



# BULLETIN OF THE BRITISH BRYOLOGICAL SOCIETY

---

NUMBER 72

FEBRUARY 1999

ISSN 0142-3169

---

*Editor:*

M.J.M. Yeo, Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ, UK.

## CONTENTS

Editorial Note .....	2
Subscriptions for 1999 .....	3
Proceedings of the British Bryological Society	
Spring Field Meeting, Torquay, 1997 .....	4
Summer Field Meeting, Yorkshire, 1997 .....	12
Summer Field Meeting, Italian Alps, 1997 .....	17
AGM and Symposium Meeting, Chichester, 1997 .....	25
Bryological Workshop, University of East London, 1997 .....	31
Summer Field Meeting, First Week: The Isle of Islay, 25-31 July 1998 .....	32
Summer Field Meeting, Second Week: The Isle of Jura, 1-7 August 1998 ....	40
AGM and Symposium Meeting, Loughborough, 1998 .....	44
Reports of Local Meetings .....	57
Future Meetings of the Society .....	65
Local Meetings Programme, 1999 .....	66
Other Bryological Meetings, 1999 .....	67
Hedwig Symposium, Göttingen, Germany, 29-30 May 1999 .....	68
Election of Officers and Elected Members of Council .....	69
BBS Library Sales and Service, 1999 .....	70
BBS Microscopes .....	72
<i>Mosses and Liverworts of Hong Kong: Complimentary Copies Available</i>	
for Institutions/Libraries in Developing Countries .....	72
Available Set of <i>Journal of Bryology</i> , 1972-1996 .....	73
New Hepatic Flora of the Auvergne .....	73
Wanted to Buy .....	74

## PROCEEDINGS OF THE BRITISH BRYOLOGICAL SOCIETY

Throughout the following accounts of BBS meetings, new vice-county records are indicated by an asterisk (\*). Nomenclature follows Blockeel & Long (1998), *A Check-list and Census Catalogue of British and Irish Bryophytes*.

### SPRING FIELD MEETING, TORQUAY, 1997

As the Society had not met in Devon since 1982, it was felt the deficiency should be remedied. The centre chosen was Torquay, a town which is not only well placed for exploring the surrounding countryside but which also has a fascinating bryoflora of its own. The headquarters was the Norcliffe Hotel in Babbacombe Downs Road and the local secretary was Mark Pool.

The following members attended for all or part of the meeting: Ken Adams, Giles Clarke, Alan Crundwell, Dr and Mrs Sean Edwards, Jan Hendey, Mark Hill, Nick Hodgetts, David Holyoak, Roy Hurr, Roy Jeffery, Frank Lammiman, Martha Newton, Seán O'Leary, Jean Paton, Irene Perry, Roy Perry, Ron Porley, Sylvia Priestley, Michael Proctor, Christine Rieser, Gordon Rothero, Ron Shoubridge, Jonathan Sleath, Tony (A.V.) Smith, Graeme Smith, Philip Stanley, Rod and Vanessa Stern, and Harold Whitehouse.

### WEDNESDAY 2 APRIL

#### Cockington

A total of six enthusiastic members turned up for this short local excursion, on a gloriously sunny afternoon. Cockington is a well-preserved thatched village, with parkland and lakes, on the outskirts of Torquay; the bedrock is mostly sandstone.

The approach was made by way of a typical 'red Devon' sunken lane; the banks had quite a good bryoflora, including sheets of *Lejeunea lamacerina*. *Bryum donianum* and *Scorpiurium circinatum* were of great interest to those members not from the south-west. David Holyoak found a small, puzzling *Tortula* which might key out as *T. solmsii* or *T. vahliana*; unfortunately, there was too little of it to be certain. The local secretary hopes to keep an eye on it in the future, just in case. Cockington village itself had a useful wall with a fair amount of *Tortella nitida*; this is another plant which, while common around Torbay, is absent from much of the country. A good patch of *Epipterygium tozeri*, growing, as so often, in a sheltered soily chink of a hedgebank, also caused some excitement, but this was soon forgotten on the finding of a stone gatepost largely covered in *Leptodon smithii*, some of it fruiting.

