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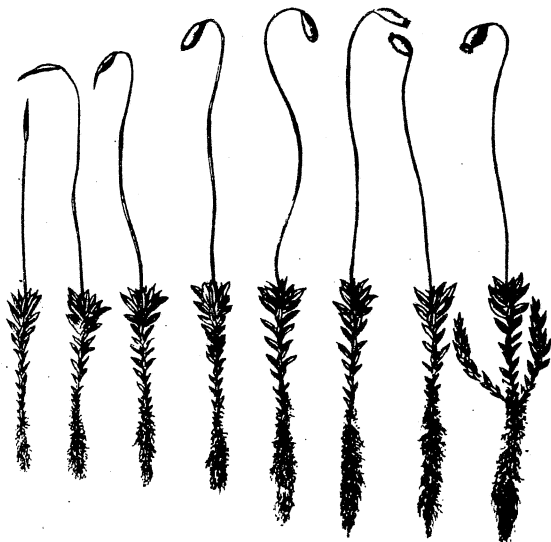


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Edited by A. R. Perry



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C O N T E N T S

Subscriptions	1
Proceedings of the British Bryological Society	
The Summer Meeting, July/August, 1985, Bavarian Alps	2
The Spring Meeting, 1987, Penzance	3
The Summer Meeting, 1987, Co. Mayo	7
The Paper-reading Meeting, 1987, Wye	16
The Taxonomic Workshop, 1987, Manchester	23
Future Meetings of the Society	24
Other Bryological Meetings	27
Council Newsletter Number 4	27
B.B.S. Mapping Scheme	28
News from the Herbaria	
The Bryophyte Collections at Liverpool (LIV)	30
B.B.S. Library Sales and Service 1988	32
Notes on some Nineteenth Century Herefordshire Bryologists. By J.D. Sleath	33
George G. Geyman	35
Request for Records	36
Warburg Memorial Fund	36

SUBSCRIPTIONS

Subscriptions for 1988 became due on 1 January. Please check to see if you have paid. A form is provided with this Bulletin for your convenience but please note this has to be sent to all members, even those who have already paid and those who pay by standing order. If you have already paid please ignore this. Members in arrears should pay as soon as possible. Current subscription rates are as follows:

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PROCEEDINGS OF THE BRITISH BRYOLOGICAL SOCIETY

THE SUMMER MEETING, JULY/AUGUST, 1985, BAVARIAN ALPS

Nine members plus families and several German bryologists accepted Professor Duell's invitation to join the excursion in the Bavarian Alps, and included Dana Bergstrom (Australia) George Bloom and wife, Joan Gutteridge and husband, Martin Godfrey, Barbara Murray (Alaska), Brian O'Shea, Roy Perry and family, Michael Proctor and John Port.

The party was very efficiently gathered up by Dr Duell and Roy, from various flights into Munich, and transferred to the hotel at Lenggries, an hour or so to the south, and at a height of about 700m. After a meal, no time was lost getting into the field, and the afternoon was spent in a pleasant amble up a side valley out of the village, past trees bearing a good growth of fruiting Orthotrichum obtusifolium.

The local geology is almost entirely limestone, though the leaching effect of a mountain climate with high rainfall is very evident in the forest flora, rich in familiar acid-woodland species. On Monday morning a visit had been arranged to the nearby Arzbach valley, where it was pointed out that much of what had been dismissed as Eurhynchium striatum was in fact E. angustirete. Antitrichia curtipendula was frequent, and others such as Lescuraea plicata, Pterigynandrum filiforme, Moerckia hibernica, Tayloria serrata, Paraleucobryum longifolium, Bazzania flaccida and Bryum schleicheri var. latifolium were seen. One plant of Buxbaumia viridis was on the trunk of a trackside tree, but collection was forbidden, so this is evidently a rarity. An introduction was also made to two non-British species, Brotherella lorentziana (Sematophyllaceae) and a conspicuous yellow-green Barbula, B. crocea.

Fine shows of Campanula cochlearifolia and C. scheuchzeri diverted attention from bryophytes, and for those of more sinister intent, Atropa belladonna was available, though not yet in berry.

The following day's choice of another valley, the Steinbachtal, SE of Bad Tölz, was dictated by the weather, which threatened rain. The flora here reconfirmed the basic nature of the area with Scapania aequiloba, Isopterygiopsis muelleriana, Orthothecium intricatum, and Schistidium trichodon on limestone boulders. The beautiful Ptilium crista-castrensis was plentiful under foot and Ptilidium pulcherrimum was found on a conifer.

Wednesday morning looked more hopeful, but by the time the cable-car reached the top of Lenggries' local mountain, the Brauneck, at 1500m, the clouds had gathered and a sudden storm later in the morning had the party rapidly struggling into waterproofs. This is the zone of the high alpine including Lescuraea incurvata, Tayloria serrata, T. froehlichiana, Geheebia gigantea, Campylopus schimperi, Brachythecium reflexum, Campylium halleri, Cratoneuron decipiens, and the red hair-pointed Tortula, T. norvegica.

The flowering plants were again a distraction with Aster alpinus, Dryas octopetala and Pinguicula alpina particularly in evidence, and the character separating Gentiana pannonica from G. purpurea was examined at length to produce a verdict in favour of the former.

Next day's visit to the Kreuzeck, near Garmisch-Partenkirchen, involved a long winding route for the drivers. By cable car again, this time up to 1700m - not for us to be trusted in the helicopter ferrying loads of beer up to the cafe at the upper station. The memorable finds included Ctenidium procerrimum, Cirriphyllum cirrosium, Hypnum bambergeri, Pohlia wahlenbergii var. glacialis, and Polytrichum longisetum, besides Marchantia alpestris. Again the alpine

flora was in good flower, with Campanula barbata, Gentiana bavarica, Tozzia alpina, and the orange form of Saxifraga aizoides.

A return to valley level brought a complete change of habitat, to an area of boulder-strewn woodland by the Eibsee where the noteworthy species included Anastrophyllum michauxii, A. hellerianum, Bartramia halleriana, Mylia taylori, Sphenolobus minutus, and two Bazzanias, B. trilobata and B. tricrenata, both abundant. All were in fine condition following a lunch-time downpour.

On Friday the day was divided between two sharply contrasting venues. In the morning, a National Nature Reserve, the Sindelsbachfilz, a large area of calcareous fen where among other Sphagna, S. magellanicum, was conspicuous, and Polytrichum strictum and Dicranum undulatum were to be seen in quantity. Here too the sundews, Drosera rotundifolia and D. obovata, were both closely examined.

After lunch it was off to a different Steinbachtal, E. of Bichl, different too in flora. A wooded valley where the first group of trees examined yielded Anomodon longifolius and A. attenuatus, Amblystegium subtile c.fr., Pseudoleskeella nervosa and generously fruiting Leucodon sciuroides on an elm. Later Dicranum viride and Frullania jackii were recorded, the latter having underleaves reminiscent of Calyptogeia neesiana. Other notable finds included Ecalypta streptocarpa with sporophytes and Entodon schleicheri.

By popular request, the final day in the field demanded a return to the Brauneck. A wider ranging route was followed, to Hinterer-Kirchstein and Propstenwand, and ended by a return via the Arzbach valley, where our drivers were waiting. Many plants seen had been met earlier in the week, for example Hylocomium pyrenaicum, Meesia uliginosa and Cololejeunea calcarea, but there were new finds, including Mnium thomsonii, Myurella julacea, Cirriphyllum tenuinerve and Paraleucobryum sauteri. The sight of Michael stalking mountain goats for a photographic close-up will be long remembered. The long day provided a fitting close to a meeting much enjoyed by both German and 'British' sections of the group.

Thanks must go first to Professor Duell and our German hosts for the first class arrangements made on our behalf; to our hard-worked drivers; and by no means least to Roy for his handling of the British end of the organisation.

J. PORT

THE SPRING MEETING, 1987. PENZANCE

West Cornwall is renowned for its spectacular scenery and supports a wide range of interesting bryophytes including several introduced species established in Tresco. Thirty-seven members and friends responded to these lures, twenty-two staying for all or most of the meeting and the rest attending up to half the excursions. It was a pleasure to welcome Lillian Franck from W. Germany, and two new members, Gill Castle and Andrew Scott. Cornwall Trust for Nature Conservation Officers also joined us in the field on two days.

It was twenty-five years since the BBS last met in Cornwall, when we were based at Helston and spent more time on the Lizard than on the Land's End peninsula (Paton (1963) Trans. BBS, 4, 528-531). Penzance was chosen this year because it is more convenient for a day trip by helicopter direct to Tresco in the Isles of Scilly. Sadly the Cordylines and other exotic plants which normally impart a Riviera appearance to the town, had been destroyed by severe weather the previous January. The meeting was based on the Union Hotel which proved to be a happy choice in every respect. Fortunately we did not have to endure the

strong winds that persisted during the 1962 meeting, and with only two half-days spoilt by rain, we were much luckier with the weather than the forecasters predicted. All the excursions were held in West Cornwall, vice-county 1. The Land's End peninsula and the Isles of Scilly are composed mainly of granite, whereas much of the Lizard consists of serpentine and hornblende-schists. Although Cornwall has been fairly well worked bryologically, comparatively little has been done during the last twenty years. Thus there was plenty of scope for some useful recording as well as the chance for members to see habitats and plants new to them.

2 April. Treen Cliff, Porthgarra and Sennen Cove.

From Treen car park a short walk across fields brought us out on the coastal footpath a few miles S.W. of Penzance. Attention was drawn to a small quantity of Campylopus polytrichoides surrounded by an abundance of C. introflexus. The latter species was not observed on the Land's End peninsula until 1970 since when it has increased and spread considerably. The flora of the over-trodden paths and the jumble of rocks on the headland was rather disappointing. Typical coastal species seen here (and elsewhere during the week) included Archidium alternifolium, Pottia crinita, Schistidium maritimum, Scleropodium tourettii, Trichostomum brachydontium, Weissia perssonii, Fossombronina husnotii, and the yellow lichen Teloschistes flavicans.

After driving a little further along the coast to Porthgarra, and lunching on the beach, we explored the coast to the N.W. in warm sunshine. Not only were the Longships lighthouse off Land's End and the Wolf Rock lighthouse clearly visible, but also the Isles of Scilly 28 miles to the S.W. The cliff tops are heathy or rocky with occasional springs and flushes. Additional species typical of the Cornish coast seen here (and elsewhere) included Bryum alpinum, Fissidens curnovii, F. limbatus, Hookeria lucens, Frullania microphylla and Riccia sorocarpa. The diminutive pale yellowish form of Mnium hornum on low peaty banks was unfamiliar to some people. The pool near Porthgarra was too full of water to be interesting but epiphytes were abundant in the small valley woodland, including Orthotrichum pulchellum, Lejeunea ulicina, Radula complanata and Cololejeunea minutissima which was also seen on sheltered cliff-top rocks.

A smaller party went on to Sennen Cove to look at the N.-facing rocks and base-rich sandy slopes. Homalothecium lutescens, Rhynchostegium megapolitanum, Scorpiurium circinatum, Tortella flavovirens, Tortula ruraliformis and T. ruralis were among the plants noted before we ran out of time. It had been wet all day in the rest of Cornwall as Harold and Pat Whitehouse discovered when they went to St Mawgan near Newquay in a vain attempt to refind Leptobarbula berica. On their way back they found some arable fields S. of Canonstow N.E. of Penzance with Bryum violaceum and Funaria fascicularis new to the 10 km square.

3 April. Mullion Cliff and The Gaider/Downas Valley to Black Head.

We eventually arrived at Mullion via circuitous routes owing to an accident on the Helston/Lizard road. We were in no hurry to get into the field because it was raining so heavily. Conditions on Mullion Cliff may have been good for bryophytes but they were diabolical for bryologists. All the paths were rivers and the shallow peaty depressions where nice plants grow, were flooded. Riccia beyrichiana and R. crozalsii were located but were seen again elsewhere on The Lizard and under better conditions. We abandoned our efforts prematurely and retreated to the Wheel Inn at Cross Lanes. While we steamed in front of an open fire and slaked a non-existent thirst, the clouds gave way to brilliant sunshine and quickly restored our morale. After lunch we drove to Arrowan Farm S.W. of Coverack only to find that the track out to The Gaider was awash with liquid mud and the stream in Downas Valley was in full spate. This restricted the number of people who were able to proceed towards Black Head since only

those with the longest wellingtons could negotiate the submerged footbridge. As in many other parts of Cornwall, extensive areas of the cliff and valley slopes are densely covered by low wind-cut shrubs, making exploration rather difficult. Here, however, it is also possible to explore a wide range of habitats. Plants seen during the afternoon included Heterocladium heteropterum, Neckera complanata, Trichostomum crispulum, Weissia microstoma, Fossombronia angulosa, Frullania fragilifolia, Marchesinia mackaii, Metzgeria temperata, Plagiochila killarniensis and Porella obtusata. Only those people who crossed the stream were lucky enough to refind Gongylanthus ericetorum.

4 April. Carn Galver, Porthmoina Cove, and Pendeen Watch to Portheras Cove. On Saturday morning thirty of us assembled beside the old mine engine-house near Rosemergy on the coast W. of Penzance. Although much of the building has been repointed, Barbula revoluta and Gymnostomum luisieri were refound, together with Gyrowisia tenuis. Several members went down to the coast where they saw plants such as Blindia acuta, Dicranella palustris, Epipterygium tozeri, Eucladium verticillatum, Hyocomium armoricum, Fossombronia angulosa and Lepidozia cupressina. Most of the party scrambled over the boulder-strewn Carn Galver massif (230 m). Plants not noted previously during the meeting included Bryum tenuisetum (new to the L. E. Peninsula) Cynodontium bruntonii, Dicranum scottianum, Hedwigia ciliata, Racomitrium aquaticum, Barbilophozia attenuata, Plagiochila punctata, Tritomaria exsectiformis, Scapania scandica (the only new vice-county record of the meeting) and the filmy fern Hymenophyllum wilsonii.

