. Winham, who had just joined us, reached it, they, too, found *Betula nana* as well as *Arctous alpinus* and *Juniperus communis* subsp. *nana*.

July 23rd: The quadrants of 28/30 were decided on. Not to be outdone by the men, Miss Gordon and Miss Young undertook the long walk to that part of Corrieyairack which falls in this grid-square, bringing back as their best find *Festuca altissima*. Miss Duncan and Mr Minor decided to fish for water plants and were rewarded in Loch Uanagan, near Fort Augustus, by *Potamogeton praelongus*, *P*. × *zizii* (two entirely different specimens, one approaching *P. lucens* and the other *P. gramineus*, the parent species), as well as the common *P. natans* and *P. polygonifolius*. Mr Dandy subsequently informed me that the record of *P*. × *zizii* was the second for v.c. 96, the first being A. W. Bennett's last century, of which he had not seen a specimen. The evening before, Dr Corner, who was staying at Invergarry, had shown us a fruiting spike of *Leucojum aestivum* which was growing on a large island in Loch Oich (28/30), having been established there for some years. An hotel guest told him he first heard about it from the authoress Mary Stewart. Another of our groups went to Inchnacardoch Forest, reporting still more *Betula nana*, of which we were getting a bit tired by now, and of course doing useful mapping.

July 24th: Grid-square 28/21 was chosen by three parties in an endeavour to cover more of Glenmoriston. They recorded between them *Botrychium lunaria*, *Pseudorchis albida*, *Lycopodium annotinum*, *Salix phylicifolia*, and another willow which was subsequently identified as S. × rubra, also a single flower of *Subularia aquatica*, not forgetting fruiting specimens of *Rubus chamaemorus*, which were found to be common in the Loch Ness area. *Thalictrum alpinum* made its first appearance in flushes. Mr Copping demonstrated the difference between *Agrostis canina* subsp. *canina* and subsp. *montana*, and was helpful on the subject of grasses throughout the week. Meanwhile Miss Duncan made a special trip to Loch nam Faoileag, near Milton, Drumnadrochit (28/43), to try to refind *Potamogeton praelongus* which she remembered seeing there some years ago, getting this and plenty of *P. gramineus*. Some broom bushes (probably planted) by the roadside near Milton had densely downy seed-pods and silvery leaves, contrasting with the glabrous-podded *Sarothamnus scoparius* among which they grew. No one has yet been able to name this plant in the absence of flowers, and it may be only a mutant.

July 25th: As the weather continued good, we decided to join up and climb Meall Fuarvonie (2,284 ft) in 28/42, this being the only mountain in the vicinity, though we had been told it had been well mapped. The dry peaty summit was entirely colonised by mosses and lichens, and after admiring the wonderful view we descended to concentrate on the steep fissured cliffs below, dividing into two parties. *Equisetum hyemale, Eriophorum latifolium, Oxyria digyna, Polystichum lonchitis* and *Saxifraga oppositifolia* were found by one party, while the slippery north-western cliffs were explored by Miss Conacher, Mr Copping, Dr Corner and Mr Winham. Dr Corner descended to the loch, finding *Hymenophyllum wilsonii* on the rocks above it. *Potentilla crantzii* was also seen on the mountain. Just as we were about to embark in our cars, Mr and Mrs Minor saw *Platanthera chlorantha* by the roadside, *P. bifolia* having hitherto been found to be the commoner of the two species in our area.

July 26th: It was decided to return to 28/43 and also make a start on 28/53. Miss

Conacher and Miss Duncan had little reward for a long walk to Loch Bruicheach by Boblainy Forest (28/43), except *Callitriche intermedia* and the inevitable *Lobelia dortmanna* and *Myriophyllum alterniflorum*, but Mr Copping, Miss Gordon and Miss Young did better in 28/53, finding a *Schoenus* flush with masses of *Eriophorum latifolium*, and finished by finding *Carex limosa* and *Potamogeton praelongus* in Loch Laide. In the evening Miss McCallum Webster reported *Agrostis gigantea* in the car-park at Drumnadrochit (28/52). This was a grass we had not expected 'deep' in the northern highlands.

July 27th: Once more we divided up to try and fill in gaps. In 28/43 Miss Conacher and Mr Winham undertook the long walk to Loch Garve Bhreach, finding *Orthilia* secunda and, for the first time, *Isoetes lacustris*, detected by Miss Conacher. Miss Gordon with another party returned to 28/31, where she found more than one colony of *Drosera* \times obovata in perfect condition near Torgyle Bridge in Glenmoriston. A brief unscheduled visit was made to Loch Lundie, near Fort Augustus in Westerness (28/20), where *Sparganium minimum* was seen as well as the more common *S. angustifolium*, with many hundreds, perhaps thousands, of *Lobelia* plants fringing the loch.

July 28th: This being Saturday most of the members had to leave, but Mr Copping and Miss Duncan decided to have a search for pondweeds in Loch Laide (28/53) where *Potamogeton praelongus* had been found earlier in the week. To their surprise the wind had washed up several more species near the margin and *P. alpinus*, *P. berchtoldii*, *P. gramineus*, *P. obtusifolius*, *P. perfoliatus* and *P. polygonifolius* were collected in good condition.

A visitor from the south commented on the fact that we had so many sedges. In fact we found twenty species including *Carex lepidocarpa* subsp. *scotica*, *C. laevigata*, *C. lasiocarpa* and *C. pauciflora*.

Our thanks for this pleasant week are particularly due to Miss Conacher, who undertook the arduous task of adding our 'dots' to the composite cards, to the Invernessshire County Council, who allowed us to use Invermoriston school in the evenings, and not least to those members of the party (particularly Miss Young), who uncomplainingly 'ferried' others backwards and forwards to their lodgings and our meeting-place.