After such a start, almost anything would have seemed an anticlimax. In any event, the few trees searched in the Cockington Court parkland held very little interest, and the impressive sandstone cutting by which the path reaches the lakes produced nothing more noteworthy than *Leiocolea turbinata*. Matters improved, however, near the lakes. Planted shrubs here sported a reasonable variety of epiphytes, including *Cryphaea heteromalla*, *Neckera pumila*, *Orthotrichum lyellii* and *Metzgeria fruticulosa*. Jean Paton found *Brachythecium plumosum*, a species usually found in more upland areas; she subsequently did even better, turning up both *Anthoceros punctatus* and *Phaeoceros laevis* within a metre or so of each other on a wet clayey bank. The other species

found nearby were much more ordinary, but there were good colonies of *Hookeria lucens* and *Plagiochila asplenioides*.

## THURSDAY 3 APRIL

### Steps Bridge and environs

It seems to have become a tradition for Fingle Bridge, in the Teign valley on the edge of Dartmoor, to be visited every time the Society comes to Devon. By way of a change, a trip had been scheduled to the less well-known area around Steps Bridge, a few miles further down the river. The bedrock here consists of Carboniferous shales and grits, and often forms small crags. Most of the valley is wooded; there has been some coniferisation, but much of the area is still covered by sessile oak.

The party gathered at the Steps Bridge car park and set off up-river along the right (south) bank. The bryophytes here were not of spectacular interest; the species seen initially were those typical of shaded acid banks. A rock outcrop by the track further along sported *Plagiochila spinulosa*, *Saccogyna viticulosa*, *Andreaea rothii*, *Rhabdoweisia fugax* and *Racomitrium aquaticum* (the last, despite its name, often occurs on sloping rock faces which are only seasonally flushed). *Neckera pumila*, seen on hazel bark further up-river, was of interest to some as a decidedly western species. A determined search was made for the rare liverwort *Porella pinnata*, which is known from riverside habitats in this general area; unfortunately, it was not found at this time.

Members adjourned to the car park for lunch, after which the group (augmented by Ron Porley) proceeded up-river along the north bank. The main objective was *Orthotrichum rivulare*, of which a fine fruiting colony was duly found on waterside roots. *O. lyellii*, seen on at least one tree en route, was of interest to some.

Returning to the bridge, we headed down-river on the south bank. Full advantage was taken of the low water-level to search for *Porella pinnata*, but some promising-looking rock outcrops a short way along proved to be dominated by *Chiloscyphus polyanthos*. After a few hundred yards the group left the riverside and struck steeply uphill to gain the main footpath. As in the morning, the bryophytes here were largely common species of shaded acid banks, perhaps the most noteworthy being *Cephalozia lunulifolia* and *Diphyscium foliosum*. The ground could not have been too acid, however, as *Dicranella varia* was present in abundance at one spot, and *Rhytidiadelphus loreus*, abundant in so many of these Dartmoor woods, appeared to be absent!

Unfortunately, the party became rather scattered; this meant that only a few saw *Porella pinnata* when it was eventually found (on the base of a riverside tree about half a mile below the bridge). Consolation was provided by a number of other species of at least local interest: *Microlejeunea* (*Lejeunea*) *ulicina*, *Metzgeria temperata*, *Saccogyna viticulosa*, *Fissidens curnovii* and *Orthotrichum pulchellum*.

On the way back to Torquay most of the party stopped at the former Wheal Exmouth mine near Chudleigh; this is the only Devon site so far known for the 'copper moss' *Scopelophila cataractae*. The abnormally dry spring had made it doubtful whether the plant (which dies down in summer) would be visible, but after patient searching a good colony was found on damp spoil some distance from the road. Because of the heavy metal contamination other bryophyte species

were few. However, *Pohlia andalusica* (*P. rothii*) was found (among a much greater quantity of *P. annotina*) and was of considerable interest; it has been known from this site for a good number of years and is found elsewhere in Devon, but appears to be very local nationally.

## FRIDAY 4 APRIL

### Ashclyst Forest

Ashclyst Forest is an area of mixed woodland, owned by the National Trust, lying between Exeter and Cullompton. It occupies an inlier of the 'Culm Measures' (Lower Carboniferous shales and grits), which cover so much of mid and west Devon. Perhaps its most noteworthy feature is that it straddles the meeting-point of four 100 km National Grid squares, which can make things interesting when recording! It had never been fully surveyed for bryophytes, so the presence of so much relevant expertise was most welcome.