After lunch, group photographs and a short drive south to the lighthouse car park, we walked east to Portheras Cove. For part of the way the path is wide so that trampling is more dispersed, allowing a carpet of bryophytes to thrive. Amongst other things this contained Archidium alternifolium, Cratoneuron filicinum, Ditrichum cylindricum, Scleropodium tourettii, Weissia microstoma var. brachycarpa, Cephaloziella divaricata, C. stellulifera, Fossombronia husnotii, F. incurva (new to the L. E. peninsula) and Lophozia excisa. Pogonatum nanum (not reported from this peninsula since 1882), Fossombronia pusilla var. pusilla, Kurzia sylvatica and Riccia crozalsii occurred on the pathside banks, as did Philonotis rigida which was seen again in the cove with Fossombronia angulosa and Fissidens pusillus.

Eric Watson, accompanied by Peter Wanstall, played truant and spent the day on the Lizard. During a nostalgic walk along the cliff path near Cadgwith he gathered a few plants of Tortula rhizophylla, known from the Isles of Scilly (1984) and the Isle of Wight (1964 as T. vectensis). This was the first record for mainland Britain and the best find of the meeting.

5 April. Kynance Cove and Cliff, Tremayne Wood and other sites on the Lizard. Sunday is traditionally a free day but most members were keen to visit Kynance Cove. This is the richest and best known area for bryophytes on The Lizard but habitats are fragile and many species are becoming increasingly elusive. Only small quantities of Gongylanthus ericetorum and Riccia nigrella were seen but R. crozalsii, R. bifurca, R. beyrichiana, R. sorocarpa and Fossombronia husnotii were easier to find. Many mosses were also noted, ranging in size from tiny Pottia species to Pterogonium gracile.

Heavy blustery showers in the afternoon did not deter most people from sampling other venues. One group paid their respects to W.E. Nicholson's grave in Landewednack churchyard, and refound Hyophila (Tortula) stanfordensis in its first British locality near the Lizard lighthouse. Several people visited Chynhalls Point near Coverack but again they had great difficulty in finding Riccia nigrella which carpeted the headland twenty-five years ago. Ephemenum sessile was seen here, new to the 10 km square. Other members sought shelter and a change of habitat in the bryologically unknown valley on Portscatho slates and grits, descending northwards to the Helford River W. of Tremayne

Quay. A total of sixty-five bryophytes typical of non-basic, rocky woodland included Fissidens celticus.

6 April. Tresco in the Isles of Scilly.

This was the first time that the BBS had been transported by helicopter during a meeting and it was a unique experience for most of the twenty-five participants. On their own initiative, British International Helicopters (Penzance) rescheduled their flights so that we could have seven instead of the normal five hours in the island. Thus we could take our time and enjoy more than just the bryology of Tresco on a glorious sunny day. The bryophyte flora includes the Mediterranean Riccia crystallina and three, possibly four exotic species introduced from New Zealand, presumably as wrapping round the roots of imported plants: Lophocolea bispinosa, L. semiteres, the moss Eriopus apiculatus and Telaranea murphyae, so-named until its true identity can be established. It was appropriate that Rosaline Murphy, who first found the plant here, was one of our party.

We spent the morning in the Abbey Gardens (established in 1834), shocked and saddened by the devastation caused by the lowest temperatures on record and severe winds of the previous January. In the afternoon most of us walked round the Great Pool and back to the helipad via the S. side of Abbey Pool and over part of the sand dunes. All the exotic liverworts are widespread in and near the Abbey Gardens; Lophocolea bispinosa is small, fairly often fertile and sometimes has sporophytes; most of the L. semiteres is male but one patch of female plants with perianths was seen; the Telaranea is always male. Eriopus apiculatus is much more elusive but several small patches were seen near the Abbey Drive. In some of the fields, Riccia crystallina intermingled with Sphaerocarpos michelii and S. texanus, formed very extensive carpets of either juvenile or mature thalli, depending on how long the soil had been undisturbed. Altogether well over half the total of 150 taxa already recorded in Tresco were noted and to these were added Barbula hornschurchiana, B. vinealis, Trichostomum crispulum and Tortula solmsii in a roadside habitat rather than on the face of low cliffs as in St Martin's and St Mary's. Metzgeria fruticulosa was new to Scilly.

7 April. Bessy's and Prussia Coves to Cudden Point, and mine waste in St Hilary parish.

Seventeen of us assembled for the morning excursion but the number dwindled later in the day as people departed for home. The cliffs E. of Penzance are composed of greenstone and Mylor slates and supported several species not seen previously on the meeting. Bryum donianum was found on the bank of the lane below the car park. Other plants seen included Bryum barnesii (a segregate of B. bicolor known also at Kynance), B. dunense, Desmatodon convolutus, Fissidens limbatulus, F. viridulus, Weissia perssonii, Pottia commutata, P. recta, P. starkeana ssp. conica and ssp. starkeana var. brachyodus. Cudden Point was carpeted with Scleropodium tourettii but was not explored in detail.

After lunch we drove to two areas with waste from tin/copper mines a short distance inland. There is a lot of ground like this in parts of W. Cornwall, much of it overgrown with Ulex and Calluna and supporting a limited bryoflora but one never knows what interesting plants might turn up. Halamanning was visited in the vain hope of refinding Cephaloziella massalongi. The much more extensive, bryologically unknown waste from Penberthy Crofts mine N. of St Hilary produced an assemblage of species fairly typical of this sort of terrain, which included Bryum pallens, Pohlia annotina, P. drummondii, Weissia controversa, Cephaloziella divaricata, C. stellulifera, Gymnocola inflata and Lophozia bicrenata.

During the meeting thirty-six names were added to the 10 km square records as calculated from an annotated copy of the flora of Cornwall (Paton (1969) Trans.

BBS 5, 669-756). It was disappointing that not all the species known from the sites we visited were seen but many of them were based on records dating back twenty years or longer. Certainly some species are now much more difficult to find and many more are much less abundant than they used to be, especially on The Lizard. Some may have been affected by natural changes in habitat but many of the pathside communities have been reduced or eliminated by the pressure of human feet. The deleterious effects of increased trampling is a widespread problem but it is especially acute in Cornwall where the coast is so accessible.

It was gratifying that so many people were prepared to travel so far for the meeting but they all saw at least one and in some cases many plants new to them. Sadly it was to be Richard Libbey's last meeting but it was good that he was able to spend the week with us. It was much appreciated that, as requested most members restricted their collection to a minimum. I am grateful to car owners for providing transport, to those who assisted in the preparation of the programme, to landowners for their co-operation, to those who sent me lists of plants they had seen and/or wrote to say how much they had enjoyed the meeting. Thanks to all the participants, I enjoyed it too.

JEAN A. PATON

THE SUMMER MEETING, 1987, CO. MAYO

FIRST WEEK IN ACHILL ISLAND: 5 - 12 AUGUST

Headquarters for the Achill Week was the Slievemore Hotel at Dugort, which is situated just a few hundred yards from the Atlantic at the base of the 2,200 ft. mountain which gives it its name. The hotel was founded by John Sheridan, the entrepreneur and dilettante naturalist and artist who encouraged much of the biological exploration of the island which took place at the beginning of this century. Sheridan is remembered as the first finder of the Mediterranean heath on Achill. Several large and impressive, if somewhat gloomy, landscapes of his are to be seen in the nearby Gray's Guesthouse.

The village of Dugort came to bryological fame in 1904 when Lett and Douin published the name *Adelanthus dugortiensis*, which continues to have a precarious currency for the users of Macvicar's Handbook.

There was an international flavour to the large group which assembled in the friendly but noisy bar of the Slievemore Hotel on the evening of 5 August. Lillian Franck from Germany, Huub van Melick and Constance from The Netherlands, Barbara M. Murray from Alaska and Ted Rosen from Canada joined the contingent from the home countries, D. Allen, T. Blockeel, A. Burton, M. Fletcher, K. Lewis, D. Long, D. Newman, J.A. Paton, A.R. and Hilary Perry, A.J.E. Smith, P. Stanley, H.L.K. and Mrs Whitehouse, and D. Synnott. Peter Martin came later in the week.

A suggestion, made during the previous Irish meeting in Kerry, to attempt a Bryophyte Flora of Achill, had been favourably received. The aim of the fieldwork during this week was to do as much to this end as was consistent with enjoying the fieldwork.

For the first two days the group explored together, though there was the usual later afternoon scatter to visit nooks and crannies seen en route or selected by optimistic reading of the map. From the third day the party was split up so that less spectacular or apparently less interesting areas could be sampled.

The following day-by-day account attempts to list the major efforts of the week

though several brief stops and individual efforts are necessarily excluded.

6 August. The morning was cool and the mist threatening on the higher ground as we walked along the lane from the H.Q. to the foot of Slievemore. First records for West Mayo here were *Riccia beyrichiana, *Gyroweisia tenuis, *Pohlia camptotrachela, *Bryum sauteri and *B. radiculosum, and J.A.P. and D.G.L. found *Riccia crozalsii new to Ireland.

The dull morning had little effect on the enthusiasm of the group which hurried towards the mist and the east-facing corrie of Slievemore. This mountain has been searched by many bryologists since Lett first found the Adelanthus and the flora is relatively well known. Even so *Scapania scandica was added by J.A.P. *Pohlia muyldermansii by T.B., *Lophozia ventricosa var. ventricosa and *var. silvicola and *Plagiothecium cavifolium by D.G.L., Andreaea rothii ssp. falcata by B.M., and Cyclodictyon laetevirens by G.R. and H.v.M. First found on the island by E.F. Warburg, Cyclodictyon is now known from four localities in Achill.

Most of the rarities of the corrie were rediscovered including Adelanthus lindenbergianus, Mastigophora woodsii, Bazzania pearsonii, Scapania ornithopodioides, Dicranodontium denudatum, D. uncinatum, Campylopus schimperi and C. setifolius. Drepanocladus exannulatus var. rotae was found (D.G.L.) near Dugort Quay.

A late afternoon visit to the damp sandy flats and dunes about Lough Nambrack to the east of Dugort produced *Brachythecium mildeanum, Amblyodon dealbatus, Moerckia hibernica and Petalophyllum ralfsii. The interest of this sandy north-east corner of Achill was demonstrated in 1962 by E.F. Warburg and was the subject of several forays during the week.

7 August. The entire party trekked over the lowest point of the saddle between the Croaghau range and Slievemore to explore the rocky ground about Lough Nakeeroge, or Annagh Lough as Praeger called it in his 1904 account of the vascular flora of Achill. This is the spot of which Lett, in his report on the Clare Island bryophytes, declared, "Round this lough the ground is much shaded by the cliffs from the direct rays of the sun, the air is moist, and there is shelter from stormy winds; these are data which generally determine where mosses and hepatics will establish themselves and flourish, but they avoid this spot". The lake, which is at sixty feet above sea level, is held by a moraine and separated from the Atlantic by only twenty three paces at one point. Lett's pessimism about the place was scarcely justified. *Geocalyx graveolens was found at the east end of the lough by D.G.L. and at another place by M.F. *Calypogeia neesiana was added by J.A.P. Rhododendron ponticum, which has become a nuisance about Glandarary and Sraheens Lough in the east of the island, has spread even to this remote place though only a few scattered bushes are established on the high ground above Lough Nakeeroge. Telaranea sejuncta is one of the few compensations made by Rhododendron ponticum for destruction of natural habitats. At Lough Nakeeroge, Tom Blockeel found Telaranea in a 'natural' habitat, on litter of bracken in a peaty hole under rock on the slope at the western end of the lough.

The party fragmented in the afternoon but most people drifted westwards towards the northern flanks of Croaghau or towards Saddle Head. At the outlet of Lough Nakeeroge West (i.e. the most northerly of the loughs in this corner of the island) we found Pterogonium gracile. The moraine on the north side of this lough is greener than the surroundings, and the sward contained Ctenidium molluscum and Rhizomnium cuspidatum. A mountain stream flowing into Lough Bunafreva East has made a gully in which Metzgeria leptoneura, Leptoscyphus cuneifolius, Porella obtusata, Cyclodictyon laetevirens (G.R.) and Bryum riparium (T.B.) were found. At Gubnahinneora Point, David Long recorded

Fossombronia foveolata, Porella obtusata and Campylopus brevopilus. A small, dried out lochan to the north-east of Lough Bunafreva East contained masses of Archidium and Drepanocladus aduncus.

The spectacularly situated Lough Bunafreva West has some dry block scree on the east side where Douinia ovata was found. The lough was deeper at some former time and a fossil shoreline can be seen about 50ft above the present water level. Above the old shoreline there are some dark, wet rocks at the south end of the corrie, where Metzgeria leptoneura and Calliergon sarmentosum were found.

Blanket bog on the north side of Keel harbour was investigated by J.A.P., D.G.L. and T.B. and here *Cephalozia pleniceps and Drepanocladus exannulatus var. rotae were recorded.

8 August. The main group investigated sea cliffs and flat, sandy areas on the east side of Tramore strand, between Dookinelly and Cathedral rocks. Damp sandy ground produced *Odontoschisma elongatum (H.v.M.), Haplomitrium hookeri, *Fossombronia fimbriata (D.G.L.), *Leiocolea turbinata, *Fossombronia pusilla var. maritima (J.A.P.), Dichodontium pellucidum and *Ephemerum serratum var. serratum. On the wet sea cliffs Nardia geoscyphus, Fossombronia angulosa, Plagiochila killarniensis, Fissidens curnovii and *Philonotis rigida were seen.