U. K. DUNCAN

KINDROGAN FIELD CENTRE, EAST PERTH. 1ST-8TH AUGUST

This meeting, entitled 'Vegetation, past and present', was based at the Scottish Field Studies Association's Kindrogan Field Centre. Ten enthusiastic participants were instructed in the botany of the Quaternary Period by means of pollen and macroscopic fossil analyses of deposits formed in the Strathardle area.

Study was concentrated on four deposits. Two already known to the leader were Straloch (37/043.641), a kettle-hole sequence with Late-glacial sediments, and Dun Moss (37/167.560), a raised bog with early Post-glacial fen peat with abundant *Palu-della*, a moss now extinct in Britain. Two deposits investigated for the first time were Tulloch (37/056.636), a tiny, depression near a deserted settlement, and a mire near Loch a' Choire, Ben Vrackie, at about 1650 ft (27/931.623).

At Straloch the deposits reach a depth of about 10 m; about 3 to 3.5 m of the basal layers of marl, silt and clay are Late-glacial and rich in plant debris including *Rumex* acetosella sensu lato nutlets, *Saxifraga oppositifolia* leaves, *Salix herbacea* leaves, *Selaginella* megaspores, *Timmia* leaves, *Polytrichum alpinum* shoots and *Camptothecium* nitens leaves. The pollen/spore flora includes four species of Lycopodium, Saussurea, Betula nana, Encalypta rhabdocarpa, and many others.

The *Paludella* peat from Dun Moss was carefully examined to find which species may have grown in the rich fen apart from *Paludella* and *Camptothecium nitens*. We found *Rumex acetosa* fruits, fruits tentatively identified as *Betula nana*, a *Ranunculus* fruit and various unidentified remains. The depth of the deposit at Tulloch was less than 3 m. The basal layers are probably Late-glacial (on the basis of leaves of *Salix herbacea*).

At a depth of about 1 6m a layer of *Betula nana* leaves was encountered; the age of this layer is unknown at present.

The mire sequence at Loch a' Choire is shallow, about 1.5 m deep. About 0.5 m to 1 m below the surface of *Carex rostrata* fen *Paludella* peat was encountered and recognised easily in the field. Despite its closeness to what seems an undisturbed surface, the *Paludella* peat is several thousand years old (formed before the rise of *Alnus* pollen).

Considerable time was taken over the description of sediments and peats which were sampled, using Hiller and Russian peat-borers and a Livingstone piston corer. The Troels-Smith system of unconsolidated sediment description was used and found easily applicable once the initial intricacies were mastered.

Brief visits were made to the base-rich areas of the Cairnwell and Ben Vrackie to familiarise the participants with analogues of Late-glacial vegetation.

J. H. DICKSON

IRELAND

CLOGHER HEAD AND BALTRAY SANDHILLS, CO. LOUTH. 12TH MAY

The dry season and the resulting backwardness of the sandhill flora demanded diligent searching and keen observation from the party of twelve who came to Baltray. Only a few flowering plants of *Viola tricolor* subsp. *curtisii* were seen during a mile walk across the dunes. Two widely separated patches of *Botrychium lunaria* were discovered; a significant improvement on the single plant seen in 1968. An attempt to refind *Salvia horminoides* was unsuccessful but only a fraction of the dunes used as a golf-course was examined. *Equisetum variegatum* was seen in one wet spot and basal leaves of *Ophrys apifera* were pointed out by Mr Breen.

At Clogher Head the chief attraction was *Scilla verna*, which was often growing with *Pedicularis sylvatica*. Such maritime favourites as *Armeria maritima*, *Spergularia rupicola*, *Crithmum maritimum* and *Halimione portulacoides* were prominent. Of particular interest was the discovery of *Asplenium marinum*; this is only the second record for Louth and it is the first sighting of the plant in the county since 1915.

D. SYNNOTT

DINGLE PENINSULA, CO. KERRY. 10TH-15TH JULY

At this meeting, led by Miss Kertland and Miss Scannell, a folder of notes was given to each participant. It included lists of the more interesting plants known to occur and of segregate species which might be expected in Scully's (*Flora of County Kerry* (1916)) districts 4, 5, 7 and 8, a xerox on the botany of Brandon from the Stelfox Memorial Number (*Irish Naturalists' Journal*, **17**: 305–307 (1973)), and an outline map of the botanical divisions of County Kerry as indicated by Scully and Praeger (*Irish Topographical Botany* (1901)). The attendance of twelve included three from Belfast and two from London.

The Castlegregory area, a flat peninsula of sand and limestone, was visited on the first day; the marsh to the south-east of Lough Gill was worked and a card was completed. The flora noted included Veronica catenata, Baldellia ranunculoides, Typha angustifolia, Catabrosa aquatica, Hippuris vulgaris, Juncus subnodulosus and Juncus bufonius subsp. foliosus and Chara (possibly C. canescens) was abundant in shallow water with young plants of Potamogeton pectinatus. Potamogeton × nitens was not seen. This hybrid was recorded from Lough Gill in 1864 by David Moore, the first British Isles record. Local botanists report the plant from the western side of the Lough with other rare Kerry plants: Ranunculus lingua and Rumex hydrolapathum. The natterjack toad was also seen.