Members gathered at the former car park at Forest Gate, and set off eastwards along one of the many forest walks in the area. Initial impressions were disappointing, but matters improved once a move was made into the deeply-incised stream valley to the north. *Nowellia curvifolia* (new to the 10 km square) was quickly discovered on a rotting log (the local secretary, on a reconnaissance the previous week, had managed to walk past without seeing it!). Very soon afterwards, fruiting *Plagiothecium curvifolium* was found nearby; although spreading in Devon (and recently discovered in Cornwall) this plant is still very local here. The stream ravine itself was not particularly rich, although good quantities of *Hookeria* (some fruiting) were of interest to those members living in drier areas. Much of the ground was very wet, but the bryophytes were mostly common ones; other than *Hookeria*, *Lejeunea lamacerina*, *Microlejeunea ulicina* (on birch) and *Chiloscyphus polyanthos* were the most noteworthy. The drier ground tended to be covered by a mixture of *Eurhynchium striatum* and *Rhytidiadelphus triquetrus*, with *Cirriphyllum piliferum* in the moister spots; *Ctenidium molluscum* (apparently not the 'woodland taxon') was seen at one place, while Mark Hill found a good colony of *Cephalozia connivens* on a large rotting log.

The group divided after lunch, with Mark Hill leading a number of members northwards to explore Side Downs (grid square SY00). The main party initially followed the morning's route, but continued along the eastern edge of the forest to the south-eastern corner before returning via Gookey Down and Forest Cottage. A considerable time was spent in an area of swampy woodland near the stream; this produced more colonies of *Nowellia*, while the less experienced members were able to learn some of the common species of such habitats. Two good patches of the lichen *Lobaria pulmonaria*, on an ash by the track, provided additional interest. At one point on the southern edge of the wood *Leucodon sciuroides* was seen growing on a young oak, associated with *Orthotrichum lyellii* and *Neckera pumila*; apart from this, the bryophytes were somewhat ordinary by Devon standards. For members not familiar with the west, however, their sheer luxuriance was an eye-opener. Mark Hill's party came back from Side Downs with records for, among other things, *Nowellia* and *Fissidens celticus*.

The official excursion was now over, but a carload including David Holyoak and Jean Paton called at Dawlish Warren on the way back to Torquay. This is a nature reserve, consisting of dunes and salt-marsh, at the mouth of the Exe, and is famous as the only mainland site for the Sand Crocus *Romulea columnae*. David had hopes of finding *Petalophyllum ralfsii* (not



previously recorded there); in the event the party not only did so but also discovered *Fossombronia incurva*\*, new to Devon, nearby!

## SATURDAY 5 APRIL

### Lustleigh Cleave and environs

Lustleigh Cleave, like Steps Bridge, lies in the valley of one of the fast-flowing Dartmoor rivers (in this case the Bovey). There, however, the resemblance ends; the bedrock of the Cleave is granite, and the whole area (though equally well wooded) is much rockier.

The car park for 'our' part of the Cleave is a rather small layby in the hamlet of Water; bearing in mind the size of the party, the popularity of the area, and the continuing fine weather, the local secretary was viewing the day with some trepidation! In the event all was well; by some miracle the car park was unoccupied when the Society arrived, and all members managed to park either in it or on the adjacent verges.

The granite in the vicinity of Lustleigh seems to be rather more basic than that of much of Dartmoor. *Pterogonium gracile* is known in some quantity from rocks at one spot, and *Eurhynchium* (*Cirriphyllum*) *crassinervium* can be quite frequent (although rather stunted). The latter species was seen on a large boulder by the track just after leaving the cars. Progressing on into the Cleave, the track became steadily more sheltered (and wetter); Dr Sean Edwards was delighted to find a patch of fruiting *Hookeria* in just the right position for a photograph. The banks and walls by the track had a luxuriant growth of common acidophile species, while towards the bottom of the valley proceedings were enlivened by the finding of a colony of *Trichocolea tomentella* by a small tributary stream.