Glendarary House and woods are smothered by Rhododendron ponticum and here Telaranea nematodes was found by E.F. Warburg in 1962. J.A.P. and D.G.L. re-found the Telaranea and added Metzgeria fruticulosa, M. temperata, Nowellia curvifolia, Cephalozia catenulata, Dicranum scottianum, *Neckera pumila and *Orthodontium lineare. A.R.P. & B.M.M. found *Cephalozia hibernica at nearby Sraheens Lough.

T.B. found Dicranella staphylina and Bryum microerythrocarpum at Doega.

A small party, L.F., E.R. and D.S., went to the southern tip of the island and recorded about Cloghmore. Roadside banks produced *Bryum ruderale; wet, rushy fields above Kildavnet Castle had Pseudephemerum nitidum, Blasia pusilla, Anthoceros husnotii, Riccia glauca and Sphagnum contortum, and rock outcrops had Tortella tortuosa and Frullania fragilifolia and F. teneriffae.

A.R.P. & B.M.M. led an assault on the sandy area about Lough Doo in north Achill and re-found Catoscopium nigritum and discovered **Leiocolea gillmanii new to Ireland; they then recorded about Ridge Point.

9 August. The whole group was together again for exploration of OoghnaDirka, a wide gully on the west side of Slievemore, which has developed along a series of geological faults and where the rocks are loose and unstable, especially on the north side. Three Achill men were lost here three years ago while trying to rescue sheep caught on a ledge. Thanks are due to Gordon Rothero who scouted ahead of the main party and found a safe route. The gully was approached by rounding the base of the mountain from the old abandoned village of Slievemore. We were rewarded with Jubula hutchinsiae, Metzgeria conjugata, Plagiochila corniculata, Tritomaria exsectiformis, Nardia geoscyphus, Lepidozia pearsonii, Jungermannia subelliptica, Drepanolejeunea hamatifolia, Fissidens curnovii, *Pohlia lutescens and Campylopus shawii.

The coast to the west, under Tower Hill produced Leptodontium flexifolium, Harpanthus scutatus, Sphenolobus minutus and Geocalyx graveolens (T.B. and D.G.L.) in its third Achill locality.

*Pohlia filum was found in a disused sandpit east of Lough Doo.

10 August. One group went to Keem on the south side of Croaghaun and recorded *Tortula marginata on old ruined houses. In the valley west of Keem strand Gyroweisia tenuis, *Rhynchostegium lusitanicum (T.B.), Gymnostomum aeruginosum and *Anthelia juratzkana (J.A.P.) were found. In a large coastal ravine west of Croaghaun, *Gymnostomum calcareum (T.B.), G. recurvirostrum, Homalothecium sericeum, Hypnum callichroum, Marchesinia mackaii and *Scapania lingulata (D.G.L.) indicated the basic nature of the rocks.

L.F., E.R. and D.S. went to Salia on the eastern side of the island where roadsides and old buildings produced Elasia pusilla, Haplomitrium hookeri and *Dicranella cerviculata. At Bull's Mouth, a sandy bank in the lee of storm beach had Cephaloziella hampeana, Brachythecium mildeanum and *Campyllum calcareum.

11 August. On the last day of the Achill meeting, the weather was cold and misty. One group which went to the slopes above Lough Acorrymore recorded Adelanthus decipiens, Anastrepta orcadensis, Kurzia trichoclados, Sphenobolus minutus, Dicranum scottianum and Ulota hutchinsiae, before being driven down by the mist.

T.B. and G.R. went round to Doonty on the northernmost part of Slievemore and recorded for this unworked square, being rewarded with Aphanolejeunea microscopica, Drepanolejeunea hamatifolia, Harpalejeunea ovata, Lophocolea fragrans, Frullania microphylla, F. fragilifolia, Radula aquilegia, R. complanata, and Cyclodictyon laetevirens which grew on wet rocks in a hole by a stream. Returning by the large corrie they added *Ctenidium molluscum var. condensatum, Barbilophozia floerkei and Tetraplodon mnioides.

The misty morning kept some of the golfers off the dunes at Keel where the rest of the party congregated. D.L. found Catoscopium nigratum in its second Achill locality. Moerckia hibernica, Bryum marratii, B. calophyllum c.fr. and Brachythecium mildeanum were also of interest.

David Long made a final stop at a sandpit quarry four km east of Keel and ended the Achill fieldwork in fine fashion by finding *Campylopus subulatus new to Mayo, and **Scapania curta new to Ireland.

Achill was a good place for a B.B.S. meeting. Very little driving had to be done once we got there. Extreme Atlantic conditions, variety of geology and topography and an interesting mixture of northern and southern species contributed to the success of the meeting, which was helped also by the skill, good humour and kindness of participants. The local secretary wishes to thank particularly Hilary and Roy Perry for their hospitality, Philip Stanley for assistance with intricate transport arrangements, Jean Paton for deputising as leader, Mrs Whitehouse for brightening at least one evening with spectacular 3D slides of familiar and exotic mosses, Michael Fletcher for his unquenchable enthusiasm, Keith Lewis and Dorothea Allen for boosting the home contingent and all those overseas bryologists who made no complaint when things went wrong and who seemed to enjoy the bryology on the edge of the Atlantic.

A Bryophyte Flora of Achill is being prepared by D.G. Long and A.J.E. Smith and is to be published in Glasra (Contributions from the National Botanic Gardens, Glasnevin).

D. SYNNOTT

SECOND WEEK AT WESTPORT: 12 - 18 AUGUST

Of those attending Agneta Burton, Lillian Franck, David Long, Barbara Murray, Jean Paton, Hilary & Roy Perry, Ted Rosen, Gordon Rothero and Donal Synnott

(local Secretary) lasted the full course; Mike Fletcher, Keith Lewis, Peter Martin, Huub van Melick, David Newman, Phil Stanley and Harold Whitehouse departed at various times during the week.

As the rain eased off to a steady downpour I threw the tent and its contents into the back of the car in a jumble of guy lines, poles, sleeping-bag and washing-up, heaved a brief sigh over my box of soggy specimens and splashed away through the campsite to pick up Mike Fletcher, in a similar state but, as always, irrepressibly cheerful. We had intended to stop off on the way to Westport but the weather put almost everyone off, Huub van Melick being the only one to venture into the hills, while Harold Whitehouse continued his hunt for *Trichostomopsis umbrosa* at the base of sodden mortared walls. The rest of the party converged on the Railway Hotel in Westport for lunch. A lightning of the skies tempted us out again, to the grounds of Westport House (not to the kiddies zoo, which was far too expensive); the stalwarts donned waterproofs while Mike Fletcher and I decided to sort out our accommodation problems - with me in a nice, dry hotel and Mike in his tiny, damp nylon shell - his fibre, both moral and man-made being of better quality than mine.

A diminished party gathered in the Railway Hotel for a meal and to discuss the aquatic adventures of the morning. The exploration of the area around Westport House had produced a number of additions to the County list (H27): - *Dicranella schreberiana**, *Ephemera serratum* var. *minutissimum**, *Plagiognium rostratum**, *Tortula laevipila* var. *laevipila**, *Cirriphyllum piliferum**, *Plagiochila asplenioides** and *P. britannica**. Your man, Donal, was absent but had left word that on the morrow we should do penance on Croagh Patrick, site of one of the largest pilgrimages on the Irish religious calendar, Jean Paton being deputed to lead the party. Towards the end of the evening one question was beginning to dominate the thoughts of those who had been in hotels on Achill: "What time does the music stop in Westport?". The last chord died away at midnight, a time when Achill musicians were just getting into their stride.

Westport lies at the head of Clew Bay, famous for its oysters and its drumlin swarm of islands, like stranded humpback whales when viewed from the slopes of Croagh Patrick. Some 20 kilometres to the south lies a very different arm of the sea, the fjord-like Killary harbour and, in between the two, lies the blunt peninsula of Murrisk, the scene for most of our bryological activity. The peninsula is dominated by its blocks of high land - Mweelrea Mountains, the Sheefry Hills and the narrow pyramid of Croagh Patrick. For the most part these hills are composed of rocks of Ordovician age, mostly grits and slates interbedded with volcanic material, the latter particularly in evidence to the west of Mweelrea. Croagh Patrick is composed of Silurian quartzites, although we did find a band of rocks that were markedly schist-like; lower down were some interesting rocks containing serpentine and soapstone, associated with the Highland Boundary Fault which surfaces along the northern flanks of the mountain. Attracted both by the different geology and the poor coverage the area has had in the past, we ventured for one day into East Mayo (v.c. H26), first on to the more acid, Silurian rocks west of Partry and then to the Carboniferous limestone pavement at Keel Bridge between Lough Carra and Lough Mask.

13 August. Croagh Patrick (grid ref. 9180)

This hill dominates the southern side of Clew Bay and has a steep northern flank which falls away from the broad pilgrim's track that wends its way up the east ridge. The weather was reasonable with some cloud hanging over the summit for most of the day but the showers being few and far between. Our route lay up the pilgrim's path for a kilometre or so and then broke off westwards towards a craggy bluff with some block scree which proved reasonably basic. After a week on Achill we were able to be quite blasé on finding *Dicranum scottianum*,

Adelanthus decipiens, Drepanolejeunea hamatifolia, Harpalejeunea ovata, Colura calyptrifolia, Frullania teneriffae and F. microphylla; with these were some more calcicolous species like Neckera crispa, Scapania aspera, Schistidium strictum and Orthotrichum rupestre.

Our next target was the shallow north-facing coire that drops from the summit. The base of the coire is fairly low, about 300m, and it contains some dry-looking block scree with patches of leggy heather; above this were some interesting-looking dripping crags. Almost as soon as we had entered the coire Barbara Murray found a good patch of Adelanthus lindenbergianus, a new station for this most extreme of our oceanic species and nearby David Long found Bazzania pearsonii - a surprisingly(?) low altitude (300m or so) for this species. After a communal lunch, we straggled off towards some low crags that had a 'schisty' appearance and so it proved with the occurrence of species like Gymnostomum calcareum, Orthothecium intricatum, Plagiobryum zieri, Leiocolea alpestris and Eremonotus myriocarpus. The dip of the strata was parallel with the slope giving an unstable clitter of disc-shaped rocks which, if disturbed flew away in a disconcerting and dangerous manner and only a fortuitous tussock saved the Society the task of finding another editor for this Bulletin: Roy reacted to this near miss in a phlegmatic manner and seemed more concerned about his family who had disappeared over some very impressive terrain, to reappear, happily, on the ridge above. This unpleasant steep ground did not suit everyone (!) and so the party split, some going up onto the ridge and the purgatory of the pilgrim's path, others back down into the coire while a few of us continued up the coire wall.

The next set of crags added Campylopus schwarzii, C. setifolius, Dicranodontium uncinatum, Rhabdoweisia crispata and Radula lindenbergiana. As more height was gained the hepatic community composed of Herbertus aduncus ssp. hutchinsiae, Pleurozia purpurea, Bazzania tricrenata, Scapania gracilis and, more rarely, S. ornithopodioides, became better developed, luxuriance depending on small scale changes in aspect, slope and substrate. Eventually the rock became so horrendous that we were forced to retreat and on the way down Huub found more Adelanthus lindenbergianus. Back in the lower reaches of the coire, Jean Paton had found Racomitrium ellipticum, Lepidozia pearsonii and Marsupella adusta*. Gradually the group coalesced as the car park was approached, to be amused by the spectacle of our barefoot penitent creating some interest amongst the more religious tourist. A final regrouping occurred over excellent tea and cakes at the nearby holiday cottage of Peter and Eileen Martin.

14 August. West of Mwealrea (02/76)

A fine morning with good views, the profile of Clare Island exerting a powerful attraction as we drove along the road through Louisburgh before turning south to wend our way down to the road-end at the mouth of Killary Harbour. The prospect from the road is of a sandy shoreline with a pleasant, knobbly hinterland leading to the steeper slopes of Mwealrea itself and the intention was to explore this area and the course of the Bunakee river. Bryologising could begin immediately and within 50m of the road nice plants like Orthotrichum rupestre, Fossombronia fimbriata and Cololejeunea minutissima had already been seen. The small patches of windswept woodland and the north facing scarps of volcanic rocks were scoured and produced a good list including Campylopus polytrichoides, Plagiochila killarniensis, P. britannica, Harpanthus scutatus, Jubula hutchinsiae and all the British species of Frullania.

The approach to the Bunakee river was fairly boggy with some patches of Sphagnum magellanicum, Dicranum bonjeanii and straggling stems of Cladopodiella fluitans. A stream junction near a waterfall made a pleasant lunch spot for about half of the group. A steep wall below the waterfall had a thin covering of bryophytes which turned out to be almost pure Plagiochila corniculata;

other species of note here were Heterocladium heteropterum var. flaccidum*, Adelanthus decipiens and Fissidens curnovii. Above the waterfall the burn proved rather uninteresting so David Long struck out for the summit of Mweelrea while the rest of us turned to explore the lower reaches. The ravine and its associated crags sustained their interest until the sea was reached; in the ravine there was lots of Jubula hutchinsiae, Lejeunea lamacerina, Marchesinia mackaii and Radula aquilegia and on the rocks above Rhabdoweisia crenulata, Glyphomitrium daviesii* and Anomodon viticulosus*. David's burst of energy had not only bagged him the summit but also added Ctenidium molluscum var. condensatum*, Andreaea rothii var. falcata and Leptoscyphus cuneifolius to the card. Returning to the cars over the sand dunes was a pleasant ending to the day and there were patches of Entodon concinnus to admire on the way.