The roadside by the marsh yielded \times *Festulolium loliaceum*, a grass reported spreading in many areas. On sandy terrain *Carex arenaria*, *Koeleria cristata* and *Asperula cynanchica* were frequent. According to Tutin & Chater (see Short Notes p. 170), the closely related *Asperula occidentalis* Rouy, a species of western Iberian distribution was collected from Castlegregory in 1953. The plant collected by the present party does not, however, seem to be this species.

In the afternoon, Lough Slat, an acid lake at 600 ft on the Stradbally range, was visited. The flora included *Lobelia dortmanna*, *Elatine hexandra*, *Polygonum hydropiper* and *Isoetes lacustris*, and washed ashore were fragments of *Callitriche* (possibly *C. intermedia*). *Rhynchospora fusca*, reported as abundant by Scully, was not seen. The northern shore is now afforested. A streamlet of the Owencashla River made a fine waterfall providing a suitable habitat for *Saxifraga hirsuta*, *S. spathularis* and *S. × polita*, *Hymenophyllum wilsonii*, *H. tunbrigense* and *Pinguicula grandiflora*. A flush on marshy ground nearby yielded *Schoenus nigricans*, *Carex hostiana*, *C. dioica*, *Hypericum elodes*, *Pinguicula lusitanica* and *Dryopteris aemula*. *Thelypteris limbosperma* was abundant throughout this area but was not seen elsewhere on the Dingle peninsula. *Sibthorpia europaea* was common in wet grassy places, in most cases sharing the habitat with *Epilobium brunnescens*. Apart from *Hedera helix*, *Ilex aquifolium* and *Sorbus aucuparia*, there was no arbuscular vegetation in the area. Later, a traverse of the northern slopes of Stradbally mountain failed to reveal *Rubus chamaemorus*, which had been reported from there.

On Thursday, the party travelled via Castlemain to Inch, a sand spit which projects three miles into Dingle Bay. The party worked the western side of the dunes about a mile from the mainland. Here, the high, wind-eroded dunes bore a thin vegetation cover of Ammophila arenaria. The compacted sand in the dune valleys carried a scattered, sparse flora consisting of Viola tricolor, Leontodon taraxacoides, Hypochoeris radicata, Galium verum, Eryngium maritimum and Euphorbia paralias. On the shingle at the terminal point, the party searched for an old record for *Lathyrus japonicus* without success. It was seen as recently as 1970 on the south side of Dingle Bay. Zostera marina and a narrowleaved plant (possibly Z. nana) were washed up on the drift-line. The marsh at the extreme end was also worked. Parentucellia viscosa was plentiful. At the lunch site, west of Annascaul, the vegetation consisted of Lonicera periclymenum, Fuchsia magellanica, and a slender-flowered, pale-leaved Fuchsia referred to by Praeger (The Botanist in Ireland (1934)) as F. gracile. Owing to indisposition, Mr Michael Long of Dingle, was unable to join the party but provided a list of plants for the area west of Dingle. Here was seen Asplenium marinum in roadside habitats, as well as on the dunes, Ophrys apifera, Coeloglossum viride and Cuscuta epithymum. Orobanche rubra was conspicuous in sloping coastal pastures at Slea Head. To the north, on the western slopes of Brandon, the hedges, consisting chiefly of Fuchsia, make a dark intrusive grid on the mountain sides.

The western side of Caragh Lake was visited on Friday. In meadows by the outflow channel there was abundant *Carum verticillatum*. At Lough Beg, an arm of the lake, the shore marsh provided *Sisyrinchium bermudiana*, *Eriocaulon aquaticum*, *Elatine hexandra*, *Carex lepidocarpa* and other plants. On the roadsides, *Euphorbia hyberna* was encountered frequently, *Senecio sylvaticus* was seen in dry habitats and *Vulpia bromoides* on wall tops. After lunch at Treangarriv, a form of *Dryopteris dilatata* with narrow pinnules was collected. *Asplenium adiantum-nigrum* subsp. *onopteris* was not found although recorded from Blackstones Bridge; road-widening in recent years may have eliminated the old stations. In this well-wooded area the interstices between the boulders are filled by *Luzula sylvatica*, with *Saxifraga spathularis* and *Melica uniflora* in the wetter areas. The party later travelled to Bealalaw Bridge and to Lough Acoose to see *Carex aquatilis* where Scully had recorded it. Stools of *Carex paniculata* four feet high were noted. *Rhododendron ponticum* was seen abundantly throughout the day and at times dominated the vegetation.

Mount Brandon, named after St Brendan, the navigator, was worked on Saturday.

Brandon (3127 ft), one of the highest mountains in Ireland, is said by Praeger to be 'the finest hill in all Kerry ... rising on the edge of the ocean ... with gigantic cliffs and deep coombs - a marvellous place for the nature-lover . . .' (Irish Landscape (1972)). Guided by Stelfox's notes and Miss Kertland's knowledge the party began the ascent from Faha village and entered Brandon Glen at a high level, where Dryopteris abbreviata (det. A. C. Jermy), Dryopteris aemula and Athyrium filix-femina were collected. Isoetes lacustris formed meadows in the succession of small lakes and pools which rise one above the other in the floor of the glen. Bernard Goggin, a Dingle botanist and a man of all seasons on Brandon, then led the party by the old pilgrim path to the cliffs below the highest point. Here the flora on the broad grassy ledges included Oxyria digyna, Hymenophyllum wilsonii, Saussurea alpina, Euphrasia frigida, Alchemilla alpina, Sedum rosea, Cystopteris fragilis, Polystichum lonchitis, Deschampsia alpina and the Lusitanian plants Pinguicula grandiflora, Saxifraga spathularis and S. hirsuta. The bryophyte flora was also of alpine character and the yellow mountain basidiomycete Omphalina luteovitellina, was conspicuous on wet mossy cushions. Looking up from the base of the cliff one saw an amphitheatre of house-sized blocks making a spectacular serrated profile against the blue sky-a marvellous sight.