Lunch was taken by the river at a small unnamed footbridge. The riverside bryoflora was not very rich at this point, but included a certain amount of *Porella pinnata* growing on tree roots; other than this, the most interesting species were *Fissidens curnovii* and *Jungermannia pumila*. Afterwards the party struck upstream along the right (south-west) bank; this sported a large number of flushes, most of which carried good colonies of *Trichocolea* and *Hookeria*. The flushes were obviously not too acidic, as was shown by the presence of healthy populations of *Aneura pinguis*, *Pellia endiviifolia* and *Riccardia multifida*. The epiphyte bryoflora was also of interest, although not very rich in species (probably due to excessive shade). Michael Proctor was, however, able to demonstrate both *Ulota crispa* and *U. bruchii* (*U. crispa* var. *norvegica*), which were found here growing side by side on the same branch. *Porella pinnata* was locally frequent on rocks in the river, Gordon Rothero finding perianths at one point.

As the group neared Horsham Steps the going became harder; the ground here is basically a wooded boulder scree (many of the boulders several feet across) with the river flowing through the middle. *Climacium dendroides*, an extremely local plant in Devon, grows here in detritus on the tops of some of the streamside rocks. One or two members remarked on the absence here of species such as *Bazzania trilobata* and *Plagiochila punctata* which are typical of such habitats in the Scottish Highlands; the reason is probably that Lustleigh Cleave, lying as it does at a fairly low altitude on the drier eastern side of Dartmoor, has insufficient 'wet days'. The local secretary, his patriotism no doubt stirred, duly set off on a frantic (but ultimately fruitless) search for the *Bazzania* (which is known from further down the valley). In the process he managed to

lose contact with most of the group; luckily, their navigational skills led them safely back to the cars, finding *Plagiochila spinulosa* on the way. The errant leader, meanwhile, had teamed up with Graeme Smith to return via the left bank; on the way they found a reasonable patch of bog with six *Sphagnum* species, including a little *S. fimbriatum*.

En route for Torquay, most of the party stopped at a site a mile or two down-river to see the Red Data Book moss *Cryphaea lamyana*. This plant was unrecorded in the Bovey valley until 1996, when a visiting Dutch bryologist chanced to find several thriving colonies while out for a walk! Bearing in mind that this area has supposedly been well worked, there is hope that the *Cryphaea* may turn up in more new Devon localities.

## SUNDAY 6 APRIL

### Babbacombe Downs to Hope's Nose, Torquay

The day started rather inauspiciously; the local secretary, not content with nearly losing part of the group the previous day, had unwittingly given different people different starting times! The party (the largest of the week) mercifully let him live, and duly set off for the bryological fleshpots of the Torquay limestone.

After a brief walk-in via the manicured flowerbeds of Babbacombe Downs, members' first port of call was an area of shaded rock outcrops by Walls Hill Road. This had a number of common and conspicuous limestone species (*Anomodon viticulosus*, *Neckera crispa*, *Ctenidium molluscum* etc.), together with a much less common (and much less conspicuous) one in the shape of *Cololejeunea rossettiana*. A thorough investigation of a large *Acer* nearby produced not only the uncommon Mediterranean moss *Leptodon smithii* but also another *Cololejeunea*, *C. minutissima*.

The group fragmented somewhat as we walked up through pleasant limestone woodland to reach the open downs of Walls Hill. The woods produced nothing dramatic, but there was a reasonable list of calcicoles. The party duly coalesced at the site for *Cheilothela chloropus*, a Mediterranean moss which is extremely local in Britain (apart from the Torbay limestone it is known only from Somerset). It proved a little hard to find at first, with *Didymodon acutus* (*Barbula acuta*) being hopefully investigated by more than one of us, but Ron Porley's previous knowledge of the site soon turned up a large population.

Lunch was taken near another Walls Hill speciality, the liverwort *Petalophyllum ralfsii*. This plant was discovered here in 1980, and the site (dry, open limestone grassland) is noteworthy as one of a very few in the British Isles where the plant grows away from sand dunes. Owing to the dry winter it was in small quantity and not in good condition, but enough was seen to satisfy those members who were unfamiliar with it. After lunch the group looked initially at a dripping basic cliff at Anstey's Cove; this produced the usual bryophytes of such places, including *Didymodon tophaceus* (*Barbula tophacea*), *Eucladium verticillatum*, *Palustriella commutata* (*Cratoneuron commutatum*) and *Riccardia chamedryfolia*. The party then divided; a small splinter group (Martha Newton, Nick Hodgetts and others) set off to take the rather precipitous anglers' path down to Long Quarry Point, while the rest headed for the Bishop's Walk footpath and Hope's Nose.