15 August. Into East Mayo.

Numbers had now dwindled dramatically leaving merely the rump of the party to venture forth into H26, East Mayo, in search of additions to the county list and some limestone, both targets being met. The first port of call was a nice piece of woodland beside the Cloon River west of Partry (12/1372) where the silted rocks and tree boles produced so many new county records that I shall merely list them: Dicranella staphylina*, Weissia rostellata*, Physcomitrella patens*, Splachnum ampullaceum*, Leskea polycarpa*, Jungermannia gracillima*, J. pumila*, Scapania nemerosa*, Lophozia ventricosa var. silvicola*, Lophocolea fragrans*, Chiloscyphus polyanthos*, Plagiochila britannica*, Riccia glauca* and Fossombronina wondraczekii*. A tiny plant on the bare silt posed some problems; it looked like a dark, well-grown form of Fossombronina fimbriata but opinion switched rapidly to some form of Anthoceros, but now Jean Paton informs me that it is Equisetum prothalli!

Next stop was the shore of Lough Mask at Ballygarra (12/1471), south of Partry, which was a little disappointing. Although the boulders on the shore had a gritty texture, the calcareous ooze dominated and the bryophyte flora was sparse; however it did include Fossombronina foveolata*, Leiocolea alpestris*, Plagiochila britannica and Archidium alternifolium*. From here we moved on to the limestone proper at Keel Bridge over the river between Lough Carra and Lough Mask (12/1668), the pavement here being subject to periodic inundation thus creating conditions for a richer bryophyte flora. The first plant to attract attention here was Tortella densa, quite widespread on the bare limestone and T. nitida was also seen as was Anomobryum filiforme var. concinatum*; Riccia beyrichiana was frequent on the dried out mud in angles of the 'pavement'. On small, bare patches of soil in the damp grassland, David Long found Scapania gymnostomphila*, its third(?) station in Ireland.

Now we returned to the Silurian grits and shales north of Lough Mask (12/1372), where woodland and boggy moorland was explored. The coppiced woodland produced quite a good list including Heterocladium heteropterum var. flaccidum* and Lophozia ventricosa var. ventricosa*, but the moorland had the edge in terms of new records:- Drepanocladus exannulatus var. rotae*, Kurzia pauciflora*, K. sylvatica*, Cephalozia leucantha*, and Calyptogeia neesiana*. Finally four of us moved north to the eastern shore of Cooley Lough, south of Ballyhean (12/1382) which, again, was very calcareous but Jean Paton, as assiduous as ever, found Barbula trifaria and Brachythecium populeum* and David Long found Gyroweisia tenuis*.

16 August. Brackloon Woodland and the Sheefry Hills.

The steep, rocky woodland that descends from 'hill 581' (02/9679) is typical of many western woodlands with the oceanic bryophyte flora depending as much on the blocks of rock for damping the variations in temperature and humidity as the badly over-grazed woodland itself. Perhaps worthy of note was the quantity

of Harpanthus scutatus on the sloping rocks embedded in the soil, the occurrence of Plagiochila britannica with mature sporophytes and Jungermannia subelliptica. Other species here included Sphagnum quinquefarium, Dicranodontium denudatum, Adelanthus decipiens, Colura calyptrifolia, Cephalozia catenulata, Plagiochila killarniensis and Radula aquilegia. The boggy ground below the wood was interesting and here Jean Paton found Riccia warnstorffii* and Pleuroidium acuminatum.

As you cross the Owenmore bridge, there is a dramatic view into the Caheraspic coire (02/9271) at the eastern end of the Sheefry Hills; the craggy north-facing wall is particularly enticing (if you like that sort of thing). Unfortunately the promised basic rock is only patchy but even so a good card was pieced together. Rocks low down had Adelanthus decipiens, Plagiochila killarniensis and Marchesinia mackaii and odd outcrops of basic rock higher up in the coire provided Radula lindenberiana, R. aquilegia, Oxstegus hibernicus and David Long found Leptodontium recurvifolium and Schistidium strictum. The return to the cars provided an example of one of the pleasures of botanising in Eire; we had jammed our cars into a small parking space (including the vast 'Perrymobile') in front of a small cottage - anywhere else in the British Isles and the owner would have been fuming, but not here - here you are a target only for curiosity.

17 August. Mweelrea above Doo Lough (02/8167-68)

Mweelrea is the highest mountain in this part of Ireland and presents a very steep aspect to the Doo Lough Pass. Donal's plan was to ford the burn between the two large loughs near the road and explore the huge coire above. Now, there had been talk of 'stepping stones' across the burn but these failed to materialise and crossing techniques varied from the 'flying leap' and the 'sedate wade' to what appeared from a distance to be a double backstroke complete with squeals. Still, we all got across, some wetter than others. Unfortunately from this point onwards the party became somewhat widespread as we each seemed to have a different perception of where the best ground lay. David Long, Agneta Burton and I covered much the same ground initially, working over block scree low down on the right of the coire; this had water percolating through it and would probably repay further attention. As it was, deep delving in amongst the rocks turned up Jubula hutchinsiae and Lejeunea hibernica*.

David and I moved up next to the subsidiary coire that leads up to Point 2610' looking at both the huge block scree and the turfy slopes to the east. Good finds in this area included Dicranodontium uncinatum, Campylopus schwarzii, C. setifolius, Oxstegus hibernicus, Leptodontium recurvifolium, Bazzania pearsonii, Anastrepta orcadensis, Mastigophora woodsii, Scapania ornithopodioides and a single cushion of S. nimbosa. There was a good development here of the "mixed hepatic mat" (Ratcliffe D. A., New Phytol. 1968) and again the importance of microclimate was evident in the distribution of the best examples of this community. Donal joined us after an isolated lunch and almost immediately David found Bartramidula wilsonii* growing in unstable mineral soil amongst loose scree, indicating again that there is no shortage of habitat for this elusive plant. Donal, in his role as leader decided that he should return to the lower coire to assist with the re-crossing of the burn, and this unselfish act was rewarded after a few downward steps, by the discovery of Ptilium crista-castrensis** , new to Ireland. Its site here, in turfed-over scree, is typical of many sites in Scotland and it is a habitat that must also be widespread in Ireland, but it seems doubtful that such a distinctive species could have been passed over.

The weather had by now turned really foul, visibility was reduced to a few yards and it was raining heavily but it was still early so David and I decided

to press on in an attempt to refind Plagiochila carringtonii (seen here previously by Jean Paton) and also, I suspect, because we both enjoy wandering around on this kind of terrain. Interest was maintained on the way up by plants like Bryum riparium, Grimmia donniana var. donniana, Hylocomium umbratum, Gymnomitrium obtusum and Lophozia opacifolia*, the latter species in perhaps its second site in Ireland. Eventually we emerged onto the ridge and into the wind and sped on for the summit; as we neared the cairn, figures loomed out of the mist, unusual in itself on a subsidiary top of Mweelrea on a wet Monday. Having exchanged pleasantries and mentioned what we were doing, one of them said, "You should talk to my neighbour, Donal Synott"! We plunged off the ridge on a compass bearing, virtually giving up hope of seeing Plagiochila carringtonii, when David stumbled across it within a few yards, masquerading, as always, as Bazzania tricrenata. We squelched downwards, regardless now of bogs and pools and emerged out of the mist a good deal further west than we had anticipated, looking down on a superb, turf-roofed cottage, dark, dank and reeking of peat, a real step back in time.

Back in the coire, Jean Paton had already found Plagiochila carringtonii as well as Pohlia elongata var. acuminata* and Kiaeria blyttii*, a long way south for this species which is rare in Ireland, and Agneta Burton had found Jungermannia exsertifolia var. cordifolia*. The burn between the two loughs was even more of a problem now, involving a thigh-deep wade, but we were all so wet we could approach it with tolerable equanimity. This excellent day was rounded off by a superb meal at the seafood restaurant on Westport Quay - highly recommended.

18 August. Sheefry, Ben Gorm and the Devilsmother

The objective for the day was some of the ravines in the southern part of the area. Donal, Lillian and Ted opted for a coire in the Sheefry Hills and Barbara and Roy went to a ravine in the same area while the rest of the party headed for the southern slopes of Ben Gorm above Killary Harbour. One ravine here (02/8663), despite its small size, provided ideal conditions - wet enough and deep enough to negate its southerly aspect, near sea level and getting a lot of sunshine so presumably frost free and with a 'touch of base'. Here we found both Radula holtii and Lejeunea flava* as well as Hygrohypnum eugyrii*, Plagiochila killarniensis, P. corniculata, Marchesinia mackaii, Oxystegus hibernicus and Fissidens celticus.

In the afternoon we motored up the valley between Mweelrea and Ben Gorm looking for suitable ravines with little success; Roy and Barbara were already well established in the best looking option. So we retraced our steps to the Devilsmother (02/9164) and wandered up into a ravine where Jean had seen Acrobolbus wilsonii on a previous visit and apparently where it was seen by H.W. Lett in 1901. The Acrobolbus was duly refound and right next to it David found Daltonia splachnoides*; Jean found more Radula holtii and there was also Oxystegus hibernicus and Scapania scandica. Getting out of the ravine proved nearly as exciting as the bryophytes, 50° grass being somewhat disconcerting; however, we were soon able to enjoy ambling down to the cars in the later afternoon sunlight.

And so the end of another of Donal's Irish meetings with lots of good memories of plants and people - a new site for Adelanthus lindenbergianus; Bartramidula and Geocalyx at long last; lovely Lejeunea flava; so much Colura on a damp black crag that it resembled tiny Arabic script, Donal brandishing a stem of Ptilium, Harold Whitehouse's wonderful enthusiasm in his search for Trichostomopsis and, especially, the wild, empty hills.

GORDON ROTHERO

THE PAPER-READING MEETING, 1987, WYE

In the tranquil setting of Wye College, Kent, members met to discuss some of the most interesting aspects of bryology today. An emphasis on taxonomy demonstrated the continuing role of herbaria and the innovation of axenic cultivation and scanning electron microscopy in consolidating the firm basis on which all other research depends. Not only did we see in two papers the kinds of problems posed by little known and, in some cases, seriously threatened tropical floras but we also saw greater precision brought to bear at the infra-specific and generic levels, respectively, in two others as a result of sophisticated modern techniques. Work of this sort has rendered the British bryophyte flora one of the most well-known and one that is thus amenable to the detailed recording and mapping described by another speaker. It is similar taxonomic work, moreover, which has provided a framework for the subtle eco-physiological probing of growth and distribution shown by two other speakers to be of profound importance in current and future considerations. Summaries of these papers are provided below. With a reporter from the wider scientific press in our midst, however, the meeting has also been brought to a more general audience (New Scientist, 1582, p. 25, 1987).

Miss A.J. DAVIDSON (University of Reading) "Aspects of bryophyte herbivory."

Many invertebrates live, oviposit or pupate in the shelter of bryophyte colonies, but bryophytes are thought seldom to be freely consumed by either vertebrate or invertebrate herbivores. Rates of decomposition are also low leading to accumulation of bryophytes as humus or peat. Literature reports suggest that sporophytes may be more commonly eaten than gametophytes. These comments are conjectural, however, as there have been few detailed studies of bryophyte consumption. An investigation is therefore being conducted with the objective of providing definitive information on this point and providing information on the nature of any deterrent that may be involved. Preliminary results are presented here.

The generalist herbivore chosen for this study were slugs in the family Arionidae. Superficially, moss communities provide an ideal environment for slugs. They are moist and protective and readily apparent to ground living animals. There are few previous observations on moss consumption by gastropods.

The palatability of mosses to the slugs Arion hortensis Fér., Arion rufus L. and Arion subfuscus Draparnaud was investigated by comparing the consumption of five moss species Mnium hornum, Atrichum undulatum, Polytrichum commune, Funaria hygrometrica and Brachythecium rutabulum with that of two flowering plants, lettuce, Lactuca sativa L. and Dandelion, Taraxacum officinale L., in laboratory feeding trials. Young leaves of Lactuca were the preferred food type. Taraxacum was also eaten in substantial amounts, but consumption of moss shoots was negligible, except for small quantities of Funaria in some feeding trials. Slugs were then offered stages in the moss life cycle: Mnium, Brachythecium and Funaria at 1. Protonemata; 2. Leafy shoot; 3. Immature capsule (capsule expanded and green, calyptra fallen); 4. Mature capsule (capsule brown, but operculum intact). A. rufus and A. subfuscus showed a clear preference for immature capsules or protonemata to other tissues in all three moss species tested.

Casual observations in the field support the contention that moss shoots are not commonly grazed. Types of damage found include leaf lamina holes (usually with vein and where present border cells left intact) and a loss of apical leaves and stem. Several herbivores causing leaf holes have been identified as dipteran and microlepidopteran larvae and very occasionally slugs. Leaf fragments of Mnium, Brachythecium and Polytrichum have been found in rabbit

pellets indicating that rabbits may be responsible for removing some moss shoot apices. However, moss leaf fragments formed no more than 5% of the total plant material identified.

Conversely, there is abundant evidence of immature capsule damage in many moss species. A. rufus and A. subfuscus have frequently been observed consuming immature capsules in the field. Results of a permanent quadrat assessment of capsule damage suggest that only about 25% of Mnium hornum and less than 20% of Brachythecium rutabulum capsules survived to dehiscence at the sites sampled. Thus where feeding does occur spore output is considerably reduced.

Available evidence thus indicates that mosses are only vulnerable to slugs at certain short-lived stages in their life cycle. Possible reasons for this poor utilisation of bryophyte biomass include low nutrient value, a physical resistance presented by the cell wall or a chemical defence involving secondary metabolites.