On Sunday the 15th the party went to Camp and searched unsuccessfully for Asplenium billotii; there are no recent Kerry records for this fern. A raised bog in the same area, mentioned by Scully, was located. Here Vaccinium oxycoccos was in some abundance. A marsh north of Lough Guitane was worked and a grid-card was completed. A marsh, at the inflow point of the River Cappagh into Lough Guitane, provided much Parentucellia viscosa with Carex demissa \times C. hostiana and both parents. On the lake-shore, Littorella uniflora was the dominant plant with Isoetes lacustris washed ashore. Nitella sp. occurred in pools near the lake. Lycopodium inundatum was not seen although reported from here. As rain was now falling heavily and light was poor, some members departed to travel south to Kenmare and to report later a new station for Trichomanes speciosum.

The party dispersed on the 16th July: those going northwards botanised the limestone outcrops at Rathscannell and Ballinclogher and saw *Koeleria cristata* in an inland station.

M. SCANNELL

BRUSE HILL, CO. CAVAN. 11TH AUGUST

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Six members and friends travelled from Dublin to the meeting-place at Bellananagh village where two botanists from Sligo joined the party. The weather was warm and sunny.

Bruse Hill, a hill of 865 ft and south-west of Cavan town, is in an area of tightlyfolded, brown Palaeozoic rock lying in a NE/SE Caledonian trend. The party worked the marsh flora on the eastern flank of the hill and recorded *Carex dioica*, *C. lepidocarpa*, *C. echinata*, *C. nigra*, *Pinguicula vulgaris*, *P. lusitanica* and *Equisetum fluviatile* amongst others. Working up the hill, *Thelypteris phegopteris* was seen in fair abundance (first recorded by G. G. Blackwood in 1923), and also the mountain fern *Thelypteris limbosperma* with *Athyrium filix-femina* and *Blechnum spicant*, but *Hymenophyllum tunbrigense* and *Cryptogramma crispa*, both recorded in the past from a single outcrop, were not refound. Other plants noted were *Alchemilla xanthochlora*, *A. vestita*, *A. glabra*, *Antennaria dioica*, *Viburnum opulus*, *Lonicera periclymenum*, *Sorbus aucuparia*, *Salix cinerea* subsp. *oleifolia* and *S. aurita*. *Pseudorchis albida*, which was seen earlier in the year on rocky ground near the farm-track, the second Cavan record, was not in evidence at this time of year.

In a marsh below the road, the emergent vegetation noted included *Typha latifolia*, *Carex curta*, *C. rostrata*, *Angelica sylvestris*, *Menyanthes trifoliata* and *Potentilla palustris*. Small areas of rock outcrop abutted on the marsh, in some cases forming small islands of thin peat and supporting the following species: *Erica cinerea*, *Ceterach*

officinarum, Polypodium vulgare, Euphrasia micrantha, Rubus fruticosus, Hedera helix and Cotoneaster horizontalis. Rhacomitrium lanuginosum was seen here at this unusually low level covering quite an area of the outcrop.

Mr R. C. Faris, who has a wide knowledge of Cavan county, could not lead the advertised meeting to Cootehill owing to another engagement.

M. SCANNELL

KILLARNEY, CO. KERRY. 2ND-4TH SEPTEMBER

A short field meeting, in the form of a seminar and field-trips on the vegetation of the Killarney region, was held at Killarney. All those professionally involved in vegetation studies in Ireland were invited, in addition to B.S.B.I. members. The attendance of twenty-five included botanists working in Irish universities, government departments and research institutes, as well as interested students and visitors from England. The meeting, which was the sequel to a meeting in Co. Wicklow last year, provided an opportunity for research students from Trinity College, Dublin (T.C.D.) and University College, Dublin (U.C.D.) to demonstrate their ecological research in the Killarney area, which they are carrying out in consultation with the staff of the National Parks and Monuments Service and the Forest and Wildlife Service.

After a preliminary discussion on Sunday evening, the meeting commenced on Monday morning with talks on the research projects. The research on the limnological characteristics and pollution problems of the Lakes of Killarney, being carried out by a U.C.D. research team headed by Dr John Bracken, was reviewed by two members of the team, Mr Kieran Horkan and Mr Dermot Douglas. The focus of attention then turned to the terrestrial vegetation, with talks on their work by three T.C.D. research students. Dr John Cross described his studies of the ecology and control of *Rhododendron ponticum*, an exotic species which presents a major threat to the conservation of the plant communities of the bogs and heaths, and Mr Daniel Kelly described his studies of the ecology of woodlands, particularly the oak woods of Killarney.

On Monday afternoon we visited the Muckross peninsula, a geologically varied area between the Lower and Middle Lakes, and saw areas of yew wood and oak wood as well as *Rhododendron* infestation and experimental control plots. On Tuesday morning a visit was made to Tomies Wood, an oak wood in which an experimental deer enclosure, part of which is in a clearing, was of particular interest. On Tuesday afternoon the main area visited was the Owenreagh valley, where there is a fine series of bogs with interesting vegetation patterns and hydrological features. A short visit was also made to Derrycunnihy oak wood, the classic oak wood studied by the Cambridge expedition almost forty years ago.

A concluding discussion took place on Tuesday evening. It was agreed that another meeting, bringing together a similar cross-section of people, would be desirable in 1974. A number of venues were discussed, but the majority of those present favoured a meeting at Lough Carra in County Mayo, to make a brief study of the potential effects on vegetation of lowered water-levels, proposed as part of an arterial drainage scheme. The end of June was suggested as a suitable time of year for such a meeting.