The Bishop's Walk (named for a former Bishop of Exeter who lived nearby) starts off as a ledge along a limestone cliff, fortunately protected by a guard rail. The cliff face has a good bryophyte flora, highlights being *Cololejeunea rossettiana*, *Eurhynchium (Isothecium) striatulum* and *Marchesinia mackaii*. A short distance further along, the path leaves the cliff behind and continues through pleasant basic woodland; it was from somewhere here that Jean Paton collected a *Plagiochila* which she subsequently identified as *P. britannica*\*, a new Devon record. A good patch of *Bryum donianum* nearby was of interest to some members.

The Bishop's Walk epitomises to some extent the great geological variety of Torquay. It begins on limestone, passes on to basic shale, and then crosses an outcrop of dolerite in the vicinity of Black Head. This variety is echoed in the bryoflora; limestone saxicoles at the start, common species of basic woodland in the middle (*Cololejeunea minutissima*, on an ash, relieved things a little here), and plants of dolerite rocks further along. Outcrops in this last area have *Porella arboris-vitae* and *Pterogonium gracile*, together with sheets of *Lejeunea lamacerina*; unfortunately *Lophocolea fragrans*, noted in small quantity by the path on several previous visits, could not be refound on this occasion. Consolation was provided by sizeable amounts of *Leptodon*, growing here on *Acer campestre*.

Interest was flagging by the time the end of the footpath was reached, but a small band of stalwarts continued on to the headland of Hope's Nose. Much of the rock here is a relatively acid slate, but there is limestone at the end of the promontory; perhaps unsurprisingly, all the remaining members concentrated on the latter. The ground was very exposed and the bryophytes correspondingly stunted; the predominant species were *Trichostomum crispulum* and *Barbula unguiculata*, but *Scleropodium tourettii* provided some extra interest.

The Long Quarry Point party had also had a productive afternoon, perhaps the best of a presentable list being *Gymnostomum viridulum*.

## MONDAY 7 APRIL

### Noss Mayo and the Warren

Noss Mayo is a village on the estuary of the Yealm, south-east of Plymouth; the bedrock is Devonian slate and most of the surrounding countryside is owned by the National Trust. Prior to this excursion the bryophytes of the area were not well known, but were thought likely to be interesting.

Members gathered at Ferry Cottage, west of the village, and walked westward along the public footpath through Passage Wood. Initially the bryology seemed very dull; with the exception of *Lejeunea lamacerina*, *Epipterygium tozeri* and a possible candidate for *Fissidens celticus*, little of interest was found, and Rod Stern's suggestion that we should aim for ninety taxa before lunch was greeted with near-derision! Matters eventually began to improve, however; the wall around Battery Cottage produced a useful list, of which the best was probably *Orthotrichum cupulatum* (not often recorded in Devon - perhaps overlooked?), and other interesting species appeared on the way down to the lunch spot at Cellar Beach. *Orthotrichum tenellum*, *Metzgeria fruticulosa*, *Cololejeunea minutissima* and *Ulota phyllantha* all occurred as epiphytes hereabouts; the *Ulota* is common on coastal bark in Devon, while the *Cololejeunea* can often be found in such habitats where the bark is basic. Rocks at Cellar Beach had *Tortella flavovirens*.

Moving on westwards in hot sunshine, members were glad of the shade of Brakehill Plantation. This consisted largely of beech and sycamore and, as would be expected in such an exposed coastal site, the bryoflora was not of great interest. *Neckera pumila*, hanging on grimly in one place, was perhaps the best find. A *Radula*, growing in abundance on a nearby wall, was collected and thoroughly checked in hopes of *R. lindenbergiana*; unfortunately the specimen was totally sterile and so could not be confirmed. In the prevailing conditions, searching the open coastal slopes around Mouthstone Point needed determination; the list was steadily growing, however, and the finding of *Plagiochila killarniensis* (another under-recorded species in Devon) on a rock outcrop provided a much-needed fillip. A better one came soon afterwards; a small group of enthusiasts (Ron Porley, Gordon Rothero and others) had been scrambling around the loose slaty cliffs of the area looking for the rare *Tortula canescens*. This hope was not fulfilled, unfortunately, but a specimen collected for checking was found later to be *T. cuneifolia*, a plant which may be even rarer. A *Grimmia* was common on the slate outcrops, but it all turned out on examination to be one or other of the forms of *G. trichophylla*. Rod Stern collected a sterile *Fossombronina*, resembling *F. angulosa*, from damp soil near Warren Cottage, but unfortunately this could not be satisfactorily determined; it would have been a new Devon record if correct.