In all mosses sampled the average ash-free calorific value obtained for the immature capsule was similar to or slightly lower than the value obtained for the leafy shoot. Mnium hornum mature capsules had a slightly higher energy content (18.79 KJg^{-1}) than immature capsules (18.65 KJg^{-1}). Thus, there appears to be no energetic advantage to be gained by eating the immature capsule. However, it must be recognised that potential energy yield and metabolizable energy yield are not the same. Rumen content studies (Thomas & Edmonds, 1983; White & Trudell, 1980) suggest that moss leaves are poorly metabolized. A preliminary examination of slug faeces supports this theory. Possible reasons for low digestibility include a concentration of holocellulose or "lignin like" material within the cell wall or the presence of tannins or other polyphenolics.

These factors are being investigated by comparing the phenolic component of the moss shoot and immature capsule and by presenting moss extracts to the slugs on artificial substrates. First results indicate that slugs prefer a moss cell extract to the whole fresh shoot suggesting that the moss cell wall provides the barrier to free consumption. Whether this barrier is a physical obstruction or a chemical interaction with the digestion of the consumer remains to be determined.

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Mr A. EDDY (British Museum, Nat. Hist.): "Malesian Leucobryaceae".

Mr T. ELLIS (British Museum, Nat. Hist.): "Taxonomic problems in the Calymperaceae."

The Calymperaceae is a pan-tropical family of largely epiphytic, acrocarpous mosses characterised by the possession of leaves with a sharply defined hyaline, semi-sheathing base and marginal or intra-marginal ribs. Fusiform gemmae are frequently produced from the costa, most often in a mass radiating from the apex.

Calymperes and Syrrophodon are the largest constituent genera. In Calymperes the capsule is eperistomate and enclosed by a persistent calyptra, spore

release being effected through longitudinal splits in the latter. Gemmiferous leaves are often highly modified, especially at the apex. The nature of this apical modification is slightly different in each species and is therefore an important feature in classification.

In Syrrhopodon the capsules have a haplolepidous peristome and a fugacious calyptra, and, in most species, there is little differentiation of the gemmiferous leaves. The generally recognised subgenera differ widely and the genus is therefore considered to be polyphyletic.

Fleischer (1904) observed a Syrrhopodon-like peristome in various genera (Arthrocnemum, Exodictyon (including the recently segregated Exostratum), Leucophanes and Octoblepharum) with leaves resembling those of Leucobryum. Accordingly he transferred these from the Leucobryaceae into a new family, the Leucophanaceae, which he grouped with the Calymperaceae. Prior to Fleischer's work it had become generally accepted that all mosses with leucobryoid leaves were derived from a single ancestor. As the peristome in Leucobryum (the most widely known of the genera with leucobryoid leaves) resembles that of Dicranum and its allies, it was assumed that this ancestor was shared with the Dicranaceae.

The features of dicranoid and Syrrhopodon-like peristomes described by Edwards (1979), together with evidence gathered from the examination of leaves lend support to Fleischer's classification. The leaves of all the genera in the Leucophanaceae possess features that, to some extent, can be related to the basic calymperoid leaf form. In Exostratum they are the least modified from this calymperoid form and resemble most closely those of Syrrhopodon.

Andrews (1947) first advocated placing the Leucophanaceae into the Calymperaceae. He suggested a connection between Leucophanes and Syrrhopodon subgenus Leucophanella on the basis of a supposed homology between the hyalocysts of the two groups, their peristome structure and gemmae. However, the hyalocysts in Leucophanella form part of the lamina while most in Leucophanes are part of the costa and are therefore not homologous.

Costal hyalocysts similar in form to those of Exostratum (but independently evolved) do occur in the Calymperaceae and their presence is often associated with the production of gemmae. This association is less obvious in Calymperes subgenus Somphoneuron as the species of this, probably polyphyletic, subgenus possess gemmiferous and non-gemmiferous leaves with a costa largely composed of (apparently non-porose) hyaline cells.

It is possible to view the present leaf morphology of the genera in the Leucophanaceae as being the result of reduction and modification from the leaf-form of an ancestor which they share with the modern Calymperaceae. In the course of this process these genera have evolved porose, costal hyalocysts independently of those of the dicranaceous leucobryoid mosses. Therefore, agreeing in spirit, if not in detail, with the recommendations of Andrews (1947) and the various proposals of subsequent authors, the genera of the Leucophanaceae have been formally transferred to the family Calymperaceae as the subfamily Leucophanoideae (Ellis, 1985).

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Dr M.C.F. PROCTOR (University of Exeter): "Scanning electron microscopy and some thoughts on Polytrichadelphus"

Mr R.C. STERN (Chichester) and Dr F. ROSE (Liss, Hants): "Bryophyte distribution in Sussex - the progress on the new Sussex bryophyte flora."

Sussex is a good area for bryophytes with about 470 taxa. It has a long coastline and a low level of air pollution. It has varied topography (up to 919 ft) and rainfall (from 25 ins to the upper 30's). The main reason for the diversity, however, is the varied geology.

The West Sussex coastal plain has recent deposits including gravels; old pits have rare species such as Fossombronina husnotii, F. incurva and Atrichum angustatum. Near the sea are the epiphytes Cololejeunea minutissima and Ulota phyllantha, as well as Leptodon smithii which also occurs on walls. The last is one of the "southern" species as is also Pleurochaete squarrosa which occurs on chalk grassland.

The South Downs provide some of the most interesting species on open grassland such as Entodon orthocarpus, Porella arboris-vitae and Scapania aspera. In the wooded areas on chalk stones are Seligeria paucifolia and Tortella inflexa.

The Lower Greensand is well represented in West Sussex with some of both wet and dry heathland, on which species such as Odontischisma denudatum and Dicranum spurium occur. On the wooded hills, especially on chestnut coppice areas, there are other Dicranum species including montanum, tauricum and flagellare.

The Weald Clay areas are well wooded with abundant epiphytes such as Lejeunea cavifolia, Neckera pumila and Zygodon baumgartneri; on clay banks there is Ctenidium molluscum "woodland taxon" which needs to be described as a separate species.

This last also occurs on the High Weald which comprises the Hastings Beds - a complex series of clays and sands with some very fine and celebrated sandrock areas. These are noted for the occurrence of "Atlantic" species such as Hyocomicum armoricum, Harpanthus scutatus, Pallavicinia lyellii, Orthodontium gracile and many other species, particularly of hepatics. At the eastern end of East Sussex is Fairlight Glen with Fissidens rivularis, Tortula freibergii and Dumortiera hirsuta.

With the assistance of Mr H.W. Matcham, a bryophyte atlas is in course of preparation. Maps will be on a 10 km square basis, or by tetrads for the less common species. It is hoped to publish this in 1990.

Mr C. STUDHOLME (University of Manchester): "The peroxidase activity and isozyme variation of Sphagnum cuspidatum from polluted and unpolluted areas".

The occurrence of ecotypes of higher plant species tolerant of sulphur dioxide is a well established phenomenon, but their counterparts in the Bryophyta are virtually unknown. Although variation in susceptibility to sulphur dioxide is observable between different bryophyte species in much the same way as it is in higher plants, the far greater sensitivity of bryophytes as a whole may mask any intraspecific variation which might exist.

The opportunity to examine whether such variation in susceptibility to sulphur dioxide pollution is present in bryophytes is available in the southern Pennine uplands. The long pollution history of this region has resulted in dramatic changes in the hydrology and vegetation of the blanket bogs and the ombrotrophic Sphagnum communities, once widespread, have been replaced by a far less diverse flora dominated by Eriophorum vaginatum. However, situated in isolated parts of this eroded and uninteresting landscape are a few populations of Sphagnum cuspidatum which may well be relics of the once extensive Sphagnum cover. If these are relics, and thus pollution tolerant ecotypes, they should display physiological, genetic and growth differences when compared with plants from unpolluted regions.

When grown in an artificial rainwater solution amended with increasing concentrations of bisulphite (the major solution product of sulphur dioxide) the growth of Sphagnum cuspidatum from three southern Pennine populations was affected far less than was the growth of plants from three populations with no history of pollution. Furthermore, at the highest concentration (0.3 mM) severe tissue damage was visible in the plants from the three unpolluted populations, while plants from the southern Pennines remained unaffected. This was the first piece of evidence to suggest that the southern Pennine populations of Sphagnum cuspidatum might be pollution tolerant relics.

An electrophoretic study was performed on plants from the same six populations in order to determine whether southern Pennine plants were genetically different from their counterparts in unpolluted regions. An examination of over 400 samples revealed that, for peroxidase, 5 isozymes were common to all samples. At the three sites unaffected by pollution these 5 bands were supplemented by a combination of others representing up to 10 additional isozymes. In the southern Pennine populations however these supplementary bands were rare. Thus a peroxidase isozyme profile with a low number of isozymes typifies southern Pennine populations of Sphagnum cuspidatum, although such an arrangement may also be found in some plants from unpolluted populations. Whether this signifies selection for a tolerant genotype or reflects the chance establishment of more recent wind-blown propagules, which have spread vegetatively to produce the southern Pennine populations, is uncertain.

It has been reported that the total activity of the enzyme peroxidase is at a lower constitutive level in higher plant ecotypes known to be tolerant of sulphur dioxide. The Sphagnum cuspidatum plants from the southern Pennine populations also have a lower base level of peroxidase activity which may be further evidence that the plants are tolerant ecotypes. However, while higher plants respond to sulphur dioxide with an increase in peroxidase activity, Sphagnum cuspidatum plants exhibit a depressed activity both with laboratory bisulphite treatments and when plants from unpolluted regions are transplanted to the polluted southern Pennines. This would not appear to account for the lower base level of peroxidase activity in southern Pennine plants as the base levels were determined after a long period of growth under controlled conditions in the laboratory. Similarly it is not the additional isozymes typical of populations from unpolluted regions which produce overall higher activities. The 5 main isozymes common to all samples examined stain darkly and account for a large proportion of the activity observed in the total activity assay. The activity of two of these isozymes (PER 4 and PER 5) are, however, sensitive to environmental conditions and these are consistently seen to produce dark bands in plants from unpolluted sites, but to stain poorly in plants from the southern Pennines. A drop in total enzyme activity when plants from unpolluted sites are transplanted to the southern Pennines is accompanied by a significant reduction in the stain intensity of the same two isozymes. None of the additional isozymes characteristic of plants from unpolluted populations appeared in the isozyme profile of southern Pennine plants

transplanted to an unpolluted site, although stain intensity of the two isozymes PER 4 and PER 5 did increase to account for the observed increase of total enzyme activity.

The presence of isozyme variation in some populations of Sphagnum cuspidatum is an addition to the growing number of reports that bryophytes may be as genetically diverse as higher plants, but the reduction of peroxidase activity under polluted conditions reported here for a bryophyte may serve to highlight important physiological differences between the two groups.

Dr H.L.K. WHITEHOUSE (University of Cambridge): "The use of axenic cultures to resolve the components of aggregate species in mosses".

Growing bryophytes in agar culture provides a technique equivalent to the experimental garden long used by flowering plant taxonomists. 'Axenic' means 'not contaminated', but bacterial infection of Knop's agar cultures of mosses seems often to favour their growth. The cultures are started in petri dishes, using any part of the moss, surface sterilized with 5% sodium hypochlorite solution. When growth starts, the material is transferred to 10 cm tubes of culture medium.

The first success of using this technique to recognise the components of aggregate species was with Bryum mildeanum Jur. Some individuals produced flat red gemmae, with a serrated edge, on the rhizoids, including those in the leaf-axils, and were found to be B. riparium Hagen. The gemmae were very abundant in the cultures. B. riparium is a brown-stemmed plant of non-calcareous habitats, particularly where water seeps over rocks at the sides of streams, and is widely distributed, though rare, in the west and north of Britain and Ireland. It also occurs in west Norway and there is a single record from North Carolina (coll. L.E. Anderson, 1949). A similar plant occurs in east Nepal (coll. W.D. Foster, 1977) and in Sikkim, but keeps distinct in culture. B. mildeanum is a red-stemmed plant, lacking gemmae, of limestone rock crevices and also of rocks in base-rich streams. It is not known in Ireland and is of very local occurrence in Britain.

The culture method was also used to confirm the distinctness of Dicranella staphylina Whiteh. from species with which it might be confused such as D. rufescens (With.) Schimp, and D. varia (Hedw.) Schimp. D. rufescens differs from D. staphylina in many characters including its red stems, rhizoids and tubers. D. varia has narrower leaf-cells than D. staphylina and the tubers are paler, more variable in shape and size and less constantly present - indeed, often absent, particularly from non-calcareous habitats.

Recent work in collaboration with Dr M.E. Newton has established that two taxa occur within Tortula stanfordensis Steere. Cultures on Knop's agar of the two forms keep distinct. T. stanfordensis sensu stricto occurs widely in California and in Victoria, Australia, and is known in Europe from a single locality in the Dordogne, France, coll. J.G. Duckett, 1977, from the Severn, Wye and Usk valleys in the west of England, from west Cornwall, from the Magnesian limestone in Yorkshire and from a few scattered localities elsewhere in England, Wales, Scotland and Ireland. Almost all the populations are female only. The second taxon occurs in the Thames and Tweed basins. It differs from T. stanfordensis in having a more acute leaf apex with a larger apiculus and larger leaf cells and is autoecious, or rarely synoecious, with gymnostomous capsules on short setae produced regularly in spring. It has a chromosome number of $n = 52$ or, more rarely, $n = 26$, while T. stanfordensis has $n = 13$.