A. J. CRAIG

The following field meetings also took place in 1973:

ENGLAND: Peterlee, Co. Durham; How Hill, Ludham, East Norfolk; Attingham Park, Shropshire; Alien Hunt.

SCOTLAND: Tomatin, Easterness.

WALES: East Denbigh-West Flintshire; Radnorshire; Craig Cerrig Gleisiad, Breconshire.

EXHIBITION MEETING, 1973

The Annual Exhibition Meeting was held in the Department of Botany, British Museum (Natural History), London, on Saturday, 24th November, 1973, from 1200 to 1730 hours.

HETEROPHYLLY IN ARMORACIA RUSTICANA

Pressed specimens of *Armoracia rusticana* showing a wide range of heterophylly (as measured by the degree of dissection of the leaf-lamina) were shown. The incidence of this phenomenon in plants found on a well-drained site is being investigated by controlled experiments aimed at determining whether or not leaf-dissection is a response to increased sunlight or decreased water-availability. The implication is that reduced leaf-area is associated with reduced transpiration, so that such a response would be an adaptive mechanism. Early results tend to suggest that water availability is a significant factor.

Alperton High School (A. Chauhan, K. Geiger, M. Hanif, J. Manek, G. Patel, Y. Patel, P. Rumney & J. H. Southall)

MAPPING OLD WOODLAND IN BRITAIN

An attempt to plot the distribution of ancient woodland in Britain has been made by superimposing the maps of 56 rare vascular plants considered to be characteristic of old woods. The resultant map does not coincide closely with existing woodland, but correlates well with the distribution of woodland thought to be of ancient origin.

H. J. M. BOWEN

LEAD-TOLERANCE IN SENECIO VULGARIS

Lead-tolerance in plants is especially associated with spoil-heaps in mining areas, but a degree of tolerance might be expected wherever man is using or discarding lead or its compounds. Evidence for lead-tolerance of the latter sort has been found in studies of *Senecio vulgaris*.

Senecio cypselae collected from habitats containing various soil-lead levels were tested for lead-tolerance. In general, cypselae from plants found on roadsides, in urban, industrial areas and on rubbish dumps, where soil-lead levels are relatively high, showed a much greater degree of lead-tolerance than those from sand-dunes, where soil-lead levels are very low.

D. BRIGGS

HYBRIDIZATION IN HAWTHORN

Selected populations of hawthorns (*Crataegus monogyna* and *C. laevigata*) have been investigated in south-eastern England to discover to what extent hybridization has proceeded in that area. The results of morphological measurements were plotted on

scatter diagrams which show that the two species, which are very distinct when hybridization has not occurred, have hybridized extensively in south-eastern England and very few, if any, populations of pure *C. laevigata* remain.

J. I. BYATT

CENTENARY OF J. TRAHERNE MOGGRIDGE

J. T. Moggridge spent the last years of his short life in Menton, Alpes Maritimes, France, and an excursion to some of 'his' localities is planned for 1974.

The exhibit consisted of a map of the Mentonnais area, photographs of *Fritillaria* moggridgei along with its plate in Moggridge's *Contributions to a Flora of Mentone* (1874), and pictures of other rare species characteristic of the vicinity.

M. S. CAMPBELL

THE FLORA OF CADÍZ AND MÁLAGA

The exhibit was a progress report on a proposed distribution atlas of the flora of the provinces of Cadíz and Málaga in southern Spain. A map on the scale of 1:200,000 (about three miles to the inch) showed the boundaries of the two provinces.

A check-list of the flora of Cadíz was exhibited. It had been compiled especially for us by B. E. Smythies of Estepona.

Albums of botanical illustrations were also shown. It is an accessory aim of the project to produce a set of drawings of all those species of southern Spain that are not included in either Ross-Craig, Coste or Fiori. It is obvious that no maps are possible unless the species can be certainly named. Work of the following artists was displayed: D. A. Carr, S. R. Edwards, J. M. Smythies and H. R. Broad.

J. W. CARR

THE HISTORY OF A CURIOUS PLANT

The history of a variety (var. *integrifolium* Nolte) of *Lamium album* with entire leaves was outlined. First acquired in the mid-17th century by Gaston duc d'Orléans for his garden at the Chateau de Blois, it was subsequently cultivated in Paris, London, Oxford and Edinburgh and other European botanic and physic gardens in the late 17th and 18th centuries. Early specimens in the Sloane Herbarium at the British Museum gathered from Edward Morgan's Westminster garden were displayed (by kind permission of the Keeper of Botany).

Although recorded in recent years from Sweden it had not been known to grow in this country this century until Mrs B. H. S. Russell found a plant in the garden of an old house in Essex. Similar material has since been acquired or reported from Kent, Hertfordshire and near Edinburgh. Crossing of plants from three of these sources is in progress to test if the mutation – apparently a simple recessive – is identical in all three cases, thus suggesting a derivation from a single original source.

A. P. CONOLLY

A CAREX HYBRID PREVIOUSLY UNKNOWN

For a full report of this hybrid see Short Notes, pp. 165–166

R.W. DAVID

THE CAREX DIVULSA-C. LEERSII COMPLEX

Between *Carex divulsa* Stokes and the sedge described by F. W. Schultz as *Carex leersii* (= *C. polyphylla* auctt., *non* Kar. & Kir.) there are intermediates, but the variation does not appear to be continuous. Material gathered in the 1973 season could be grouped into six 'nodal forms', which were illustrated by specimens and photographs. The question of whether any of these (except *C. divulsa*) deserve specific rank is for the moment left open.