By the time the group dispersed, the list total stood at something over a hundred; honour had definitely been satisfied! Much of this slate coast tends to be under-worked, perhaps because of its nearness to the more obviously interesting schists of the Bolt Head-Prawle Point area. The results of this excursion suggest that this neglect is unjustified.

## TUESDAY 8 APRIL

### Shipley Bridge and the Avon valley

The Avon (locally Aune) is another Dartmoor river. Its valley is more open than those visited earlier in the week, so it was felt that it would give members a taste of true moorland conditions without losing the variety conferred by the presence of a river. The area was known to be interesting (89 species previously recorded from the tetrad) but it was hoped it would benefit from a more concentrated survey; in the event this hope was fully justified.

Once again, members awoke to perfect weather. After parking at Shipley Bridge, the first port of call for most (David Holyoak and Jean Paton, arriving early, had already produced a list rivalling the former tetrad total) was an area of *Sphagnum* flush just to the east, together with the adjacent riverbank. The most interesting species here was probably *Atrichum crispum*, present as a single colony among riverside boulders.

Members soon moved upstream to the river bed immediately above the bridge; the granite bedrock here forms wide shelving ledges, approximately at normal water-level, which are partly shaded and therefore sport a respectable bryophyte cover. The party took advantage of the low water-levels to study them in detail. The highlight here was *Tetrodontium brownianum*, found by David Holyoak on a vertical rock face; another noteworthy species was *Isoetecium holtii*, a plant locally abundant in many of these Dartmoor rivers but new to several members. Much interest was also taken in a *Heterocladium* growing on the rocks more-or-less at normal water-level; this was found to be *H. wulfsbergii*, a plant known to occur in this type of habitat but almost completely neglected over the last forty years.

Fortified by this and other discoveries, the group moved slowly upstream. Like several other valleys on Dartmoor, the main bryological attraction of the Avon lies in its variety. Rocks in the river produced the usual crop of calcifuge aquatics; trees of various types (oak, elder, willow, sycamore, ash and rowan) supported a good variety of epiphytes (highlights being *Orthotrichum pulchellum*, *O. striatum* and *Metzgeria fruticulosa*). A surprising number of common calciphiles was found on masonry, including *Bryum radiculosum*, *Didymodon rigidulus* (*Barbula rigidula*) and *Encalypta streptocarpa*, while a patch of flushed grassland sported *Thuidium delicatulum*.

Proof of the interest being taken in the area was provided by the fact that lunch was taken some 400 metres from the starting point. The spot chosen was a pleasant area of grassy river bank; Jonathan Sleath enlivened the proceedings here by finding an unusual waterside *Fissidens*, which appeared to be the extremely local *F. rivularis*. Unfortunately, the plant turned out on further checking to be *F. curnovii*. An attempt by Mark Pool to find *Cryptothallus mirabilis* in a *Sphagnum* lawn on the far bank was also unsuccessful.

After lunch members continued northwards up the riverside track. The valley gradually became more open and more typically 'moorland', but there was still great variety. The ruins of the former Brent Moor House produced more calcicoles, including *Pseudocrossidium revolutum* (*Barbula revoluta*); a shaded rotting log nearby had *Barbilophozia attenuata* (apparently a local plant in Devon), while *Sphagnum quinquefarium* occurred in reasonable quantity further along the road. Probably the best find of the day, however, was Seán O'Leary's discovery of *Mylia taylorii*\*, a long-awaited new vice-county record, from a bank not far from the track. It was accompanied by *Lepidozia cupressina*, another species which is very local here.

A combination of advancing time and bryological repletion meant that the party turned back well short of the Avon Dam, after a final look at a rather uninteresting (and very wet) patch of bog. The day resulted in a prodigious list; the local tetrad now has a total of 165 species, making it one of the top half-dozen in Devon. Jean and David headed for home from Shipley Bridge, but the rest moved further down the river for a look at the rare *Fissidens polyphyllus* in one of its several Devon sites.