A study of Gymnostomum luisieri (Sergio) Sergio ex Crundw. in collaboration with Mr A.C. Crundwell, using cultures of this and allied plants, has helped to

clarify the distinctions between them. G. luisieri has been confused chiefly with G. calcareum from which it differs in its short leaves, 0.3 - 0.4 mm long, and in the frequent presence (always, in culture) of ovate or bottle-shaped gemmae in the leaf axils and on the protonema. G. calcareum lacks such gemmae and has ribbon-shaped leaves often twice as long as those of G. luisieri. In the Near East G. luisieri has been confused with G. mosis (Lor.) Jur. & Milde, but that species has bistratose leaf margins and lacks the characteristic gemmae of G. luisieri. The three species keep distinct in culture. G. luisieri has a distribution that is centred in the Mediterranean area and is largely south-western in Britain and Ireland.

An offshoot of the work on Gymnostomum luisieri has been the recognition, in collaboration with Mrs J. Appleyard and Dr M.O. Hill, of the occurrence of Leptobarbula berica (De Not.) Schimp. in Britain. More recently it has been realised that L. berica has been much confused with Gyroweisia tenuis and this has led, in collaboration with Dr H.J. During, to the discovery of L. berica in the Low Countries. L. berica seems to be comparatively frequent in south-east England; the north side of churches at ground level is its favourite habitat. As would be expected, it keeps distinct from Gyroweisia tenuis in culture, although there was much confusion until it was realised that the plants growing at localities in Cambridgeshire where G. tenuis had supposedly been known for over 30 years were in fact L. berica. The perichaetial leaves of L. berica have an inflated base and taper to a sub-acute apex, while those of G. tenuis have a much less inflated base and a more obtuse apex. Also, the bottle-shaped gemmae on the protonema of G. tenuis are usually biseriate (2 cells wide), while those of L. berica are more slender and usually uniseriate.

It is self-evident that axenic cultures provide a powerful tool for resolving the components of aggregate species. The problem is to recognise which taxa merit such study.

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Following the Annual General Meeting (Minutes in Bulletin 52), there was an evening conversazione during which a number of demonstrations, listed below, were examined. Moreover, further interest was generated by the exciting discovery of Trichostomopsis umbrosa on the college itself and of Leptobarbula berica on the church nearby. The meeting proved to be not only of great reward but also enjoyable, and for this we are deeply indebted to Dr M.A.S. Burton for volunteering such careful and imaginative arrangements.

K.J. Adams: BBS Library items.

D.G. Long: Notes on Andreaea.

B.J. O'Shea: I.A.B. software library for IBM PC compatibles.

P.W. Richards: Spare reprints.

R. Stevenson: Miscellaneous Bryologica.

M.P. & H.L.K. Whitehouse: Stereoscopic photographs of thalloid hepatics from Achill Island.

H.L.K. Whitehouse: Drawings, distribution maps and a list of British records of Leptobarbula berica.

M.E. NEWTON

The weather was perfect for the Sunday excursion. A small wood, typical of the well farmed North Downs countryside near Wye had been chosen, since it had a list of over 70 species, free access in the company of its warden John Taplin, and parking space nearby. Chalk stones in it had yielded Seligeria paucifolia, Fissidens pusillus var. tenuifolius and Tortella inflexa. The Seligeria was

abundant though not in good fruit; the Fissidens was fruiting well; Tortella was scarce. The species list was available to most members who set about with a will to add to its numbers. To date 9 additions have been given to me; nothing spectacular but to me the patch of Ephemerum recurvifolium was especially pleasing since I have seen it but rarely in Kent. I thank all who have sent me records after the meeting, and especially John Taplin who prepared the species list.

Lunch was eaten at Hothfield. Hothfield bog is probably the most eastern in Britain and though bogs are commonplace in parts of the country, this one and the other at ~~Keston~~ (now in the London area) are our treasures. The great abundance of Polytrichum commune must have been apparent to all. Eleven species of Sphagnum were found with Odontoschisma sphagni growing among them. The 10 km card for the area holds one of Kent's longest species lists so members could find a pleasing number to look at.

A few members went further afield and I have been sent records of Tortella inflexa and Leptobarbula berica. Again I thank members who have sent records which add to my tetrad maps of Kent bryophytes and for a pleasant day in good company.

TRUDY SIDE

THE TAXONOMIC WORKSHOP, 1987, MANCHESTER

The 1987 Taxonomic Workshop was held on the 7th-8th November at Manchester University. The twenty-six participants included amateur naturalists and professional botanists and came from a wide area of the country as far away as Essex and Cumbria. Our tutors were Dr Sean Edwards (who also organised the meeting) and Dr Harold Whitehouse, with additional valuable assistance from Dr Martha Newton.

On Saturday, Sean Edwards demonstrated, by means of photographs, his simple method of cutting sections of moss leaves using half a double-edged razor blade and two microscope slides to produce thin sections at the precise part of the leaf required. Then he talked to us about peristome structure and development, unveiling the mysteries of nematodontous and arthrodontous peristomes with the aid of his superb illustrations and slides. In the practical work which followed we were able to try our hand at cutting leaf sections which are valuable, and in some cases essential, for accurately naming Sphagnum, Polytrichum and Campylopus species. Some of us confessed to needing considerable practice to acquire the knack but are determined to persevere. We also practised displaying peristomes for examination including those of Atrichum, Polytrichum, Bryum, Funaria, Tortula, Dicranella and Splachnum.

At the end of the afternoon, Sean Edwards put on his Curator's hat and took us on a tour of the Manchester Museum Herbarium. The Herbarium houses over three million specimens and is the largest in Britain outside the British Museum and Kew. We were then left at liberty to explore the Botany Gallery and the exhibition of Lindow Man.

Harold Whitehouse spent much of Saturday afternoon in the Herbarium searching for Leptobarbula with some success. On Sunday, he talked to us about tubers of arable field mosses and showed us beautiful photographs to demonstrate their structure and how they can be used to aid identification of small acrocarpus species. With his help and the use of his photographs, drawings, literature and permanent preparations which he made available, we were able to examine our own mosses for the presence of tubers with a good chance of successful

identification. To many of us this opened up a new, fascinating aspect of bryology. Tubers were seen on Bryum rubens, B. micro-erythrocarpum, Leptobryum pyriforme and Ditrichum cylindricum. An interesting gall was seen on the rhizoids of Pottia truncata.

At the end of the afternoon, Martha Newton invited the participants to her room to see a demonstration of chromosome preparations.

The weekend also provided opportunities for us to gain expert help with our own mossy problems. Martha Newton gave an eager group a most useful verbal summary of field characters used in the identification of Sphagnum species.

On Saturday evening, nine of us were delighted to accept the invitation of Sean and Salosh Edwards to visit them at their home for drinks and snacks. A pleasant and entertaining evening was had by all. Our thanks are due to them for their kindness especially as they are currently suffering an invasion by builders with all the attendant turmoil.

The Workshop was stimulating, helpful and friendly. We thank our tutors for giving their time and sharing their knowledge and expertise. We also thank Professor W.J. Ferguson (Dept. of Cell and Structural Biology) for making rooms and equipment available to us.

KATIE COCKING

FUTURE MEETINGS OF THE SOCIETY

Members are recommended to read the BBS Provisional Safety Code, published in Bulletin 43 and available from local secretaries for inspection during BBS meetings.

SPRING FIELD MEETING, 1988, Cirencester, 6-13 April.

Organizer & Local Secretary: Miss K.A. Hearn, The National Trust, Spitalgate Lane, Cirencester, Glos., GL7 2DE

Accommodation at the Royal Agricultural College will be available in single bedrooms at a cost of £25 per day for full board. Bookings should be made through the local secretary, from whom details of other accommodation in the area are also available.

An extremely interesting programme has been drawn up, affording an insight into a variety of habitats in the Cotswolds, the Forest of Dean and the Wye Valley. Not only will it be possible to examine limestone grassland and a range of woodland types, but there will also be visits to disused sandstone quarries, broad-leaved woodland and conifer plantations and a Sphagnum mire. With such a wide ecological spectrum, it is to be expected that species and populations of exceptional interest will be seen.

Some of the sites to be visited are Foxes Bridge Bog, Wimberry Slade Quarries, Painswick Beacon, Workman's Wood, Lineover Wood, Cleeve Common and Lady Park Wood. Many of the sites to be visited have no information on bryophytes. Some, such as Cleeve Common and Lineover Wood, feature in H.H. Knight's county flora (1914 and 1920) with species such as Weissia sterilis, W. tortilis, Tortula marginata, Acaulon muticum, Thuidium abietinum, Grimmia orbicularis, Atrichum angustatum and Funaria muhlenbergii in grassland and on rocks, and Orthotrichum striatum and Neckera pumila on trees. Buckstone Wood, according to Knight, is the only Glos. locality for various species, including Atlantic species and species unusual nationally, e.g. Lepidozia cupressina, Plagiothecium latebricola, Pterogonium gracile and Dicranum scottianum.

Whether or not any of these species are still present remains to be seen. The Wye Valley has been worked more recently with a BBS excursion there in 1968 and a NCC survey in 1979. Various local and rare calcicoles (e.g. Isothecium striatulum and Campylium calcareum) and outposted Atlantic species (e.g. Jubula hutchinsiae, Cololojeunea calcarea and C. rossettiana) occur, with interesting riverbank species such as Barbula nicholsonii as well. It will be interesting to try to re-find Anomodon longifolius at The Slaughter.

Travel: British Rail Conference Fares available (nearest Station Kemble).

Please come and contribute your expertise (or just your enthusiasm) for these beautiful and little-known sites!

Details from the Local Secretary at the above address

INTERNATIONAL SYMPOSIUM ON BRYOPHYTE ECOLOGY, 1988, University of Edinburgh, 19-23 July, AND SUMMER FIELD MEETING, Beaulieu, Inverness-shire, 23-30 July, in conjunction with the BRITISH ECOLOGICAL SOCIETY.

Organizers: Dr R.E. Longton (University of Reading), Dr P.J. Lightowlers (I.T.E., Penicuik) and Mr D.G. Long (Royal Botanic Garden, Edinburgh).

Local secretary: Dr P.J. Lightowlers, Institute of Terrestrial Ecology, Bush Estate, Penicuik, Midlothian, EH26 0QB.

The symposium will be held at the University of Edinburgh's Pollock Halls, next to the scenic Holyrood Park, and only twenty minutes walk from the heart of this historic city. Costs will be approximately £20 for dinner, bed and breakfast. The symposium (19-20 July) will be followed by a one day field excursion in the Edinburgh area, and, for those interested in further field experience, there will then be a one week field meeting in the Scottish Highlands based near Inverness. Registration and booking details are available from the local secretary. **The deadline for bookings is 18 March 1988.**

The symposium will consist of four sessions of invited papers relevant to currently active areas of research plus poster sessions and sessions of contributed papers. The invited speakers and their topics are listed below. Offers of posters and contributed papers should be sent as soon as possible, and not later than 31 March, 1988, to Dr R.E. Longton, Department of Botany, The University, Reading, RG6 2AS, UK. (tel: 0734 751684)

Session 1. Bryophyte Production and Decomposition

Tundra ecosystems. S.R. Russell

Temperate Ecosystems. D.H. Vitt (Edmonton, Alberta)

Tropical ecosystems. J.-P. Frahm (Duisberg)

Physiological basis of bryophyte production. M.C.F. Proctor (Exeter)

Session 2. Interaction between Bryophytes and Other Organisms

Bryophytes and nutrient cycling. D.H. Brown (Bristol) and J.W. Bates (London)

Bryophyte interactions with other plants. H.J. During and B. van Tooren (Utrecht)

Entomophily in the Splachnaceae. A. Koponen (Helsinki)

Bryophyte herbivory. A.J. Davidson (Reading)

Session 3. Population Biology

Reproductive strategies in mosses. R.E. Longton (Reading)

Genetic structure of hepatic species. M.E. Newton (Manchester)

Bryophytes and ecological niche theory. N.G. Slack (Troy, New York)

Bryophytes and plant strategy theory. J.P. Grime (Sheffield)

Section 4. Bryophytes in Man-Modified Ecosystems

- Bryophytes and heavy metal accumulation. G. Tyler (Lund)
Responses of bryophytes to mineral deposition. J.A. Lee (Manchester)
Terrestrial and aquatic bryophytes as monitors of environmental
contaminants in urban and industrial environments. M.A.S. Burton (London).
Effects of forest disturbance on tropical bryophytes. D.H. Norris
(Arcata, California)

The field meeting (the summer meeting of the BBS organised by Mr D.G. Long) will be based at Aigas Field Centre, Beaulieu, Inverness-shire. Localities to be visited include Glen Affric, Glen Strathfarrar and Ben Wyvis. The Field Centre is centred on Aigas House, a Scottish baronial shooting lodge in a beautiful parkland setting above the River Beaulieu. A variety of types of accommodation is available in the house and in chalets in the grounds. Prices range from £49 to £140 per week for bed and breakfast, with a packed lunch and dinner @ £9.50 per day. Bookings should be made as soon as possible through the local secretary, and certainly by 30 April.

ANNUAL GENERAL MEETING AND PAPER-READING MEETING, 1988, Liverpool, 17-18 September.

Local Secretary: Dr J. Edmondson, Merseyside County Museums, William Brown Street, Liverpool, L3 8EN.

Full details will be published in the next Bulletin, all bookings being addressed to the local secretary.

BRYOLOGICAL WORKSHOP, 1988, Bristol, November.

Local Secretary: Dr D.H. Brown, Department of Botany, The University, Bristol, BS8 1UG.