R. W. DAVID

A NEW SERIES OF BOTANICAL WALL-CHARTS

The set of wall-charts illustrating five British plant communities, recently published by the British Museum (Natural History), was displayed together with the original paintings by Miss Barbara Nicholson. The communities covered are Chalk-grassland, Heathland, Meadows, Sand-dunes and Waste ground. In each case about thirty species of flowering plants are illustrated, with some six to ten cryptograms, in a semi-natural setting with glimpses of typical scenery associated with the habitats. Leaflets giving full details are available from the Publications Officer, British Museum (Natural History), Cromwell Road, London S.W.7.

Department of Botany, British Museum (Natural History)

PAINTINGS OF ALPINE FLOWERS

A party of 17 flower artists visited St Luc, Switzerland in June-July, 1973. The exhibit was of water-colour paintings which I made of plants found on the excursion.

B. Everard

PLANTS OF COUNTY WATERFORD

Waterford (v.c. H6), a county in south-eastern Ireland covering some 40 miles by 25 miles, has quite a rich flora which has been comparatively neglected by botanists. Twelve specimens were shown – Fumaria capreolata subsp. babingtonii, Crambe maritima, Polygonum maritimum, Hippuris vulgaris, Lobelia dortmanna, Symphytum officinale, Calystegia pulchra, Tragopogon pratensis, Juncus acutus, Vulpia membranacea, Platanthera bifolia and Dactylorhiza majalis subsp. occidentalis. These represented a selection from about 50 new or interesting records in the county made during June and July 1973.

I. K. & L. F. Ferguson

SALT-TOLERANCE IN SENECIO VULGARIS

Between 500,000 and 1,000,000 tons of rock-salt are used annually for de-icing roads. Habitats close to salt dumps and along major roads usually have higher levels of exchangeable sodium in the soil than sites near minor roads. Using appropriate culture experiments it has been shown that seedlings of *Senecio vulgaris* growing in the former habitats have a higher degree of salt-tolerance than seedlings growing near minor roads.

M. M. HUGHES & D. BRIGGS

THE LIGURIAN-TYRRHENIAN FLORISTIC ELEMENT OF THE WESTERN MEDITERRANEAN FLORA

One of the more interesting floristic elements of the western Mediterranean region is that which occurs on the Balearic Islands, Les Iles d'Hyères, Corsica, Sardinia and the Tyrrhenian islets between Corsica, Sardinia and Italy. The exhibit comprised specimens of 11 of the most distinctive flowering plants belonging to this element, with individual distribution maps for each species. The species were: *Arenaria balearica, Arum pictum, Bellium bellidioides* (Compositae), *Cymbalaria aequitriloba, Delphinium pictum, D. requienii, Dracunculus muscivorus* (Araceae), *Helleborus lividus, Ranunculus rivelieri, Soleirolia soleirolii* and *Urtica atrovirens.*

In an attempt to speculate on the age of these Balearic-Hyèran-Tyrrhenian disjunctions, the distributions were collectively considered in the light of recent palaeogeographical data on the continental drift of the Corsican-Sardinian micro-tectonic plate from the south of France.

C. J. HUMPHRIES & S. A. FORD

TWO SUSPECTED NATURAL HYBRIDS

Herbarium specimens of two unusual putative hybrids were exhibited:

An annual *Senecio* from Lowestoft, v.c. 25, believed to be *S. squalidus* \times *S. viscosus*. The plant has the habit of *S. viscosus* with which it grew, but has more conspicuous capitula (15–20 mm diam.) with less revolute ligules. The leaves are pinnatifid with 7 narrow, acute segments; in the same locality *S. viscosus* had 9 obtuse, pinnatifid segments and *S. squalidus* 5 narrow, acute segments. Viscid hairs are present but are fewer and shorter than in *S. viscosus*. The achenes are only 1.5 mm long and are poorly formed (probably sterile).

A vetch, *Vicia angustifolia*, found with the type variety and var. *segetalis* and believed to be a hybrid between them. The plant is 50-90 cm (var. *angustifolia* is under 60 cm and var. *segetalis* up to 100 cm); the leaflets of the upper leaves are about 5 times as long as broad; the flowers are \pm uniformly rose-red-violet (like those of var. *angustifolia* but as large as the bicoloured flowers of var. *segetalis*); and the pods are few, mis-shapen, mostly fail to ripen, and have about 2 seeds (about 8 in var. *angustifolia* and 10–11 in var. *segetalis*).

ed salter 01 borres and sweet basefoil creations during a variable of the H. J. KILLICK

PINK-FLOWERED WHITE CLOVER

Pink-flowered White Clover (*Trifolium repens*) is probably not rare, but few Floras mention it. In 1973 I collected it in Guernsey, Cornwall, Hampshire, Surrey and Kent, and grew the plants alongside one sent me from the Isles of Scilly. All proved to have flowers of Magnolia Pink, 030 of the Royal Horticultural Society's Chart.

The oldest name for this taxon seems to be var. (or rather δ) *carneum* of S. F. Gray (1821) – 'flowers flesh-colour'. N. E. Brown (1899) wrote that 'Comparison with an authentic specimen conclusively proves this [var. *townsendii* Beeby, 1875] to be the variety *rubescens* of Seringe', which dates from 1825. There is also a var. *roseum* Peterman dating from between the two last.

This form, for it probably rates no higher rank, has been mistaken for *T. hybridum* and *T. fragiferum*.

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D. McClintock

B.S.B.I. BLACK POPLAR SURVEY

The exhibit was prepared for the Society's Oak Symposium in September 1973. It showed the confirmed records of trees growing 'wild' in river-valley habitats in Britain or of trees planted by ponds, etc., probably taken from nearby 'wild' trees. The scheme has had some useful publicity in a few local papers, but the response from members has been disappointing. Since September, 25 fresh localities have been recorded involving 37 individual trees in mature condition or in various states of decay or mutilation, and adding eight 10 km grid-squares.

Very few healthy young trees have been noted, and a scheme has been launched to propagate from trees of both sexes of 'wild' origin in order to restock suitable country habitats.

E. MILNE-REDHEAD

BRITISH CHAROPHYTA (STONEWORTS)

The exhibit was intended to arouse interest in these plants and encourage correct handling and preservation. Information was given on basic structure, ecology and the available literature. It is hoped that a mapping scheme will be undertaken in the near future in conjunction with the Biological Records Centre.

It was emphasised that the drying of charophytes for herbarium material should be discouraged and that specimens should be identified fresh (or preserved in 2% formalin) whenever possible. For further information on the collection and identification of stoneworts please contact the author at the Department of Botany, British Museum (Natural History), Cromwell Road, London S.W.7.

J. A. MOORE

TREE PLANTING YEAR 1973

During 1973 the Government, through the Department of Environment, sponsored a campaign to encourage the planting of trees in large numbers, not only as a commercial enterprise but in gardens, towns, streets, open spaces, and in the country. The object was to make an immediate impact on the environment and to make people more 'tree conscious'. 1973 was therefore designated *Tree Planting Year* and in support of this campaign the British Post Office issued on 28th February a special 9p stamp depicting one of the British oaks, *Quercus robur*. On display were a collection of leaflets, magazine articles, gifts, newspaper cuttings, philatelic and herbarium material relating to *Tree Planting Year*.

Y. L. MOSCATI

A KEY TO BRITISH RUBI

A key to 400 microspecies of *Rubus* was presented. This key covers 118 characters and is in the form of a pack of punched cards. Such a key (polyclave) can be used with any choice of characters and these characters can be used in any order, thus avoiding some of the disadvantages of a conventional key. The polyclave is manufactured by the use of a computer but is used entirely in the hand. It can be easily and cheaply revised and reproduced. The descriptions of the plants were obtained from the monograph *Handbook of the Rubi of Great Britain and Ireland* by W. C. R. Watson (1958), plus observations on herbarium material. Additional cards convert the general key into a key for a smaller area, such as a vice-county. Copies are available on request, together with reports explaining the use of the key in detail.

R. J. PANKHURST

MISTLETOE DISTRIBUTION

A map showing the distribution of mistletoe (*Viscum album*) by tetrads in England and Wales was exhibited. It shows that knowledge of the major distribution area, which extends from Somerset to Shropshire, is now almost complete, but that there are gaps in southern Gloucestershire and on the Shropshire-Herefordshire border.

Maps on the distribution of mistletoe on its eight most important hosts, viz. Apple, Lime, Hawthorn, Black Italian Poplar (*Populus* \times *canadensis*), False Acacia, Field Maple, Crab Apple and Crack Willow (*Salix fragilis*), were also included. The limits of distribution in Somerset and the relative importance of local climate and of the presence or absence of orchards were discussed.

F. H. PERRING

FLORA OF KENT - TETRAD MAPPING SCHEME

Nearly 150,000 records have been collected together since this scheme started in 1971. A map showed the number of plants so far recorded from each tetrad in the county. Fourteen selected species-maps were also shown to illustrate different types of distribution. Of special interest was *Veronica filiformis*, first recorded in Kent in 1950, but now with 188 localities distributed throughout the county.

E. G. PHILP

ASPLENIUM CUNEIFOLIUM IN SCOTLAND – A NEGLECTED BRITISH FERN

Since 1862 it has been recognised that an Asplenium closely related to A. adiantumnigrum sensu stricto occurs on serpentine rocks in a number of Scottish localities, but this fern has received remarkably little attention from modern botanists. Recently, two plants from Glendaruel, Argyll, v.c. 98, and one from Glen Lochay, Mid Perth, v.c. 88, have proved to be diploid with a chromosome number of n = 36; A. adiantumnigrum sensu stricto is tetraploid with n = 72. Morphologically similar, but as yet cytologically unexamined, plants in a number of other Scottish serpentine areas are considered to belong to the same taxon, Asplenium cuneifolium Viv., a 'serpentine fern' of scattered distribution on the Continent.

The exhibit consisted of herbarium specimens from a number of Scottish localities, a map showing the probable distribution of *A. cuneifolium* in Scotland, drawings of the chromosomes at meiosis and pinnule characters of the cytologically-determined plants.

R. H. ROBERTS & A. MCG. STIRLING

BLACK AND WHITE PHOTOGRAPHS OF BRITISH ORCHIDS

The exhibit consisted of photographs of British orchids taken during the past two years. A number of species with a northern distribution were shown, e.g. *Listera cordata* and *Corallorhiza trifida*; the rarer taxa included *Liparis loeselii* var. *ovata*.

G. RODWAY

SOME FLOWERING TREES FROM PAKISTAN

This exhibit was an attempt to show the variety of flowering trees to be found in Lahore, a city in the Punjab plains of western Pakistan. Here, summer temperatures reach daily maxima in excess of 100° F from the end of April until early October. During the

brief spring, the streets of Lahore are a riot of colour as the trees produce flowers. The most common are probably the lemon-yellow Indian Laburnum (*Cassia fistula*), and the bright red Indian Coral Tree (*Erythrina indica*). Many of the trees are of course native to Asia, e.g. the Fig (*Pterospermum acerifolium*) and the Mango (*Mangifera indica*), but others are introductions, e.g. the Bottlebrush Tree (*Callistemon lanceolatus*), from Australia, and the Tulip Tree (*Spathodea* sp.), from tropical Africa.