It has been proposed that this meeting might provide practical experience and guidance in the increasing use of computer facilities in bryological work, both by the amateur and professional. Further details will appear in the next issue of the Bulletin.

SPECIAL OVERSEAS SPRING MEETING, 1989, The Algarve, March.

All arrangements are kindly being made by Mr A.R. Perry, to whom enquiries should be addressed. Full particulars will appear in a later issue of the Bulletin. Mr Perry's efforts on our behalf would, however, be greatly facilitated by a knowledge of the level of interest in this exciting opportunity for bryological exploration. He would welcome your comments as well as some indication of the number of members for whom his plans are being made.

SPRING FIELD MEETING, 1989, Salisbury.

Mrs V. Williams and Mr R.C. Stern have already made preliminary enquiries into the feasibility of a meeting that will allow access to interesting bryological country in this part of Wiltshire.

SUMMER FIELD MEETING, 1989, Aberystwyth.

A number of members have expressed a wish for a meeting in mid-Wales, an area with rich and varied bryological sites. Mr A. Orange has agreed to make the necessary arrangements, details of which will be published later.

ANNUAL GENERAL MEETING AND PAPER-READING MEETING, 1989, Lincolnshire, September.

Dr M.R.D. Seaward, in agreeing to organize this meeting, has afforded the BBS an opportunity to include a day's field work in a county that has been visited less often by the Society than it might have been.

OTHER BRYOLOGICAL MEETINGS

5 March, 1988: Is Nature Conservation working for plants? CABS/FFPS symposium at the Zoological Society of London's Meeting Room, Regent's Park, London. Further details and booking forms are obtainable from FFPS, 8-12 Camden High Street, London, NW1 4RY.

20-23 April, 1988: Mosses and Liverworts. A short beginners' course for all who would like to get to know these fascinating plants. Based in country cottage accommodation at Snaigow, Dunkeld, Perthshire, PH8 ORD. Cost £106 for 4 days. Write to Brian S. Brookes for details (sae please).

22-24 April, 1988: Introducing mosses. Mr G. Rothero, Kindrogan Field Centre, Enochdhu, Blairgowrie, Perthshire, PH10 7PG.

Details from the Warden, Dr A. Lavery, at the above address.

29 July - 5 August, 1988: Mosses and Liverworts. Dr M.E. Newton, Preston Montford Field Centre, Montford Bridge, Shrewsbury, SY4 1DX.

Details from the Warden, Mr J.A. Bayley, at the above address.

20-27 August, 1988: Mosses and Liverworts. Dr M.E. Newton, Kindrogan Field Centre, Enochdhu, Blairgowrie, Perthshire, PH10 7PG.

Details from the Warden, Dr A. Lavery, at the above address.

27 August - 3 September 1988: Bryophytes. A course on mosses and liverworts for beginners and for those with some experience. Based in country cottage accommodation at Snaigow, Dunkeld, Perthshire, PH8 ORD. Cost £185 for 7 days. Write to Brian S. Brookes for details (sae, please).

9-16 September, 1988: Mosses and Liverworts. Dr M.E. Newton, Malham Tarn Field Centre, Settle, North Yorkshire, BD24 9PU.

Details from the Warden, Mr K. Iball, at the above address.

14-16 October, 1988: Introduction to Mosses and Liverworts. Mr P.J. Wanstall, Flatford Mill Field Centre, East Bergholt, Colchester, Essex, CO7 6UL.

Details from the Warden, Mr E. Jackson, at the above address.

COUNCIL NEWSLETTER NUMBER 4

Members will be interested to learn that Mrs J.A. Paton and Dr R.M. Schuster were elected Honorary Members of the Society at the AGM in September 1987. Jean Paton is equally well known within the BBS for her encyclopaedic knowledge of British hepatics and for her unstinting support for the Society and its members sustained over many years. Dr Schuster, a hepaticologist of major international distinction, is author of several major works including The Hepaticae and Anthocerotae of North America. He was also the instigator and editor of New Manual of Bryology, to which he contributed several chapters. The membership list has been computerized by our Membership Secretary, Dr S.L. Jury, and thus it can be regularly updated.

The Treasurer reported an excess of income over expenditure during 1986 of £9,461, a result due in part to a bequest from the late Mr E.C. Wallace, and to a generous donation from Mr A.C. Crundwell of proceeds from the sale of some of

Mr Wallace's books and other effects. Several major items of expenditure are in the offing, but there is no immediate need to increase subscriptions.

Through the efforts of Mr R.C. Stern, the Society is negotiating to collaborate with the Sussex Trust for Nature Conservation in the purchase of a 150 acre woodland site at Saxonbury Hill. It is planned that, in return for a relatively modest contribution from the BBS, a small (3-4 acre), bryologically rich area of sand rock will be designated as the Ted Wallace Reserve. Members who have not already done so are urged to contribute to the Wallace Memorial Fund, to enable these arrangements to proceed.

Work on data input for the Atlas of British Bryophytes is now proceeding apace, being undertaken by Dr R.A. Finch and Miss C. Hine at Monkswood Experimental Station under a two-year contract from the Nature Conservancy Council. They are working in collaboration with Mr P.T. Harding and Mr C.D. Preston of the Institute of Terrestrial Ecology. It is envisaged that this work will be completed by the Autumn of 1989 and that publication of the Atlas will soon follow. We are grateful to NCC and ITE for their continuing support.

During 1987 Council approved further financial support to Dr S.W. Greene to enable him to complete his "Register of British and Irish Bryologists". Support was also approved for the preparation of a cumulative index to Journal of Bryology and other publications of the Society. Dr P.E. Stanley has agreed to undertake this important task: he thinks it will take about two years. Mr M.J. Wigginton received an encouraging response from BBS members living in the tropics to his enquiry concerning the value of establishing a Tropical Bryology Group within the Society: further developments can now be anticipated and Mr Wigginton would be pleased to receive comments and suggestions at Nature Conservancy Council, Northminster House, Peterborough, PE1 1UA.

Mr D.G. Long has suggested that occasional auctions of books and other items should be held during the Society's Autumn Meetings in order both to raise funds and to provide an entertaining diversion from more serious business.

Anyone with material that they might be prepared to contribute, perhaps on a profit-sharing basis, should contact Mr Long at the Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR.

It should also be noted that our Curator, Mr A.R. Perry has completed a vice-comital listing of BBS Herbarium holdings.

Finally, it is sad to have to report the death of Mr Richard Libbey, Richard first joined the Society in 1974 and will be remembered by many members for his kind friendship and wise counsel. He was serving as an elected member of Council at the time of his death.

R.E. LONGTON
DECEMBER, 1987

B.B.S. MAPPING SCHEME

After an initial six months delay the preparation of bryophyte distribution maps for a bryophyte atlas is now in progress at the Biological Records Centre, Monks Wood, and it is anticipated that this will take two years from October 1987. It is proposed that the atlas will be published in three volumes over a period of 12-18 months. As yet, no financial arrangements for publishing the atlas have been made but various avenues are being explored.

The map of each species subspecies and variety will be accompanied by a short

legend dealing with ecology, altitudinal range, reproductive strategy and European distribution. A draft synopsis of the atlas is as follows:

Atlas of the Bryophytes of the British Isles

VOLUME 1 - HEPATICS

1. Forward - including note on collection of rarer species
2. Preface - reasons for the atlas, acknowledgements
3. Introduction
 - 3.1 History of bryophyte recording
 - 3.2 History of the BBS scheme
 - 3.3 a. Data collection
 - b. Coverage map, comparing number of species expected to occur in a square with the number recorded.
 - 3.4 Data processing and validation
 - 3.5 Availability of data
 - 3.6 Future recording
4. Map showing the number of hepatics recorded from each square.
Distribution maps and species accounts (288 species)

Index to species in Volume 1

VOLUME 2- MOSSES (SPHAGNALES-GRIMMIALES)

1. The bryophyte flora of Great Britain and Ireland in a European context.
2. Distribution maps and species accounts (approx 350 species)

Index to species in Volume 2.

VOLUME 3 - MOSSES (FUNARIALES-HYPNOBRYALES)

1. Analysis of phytogeographical elements within the British bryophyte flora
2. Conservation
 - 2.1 Conservation priorities
 - 2.2 Provisional Red Data lists for
 - a. Great Britain
 - b. Ireland
3. Map showing number of mosses recorded from each square.
Distribution maps and species accounts (approx. 365 species)
4. Acknowledgements and list of recorders

5. Bibliography
6. Cumulative index to species

Whilst the BBS field and other records are being computerised it will be possible to incorporate additional records. However, to expedite the production of distribution maps this has to be done fairly soon. If, therefore, you have any field records, will you please let me have them as soon as possible.

A.J.E. SMITH

NEWS FROM THE HERBARIA

THE BRYOPHYTE COLLECTIONS AT LIVERPOOL (LIV).

by John Edmondson & Yvonne Iles

In January 1983 the bryological collections of the University of Liverpool (LIVU) were merged with those of the Liverpool Museum's herbarium (LIV). Nomenclature was brought into line with Tony Smith's Moss Flora of Britain and Ireland and Jean Paton's 4th edition of the Census Catalogue of British Hepatics.

Soon after the merger, the Museum also acquired the bryophyte herbarium of Miss Vera Gordon. A list of collectors was prepared during the period when the herbarium was being actively curated. Subsequently, 5 out of the 20 drawers were sampled and the numbers of packets were counted; these figures, multiplied by four, provided an estimate of the size of each collection, the period covered, and its provenance. These data are given only for collections estimated to number more than 20 packets.

In addition to the incorporated material, the Museum has examples of four bound exsiccatae: R. Braithwaite's Sphagnaceae Britannicae Exsiccatae (1877), E. Hobson's British Mosses (1818), a 3-volume set of R. Spruce's Musci Amazonici et Andini (1849-1860), and a 2-volume set of W.S. Sullivant's Musci Alleghanienses (1845).

INDEX TO COLLECTORS of Mosses from Britain and Ireland.

In the following list the estimated number of specimens is given in parentheses after the collector's name.

Armitage, E. (30), 1890-1900, S. England & Scotland
Bagnall, J
Baker, J.G. (150), 1850-60, N. Yorks & Sussex.
Ball, P.W. (30), c. 1958, Devon.
Barker, T. (20), 1890-1910, N. England
Beesley, H.
Benson, A.
Bines, T.J.
Binstead, C.H. (650), 1890-1940, Britain & Ireland
Bowler, B.A. (40), c. 1972, Scotland & N. England
Boyd, D.A.
Brummitt, R.K.
Burrell, W.H.
Carr, D.J. (60), c. 1947, N. England
Catcheside, D.G.
Clemminshaw, E.

Clough, W.
Coleman, Rev. W.H. (30), c. 1860, England.
Croall, A.
Cullen, J.
Dixon, H.N. (70), 1890-1910, Scotland & Ireland
Dixon, P.S. (40), 1945-50, N. England
Duncan, J.B. (50), 1900-1930, Scotland & Wales
Duncan, U.
Elliott, E.J.
Evans, E.
Gordon V. (90), 1950-1965, N.W. England & N. Wales
Greene, S.W.
Hamilton, N.P. (20), 1885-1900, W. England & N. Wales
Horrell, C.
Hunt, G.E.
Hunter, J.
Ingham, W. (30), 1890-1900, Yorkshire
Jackson, A.B.
Jackett, R.
Jones, D.A. (100), 1900-10, Britain
Jones, E.W.
Knight, H.H.
Lee, J.R.
Lee, W.A. (70), 1920-30, Cheshire & Ireland
Lillie, Rev. W.
Linton, W.R. (1250), 1890-1910, Britain (esp. Derbyshire).
Lobley, E.M.
McAllister, H.A. (1050), 1960-75, Britain (esp. Scotland)
McAndrew, J.
McNeilly, T. (110), 1960-65, Yorkshire & N. Wales
Macvicar, S.M
Marratt, F.P. (300), Merseyside
Meldrum, R.H. (40), 1880-1910, Scotland
Nicholson, W.E. (60), 1895-1905, Sussex & Scotland
Purchas, W.H. (130), 1835-1865, England
Reader, H.P.
Robertson, D.R.
Roper, I.M.
Salmon, E.S. (30), 1895-1905, S.E. England & Scotland
Sherrin, W.R.
Slater, M.B.
Smith, K.E.
Stirling, A. McG.
Stirling, J.
Stirton, J.
Sutton, A.
Turner, A.
Waddell, C.H. (70), 1890-1910, Ireland
Wallace, E.C. (20), 1935-1960, England & Scotland
Wheldon, J.A. (20), 1800-1900, Yorkshire & Lancashire
White, A.
White, F.B.
Wilson, A.
Wood, D.
Young, W.K. (30), 1895-1930, Scotland

B.B.S. LIBRARY SALES & SERVICE 1988

FOR LOAN:

Members wishing to borrow books or papers are advised to consider whether a xerox copy of the appropriate pages would suffice instead of the original in those cases where copyright has expired. Charge is 10p per exposure. Limit 50.

(a) Approximately 250 bryological books, journals and several thousand offprints of individual papers. A catalogue of the books and journals is available from the librarian, price £1.00.

(b) Transparency collection, list available (S.A.E. large). 650 slides in the collection. Loan charge (to cover breakage of mounts) 50p plus outgoing postage. Only 50 slides may be borrowed at a time to minimise possible loss or damage and they must be posted letterpost as the damage via parcel post is unacceptable.

(c) Microscope stage-micrometer slide for calibration of eyepiece graticules. 10µm divisions. Loan deposit £15.

FOR SALE:

British Bryological Society Bulletins: Back numbers from No:23 @ £1.00 each.