The exhibit was illustrated by paintings which were the work of Sandra Blaylock Seifert, who was once resident in Lahore.

K. Y. J. RUSHWORTH

A NEGLECTED BRITISH IVY

Hedera helix var. hibernica Kirchn. (Irish Ivy) is surely too abundant in Britain to be simply a garden escape, and is distinct enough from *H. helix* L. var. helix (Common Ivy) in its gross morphology to be easily recognised. Var. helix is diploid (2n = 48) and var. hibernica tetraploid (2n = 96). Studies of 19th century authors reveal another possible native, *H. canariensis* Willd. (Canary Ivy). In 1933 Chevalier visited the Channel Isles and found, as well as Common Ivy and Canary Ivy, possible hybrids between the two, which Schneider named *H. helix* var. hibernica. Some 20th century authors suggest that the Irish Ivy is a geographical and not a horticultural variation of the Common Ivy.

Living branches of both climbing and flowering shoots of *H. helix* var. *helix* and var. *hibernica* were exhibited, with drawings of the stellate hairs from these and *H. canariensis*.

A. RUTHERFORD

A FERN NEW TO SCOTLAND – POLYSTICHUM × ILLYRICUM IN WEST SUTHERLAND

Polystichum \times *illyricum* (Borbás) Hahne, the hybrid between *P. aculeatum* and *P. lonchitis*, has recently been found growing with the parents in limestone scree near Inchnadamph, W. Sutherland, v.c. 108. This represents only its second locality in the British Isles, the other record being from Leitrim, v.c. H29 (see *Watsonia*, **9**: 432 (1972)).

Specimens collected in the summer and autumn of 1973 were shown to illustrate the degree of variability in frond-morphology of the hybrid. Specimens of both parent species from the same site were shown for comparison.

A. McG. STIRLING

ASPERULA OCCIDENTALIS IN BRITAIN

For a full report of this species see Short Notes, pp. 170–171.

T. G. TUTIN & A. O. CHATER

A NATURAL HYBRID IN CENTAURIUM

Centaurium erythraea (2n = 40) and Centaurium littorale (2n = 40) are usually spatially and ecologically isolated, but on parts of the coasts of Lancashire and North Wales, where man has interfered with the natural vegetation, the two species grow together in mixed populations. There is some overlap in the flowering periods of the two species and casual transfer of pollen by non-discriminating insects (probably thrips) has resulted in the pollination of *C. erythraea* by *C. littorale*.

The F₁ tetraploid hybrids (2n = 40) are sterile, but backcrossing of unreduced F₁ hybrid-gametes to normal, reduced gametes of *C. littorale* results in hexaploid hybrids (2n = 60). These are isolated from both parents by the difference in chromosome number, but on selfing produce vigorous, fully fertile, hybrid plants. Thus hybridization has resulted in the formation of a new biological entity by abrupt speciation.

R. UBSDELL

VERONICA SPICATA IN CAMBRIDGESHIRE

The Spiked Speedwell, *Veronica spicata*, is one of the famous Continental rarities of the East Anglian flora, recorded first by John Ray more than 300 years ago 'in great plenty' on a part of Newmarket Heath. In recent years its survival on the Heath has been in some doubt. It is pleasant to record that in 1973 two small patches of this beautiful native species have been located on the Heath, and measures have been taken for its protection.

The exhibit showed specimens from the Cambridge University Herbarium collected in July 1823, and photographs taken by Mr William Palmer 150 years later of the plant in flower.

S. M. WALTERS

The following also exhibited:

G. BECKETT & E. J. CLEMENT. Field Meeting in Jugoslavia.

M. BRIGGS. The Sussex oak.

COMMITTEE FOR THE STUDY OF THE SCOTTISH FLORA. Inverness-shire Survey 1973.

T. M. DAVIES, M. S. DAVIES & R. W. SNAYDON. The ecological genetics of *Anthoxanthum odoratum*.

DEPARTMENT OF BOTANY, BRITISH MUSEUM (NATURAL HISTORY). Recent accessions to the Botany Library.

A. N. GIBBY. Postage stamps of botanical interest.

F. N. HEPPER. The plants of Ham riverside lands, Richmond.

J. MUNGALL & B. STRATTON. Cyanide – a natural pesticide.

NATIONAL BOTANIC GARDENS, GLASNEVIN. Some interesting plants.

P. O'HARA. British wild flowers and butterflies.

W. T. STEARN. The European rhubarb - on the way to extinction?

In the lecture hall the following members gave short talks illustrated by colour-slides:

H. J. B. BIRKS. Plants of the Faroe Islands.

J. E. LOUSLEY. New appearances of some rare British plants in 1973.

J. L. MASON. Wild flowers on military land.

G. RODWAY. British orchids.

A. G. SIDE & E. G. PHILP. Kent – still a botanist's paradise.

F. M. TAYLER. Armeria maritima in Durham.

A NATURAL FYINDS IN CENTRELATER

Continuence exploring a (2n = 40) and Cananeiro furning (2n = 40) are usually (patially and ecologically isolated, but on parts of the courts of Lemanshite and North Wales, where then has futurilated with the natural vagetation, the two papies prior togethar in moved appallations. There is some overlap in the flowering periods of the two receives and eistical transfer of police by non-discriminating losses (probably there) has resulted in the pollination of C, explored by C literade.