Transactions of the British Bryological Society / Journal of Bryology:

Vol. 1 parts 1-5 (£2.40 each) £12
 Vol. 2 parts 1-4 (£3.00 each) £12
 Vol.3&4 parts 1-5 (£2.40 each) £12
 Vol. 5 parts 1-4 (£3.00 each) £12
 Vol. 6 parts 1-2 (£6.00 each) £12 - ends the series Transactions
 Vol. 7 parts 1-4 (£5.00 each) £20 - renamed Journal of Bryology
 Vol.8&9 parts 1-4 (£5.00 each) £20
 Vol. 10 parts 1-4 (£8.00 each) £32
 Vol. 11 parts 1-4 (£10.00 each) £40
 Vol. 12 parts 1-4 (£11.50 each) £46
 Vol. 13 parts 1-4 (£15.50 each) £62
 Vol. 14 parts 1-2 (£17.25)part 3 (£18.50)

Census Catalogues:

Duncan, J.B. Census Catalogue of British Mosses, 2nd edition. 1926 (20p)
 Sherrin, W.R. Census Catalogue of British Sphagna. 1946 (20p)
 Paton, J.A. Census Catalogue of British Hepatics, 4th edition. 1966 (20p)
 Warburg, E.F. Census Catalogue of British Mosses, 3rd edition. 1963 (20p)
 Corley, M.F.V. Distribution of Bryophytes in the British Isles. 1981 (20p)
 & Hill, M.O. (A Census Catalogue of their Occurrence in Vice Counties)
 Price incl: P.&P. Non-members (£6.00) Members (£5.00)

Other Items:

Longton, R.E. & Perry, A.R. Proceedings of Jubilee Meeting. 1983. 1985 (£6.00)
 Corley et al. Mosses of Europe and the Azores. An Annotated List of Species,
 with Synonyms. Price including P. & P. 1981 (£2.50)
 Grolle, R. Hepatics of Europe and the Azores. An Annotated List of
 Species with Synonyms. Price including P. & P. 1983 (£2.50)
 Pearman, M.A. A Short German-English Bryological Glossary. 1979 (50p)
 B.B.S. Tie (Claret, with B.B.S. Logo) (£4.95)
 Swift x20 Handlens and Leather Case (£8.00)
 Idealteck No:3 Stainless Steel Forceps (£3.00)

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 THE CORRECT AMOUNT INCLUDING P. & P. (POSTAGE & PACKING EXTRA UNLESS STATED)

All the above items available from the B.B.S. Librarian
 Kenneth J. Adams, 63 Wroths Path, Baldwin's Hill, Loughton, Essex. IG10 1SH

 Latest Addition: Moss Wall Chart Include: P & P. (£2.60)

NOTES ON SOME NINETEENTH CENTURY HEREFORDSHIRE BRYOLOGISTS

by J.D. Sleath

It has often been pointed out by those interested in the social history of English botany that in the nineteenth century the subject was enthusiastically pursued by rural clergymen, operating as members of a local natural history society. This was as true of Herefordshire as of other counties, and the local society was known as the Woolhope Naturalists' Field Club, named after a village some 7 miles to the SE of Hereford. Several members of the club were enthusiastic bryologists, and from time to time published their results in the Transactions of the society, from which most of the following quotations are taken.

Despite John Duncomb's mention in his 1804 "Collections towards the History and Antiquities of the County of Hereford" of some hepatics collected from the Malverns by Rev. Mr Douglas, late of Whitbourn, the first serious bryologist of the county was the Rev. J.F. Crouch. In Purchas and Ley's Flora of Herefordshire of 1889 it is said of bryology that "The study of this branch of Herefordshire botany was begun and continued with great diligence by the late Rev. J.F. Crouch, who obtained a list of about 141 species, chiefly from the north-western districts of the county". He was president of the Woolhope Club during the 1850's and 1860's and became Rector of Pembridge in 1870 where he stayed until his death in 1889. It was said of him that "He was a man of very large and varied scientific attainment, the strong powers of whose highly educated mind were stimulated by an ardent love of nature, and in both the field of botanical and geological research he was distinguished".

Certainly he compiled an extensive herbarium during his lifetime. It was bequeathed to the Woolhope Club, and is currently to be found in the City of Hereford Museum. The specimens themselves are in excellent condition and are mostly mosses, with some hepatics, lichens, ferns and flowering plants. There are several thousand bryophytes including many from the Exsiccatae of Wilson, Braithwaite, Carrington and Pearson. These were reference collections of bryophytes; a cross between a herbarium and a flora, published in volumes and sent out to subscribers throughout the country, many of whom also contributed material. Crouch also travelled, and there are specimens from bryological excursions he made in the 1860's to Cheshire and Yorkshire. Much of his material was collected by others, not only other members of the Woolhope Club, but also well-known bryologists such as Dr W.P. Schimper. He was also in contact with the Oxford botanist, H. Boswell, who provided him with material, and named a collection of mosses from overseas.

Whilst Crouch was collecting his mosses, a gentleman by the name of Burton Watkins was pursuing the study of hepatics in the south of the county. He was born in Liverpool in December 1816, then moved early in his life with his father to London where he was educated at a school in Mount Street, off Grosvenor Square. At the age of fifteen he moved again when his father left London for Monmouth because of ill-health. His father was a shoemaker by trade but also a keen amateur entomologist, who brought his son up to be interested in natural history. In 1844 Burton Watkins began to collect plants in the Doward hills, which were always his favourite hunting ground. For fifty years he worked as Relieving Officer at Ross on Wye. He was a sort of Victorian Social Worker, it being said of him that "a man of very retiring and modest disposition and abstemious habits, Mr Watkins was not one to be widely known; but he was greatly valued by the few who knew him well. An extensive reader, he was also an acute observer, not only of plants, but also of men." He corresponded with fellow bryologists such as Rev. Crouch and Dr Braithwaite, and was both a contributor and subscriber to the Exsiccata of Carrington and Pearson. In 1872 he discovered Riccia sorocarpa on the Dowards, an area of

limestone near Symonds Yat, and later contributed observations on the life history of Riccia natans [Ricciocarpos]. His "Flora of the Dowards" was published in 1881, and in 1886 he was made an honorary member of the Woolhope Club. By 1890 his health had begun to fail, and he was forced to give up his botanical activities. His friend the Rev. A. Ley commented that "the Hepaticae formed his favourite study, and were the last to be relinquished when infirmity and the loss of accurate eyesight obliged him to give up work with the microscope". A series of heart attacks weakened him, the last one of which caused his death on 30 July, 1892.

Ley himself was a fellow botanist, and probably the most enthusiastic of our circle of Herefordshire bryologists. He was born in Hereford on 3 April 1842. His father was headmaster of the Cathedral School, and his mother the daughter of an "eminent ethnologist" of Bristol, Dr Pritchard, and the sister of Augustin Pritchard, a botanist. Ley's father undoubtedly encouraged both him and his elder brother, William Clement, in natural history, although the latter was apparently once heard to exclaim "If father does not like having scientific sons, he ought not to have married the daughter of a scientific man!" Soon after Ley's birth, his father left the Cathedral School on the grounds of ill-health to take up the incumbency of the parish of Sellack and King's Caple, two villages which straddle the river Wye between Hereford and Ross. Here the brothers were permitted to indulge their botany and by the time Ley was six years old he had already built up a "hortus siccus" or herbarium with the help of Clement.

Ley did not go to school, but was well educated by his father, and studied Classics at Oxford, gaining the Gaisford prize for Greek verse composition. He was ordained in 1867 and worked as a curate at Buxton for four years, before returning home to act as a curate to his father. By this time he was a member of the Moss Exchange Club and bryologically active in the county. In 1878 he became Vicar of the parish of St Weonards, between Hereford and Monmouth, and published in the Transactions of the Woolhope Club "The mosses of Herefordshire and the adjacent districts", which listed 249 species. In 1885 he returned to his ailing father, who was to die two years later. Ley succeeded him as vicar.

For the rest of his life, Ley contributed further papers to the Transactions, updating his list and contributing papers on more general botanical matters. It was said that "next to his duty as a parish priest, which always held the first place, his life's interest was found in botany". He was especially interested in the Rosaceae and Hieracia, and collaborated with W.H. Purchas to publish a Flora of Herefordshire in 1889. In addition to his exertions in Herefordshire he also visited many other parts of the British Isles, and travelled abroad, first in 1863 with his father to Norway, and later to Switzerland, France and the Tyrol in 1875. Certainly he was an active man who spent a good deal of time in the field. Binstead later comments that his list of bryophytes "impresses one by its length and testifies to the zeal which impelled him to explore in so many districts in days when means of transport were often a problem. But he was one whose physical energy was on a level with his geniality and the alertness of a scholarly mind".

In 1889 he contributed a section on mosses to the "Flora of Herefordshire", and the following year published a "Florula of the Doward Hills", in which he listed 191 species of mosses, and acknowledged the help of Burton Watkins as "the doer of all the early cryptogamic work done among these hills". He continued contributing papers to the Woolhope Club until 1905, although Binstead notes that "From 1900 he did but little, his eyesight being not quite keen enough after that date....it is noteworthy, however, that it is due to his perseverance that a moss, Eurhynchium abbreviatum [E. schleicheri], was added to the list of British species. It had always been mistaken for E. swartzii. Ley would not admit the identity, and his friend Boswell, of Oxford,

at last identified the species which was well known on the continent. Up to the last he was always interested in the mosses". In 1908 he resigned his incumbency and moved with his stepmother to a cottage near Ross where in 1911 he died, following a few weeks of painful illness. Despite his enthusiasm for bryology, he never forgot his parish work where he was a "welcome visitor in the homes of the poor and neglected". Through his exertions a bridge had been built across the Wye, linking Sellack with King's Caple, and those who knew him recalled "the combination of a lovable friend, a real gentleman, and a devoted Christian".

One of these friends was Charles Henry Binstead, another clergyman-bryologist whom Ley had described in 1894 as having "a practised eye and great knowledge in this group of plants". Binstead was born in 1862 and ordained in 1887. He became curate of Eardisley in 1890, and vicar of Breinton in 1897. In this last year he published his first paper in the Transactions of the Woolhope Club, "Rare and interesting mosses in the neighbourhood of Kington". Here he drew attention to the presence of species from the Mediterranean moss flora, in particular Tortula cuneifolia, Tortula canescens, Barbula acuta and Bartramia stricta. Further records were published in 1903 and 1918, including a paper on the mosses of the Caplar district. He became vicar of Mordiford in 1915, but in 1923 left Herefordshire for Reading.

For most of this time Binstead was an active botanist, travelling widely and building up a considerable bryophyte herbarium. He became a Fellow of the Linnean Society. Many of his specimens have found their way into other collections including herbaria at Liverpool (LIV), Cardiff (NMW), Oxford (OXF), London (BM) and Helsinki (H). A dusty shoebox remains at Hereford Museum with approximately one hundred specimens collected in the spring of 1929, mainly from the Lake District but also Hampshire, Dorset and Wales.

He returned to Hereford later in life and died in 1941. His obituary stated that he was "a man of charming personality, an amateur artist of some ability, and of generous disposition. Charles Binstead was beloved by all with whom he came in contact". The year before he died he published his account of the "Mosses of Herefordshire", which lists 330 species, plus 91 hepatics. In this paper Binstead collaborated with that remarkable lady Eleanor Armitage, who was particularly interested in the Sphagna and Hepatics, publishing in the Transactions of both the BBS and the Woolhope Club (although the latter did not admit women until 1954). She falls rather outside the scope of this paper but clearly merits an article in her own right.

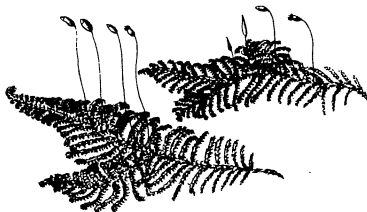
GEORGE G. GEYMAN

It is with regret that we announce the death of George Geyman, for many years our Membership Secretary. He died in hospital on 12 January 1988 after a long illness.

REQUEST FOR RECORDS

Mr P.B Duncan (N.C.C. Warden Sunart, No. 2 High Houses, Ardgour, By Fort William, Inverness-shire, PH33 7AH (Tel. 085-55-266)), would appreciate it if members with records relating to any of the reserves listed below would be good enough to let him know of them. If anyone were able to help at any time by undertaking some recording in the area, he would be very happy to assist by arranging permission to visit the reserves and by gaining access.

Ariundle Oakwood	- near Strontian	- oakwood on granite
Glencripesdale	- south shore L. Sunart	- ashwood on lime
Claish Moss	- near Acharacle	- raised bog (15 <u>Sphagnum</u> s)
Glen Roy	- near Roybridge	- Parallel roads (relatively unrecorded)
Coille Thogabhaig	- Skye	- ashwood on lime/raised bog/gorge/ oak on sandstone



WARBURG MEMORIAL FUND

This Fund was established jointly by the Botanical Society of the British Isles and the British Bryological Society in order to grant each year a scholarship for field work to a botanist under the age of 25 years.

Young botanists wishing to be considered for this award should write to the address given below with the following information:-

1. Full name and address of applicant;
2. Date of birth;
3. Short details of project involving travel, including an estimate of expenses and information relating to candidate's experience and other qualifications for carrying out the proposed work;
4. Name and address of a referee to whom Trustees can refer if necessary.

Successful applicants will be requested to submit a report on the work they have carried out as a result of the scholarship.

The Secretaries, Warburg Memorial Fund, c/o Botanical Society of the British Isles, Department of Botany, British Museum (Natural History), Cromwell Road, London SW7 5BD.

Edited by

A.R.Perry, Department of Botany, National Museum of Wales, Cardiff CF1 3NP, U.K.