## WEDNESDAY 9 APRIL

### Kerswell Down Hill

A small group of diehards met at the Norcliffe Hotel for a morning visit to two local limestone sites. The first of these, Kerswell Down Hill, is an area of woodland and scrub, with some open downland, on the edge of the village of Kingskerswell. Unfortunately, much of the site now belongs to a quarry company but, after a public enquiry, permission to quarry was refused so the area should be safe for the foreseeable future! Members concentrated mainly on the woodland, as the day was hot and the best of the downland, which was some distance from the car park, was not expected to have anything not already seen on the Sunday. An attempt by the local secretary to refind *Seligeria pusilla* (found 'just near here two years ago') was probably a forlorn hope from the start, but it did result in the finding of a healthy tuft of fruiting *Orthotrichum striatum*. *Porella arboris-vitae* was in fine form nearby, along with *Marchesinia mackaii* and *Neckera crispa*.

## Broadridge Wood, Newton Abbot

Moving on from Kingskerswell, the group managed to reconvene (just!) in the busy car park at Baker's Park on the western edge of Newton Abbot. The goal was Broadridge Wood, a fine limestone woodland reached by way of the National Trust's Bradley Manor estate. This whole area is good for bryophytes; among many other things the tiny *Fissidens exiguus*, known nowhere else in Devon, has been collected from the riverbank here (unfortunately it was not seen on this occasion).

The walk in via Bradley Manor produced a considerable number of species (*Hookeria*, *Anomodon viticulosus* and *Neckera pumila*, to name but a few); the focal point was, however, the former Broadridge lime quarry. This is almost certainly the best, and may be the only, current Devon site for the rare *Grimmia orbicularis*, which grows in quantity on many of the limestone slabs and faces. In addition to this, members noted several colonies of both *Pleurochaete squarrosa* and *Bryum canariense*, some of the latter fruiting, while things like *Syntrichia (Tortula) intermedia* and *Trichostomum crispulum* were locally abundant.

Considering that all the excursions were held in the relatively well-worked VC 3 (South Devon), the finding of three new county or vice-county records is most impressive. There were also a considerable number of new 10 km grid square (and, of course, tetrad) records, which have been duly incorporated into the county database and for which I am most grateful.

As this had been the first meeting I had led for the Society, I had been viewing it with a mixture of euphoria and abject terror! In the event, it proved most enjoyable; my sincere thanks go to all those participating for making it so. Our thanks as an organisation go to the management and staff of the Norcliffe Hotel, for the efficient way in which they catered for our needs; to English Nature, the National Trust and the Devon Wildlife Trust, for permission to visit and/or collect on their land; and last, but not least, to whoever organised the weather. April in Devon can be a very unpredictable time; as it turned out, our only problem was potential dehydration! No doubt the manufacturers of spray bottles enjoyed it too....

MARK POOL

---

## SUMMER FIELD MEETING, YORKSHIRE, 1997

In view of its close proximity to the meeting in the Italian Alps, the meeting was pretty well attended. The leader, John Blackburn, was hoping for some joyous records for VC 62, in which vice-county all the localities visited were situated. Those expected to fulfil these hopes were Agneta Burton, Frank Lammiman, Seán O'Leary, Jean Paton, Christine Rieser, Ron Shoubridge, Graeme Smith, Phil Stanley (whom duty called home a day early) and Cliff Townsend, all staying at the Beansheaf Hotel, a little south of Pickering on the Malton road. Vincent Jones attended for three days, and Tom Blockeel and Mark Owen for a day each. The weather was kind to us and virtually no time was lost; most of the distances travelled by car were mercifully short.

## THURSDAY 14 AUGUST

### Seven Valley woods, north of Sinnington

From Sinnington we walked gently northwards, taking in Spring Bank Wood, Hill Bank Wood and Cropton Banks Wood, moving on to Howlgate Wood after lunch. The woods are on the sides of the River Seven valley; the bedrock is Jurassic limestone, which includes calcareous grits. That this was to be a disciplined meeting was soon indicated when the leader (perhaps after brooding on the word 'Jurassic') thumped Seán with a large branch which he claimed had broken off in his hand. Thus spured, the party got to work. The bryophyte flora was not rich, but species found included *Anomodon viticulosus*, *Bryum subelegans* (*B. flaccidum*), *Campylium stellatum* var. *protensum*, *Eurhynchium* (*Cirriphyllum*) *crassinervium*, *E. pumilum*, *Encalypta streptocarpa*, *Hygrohypnum luridum*, *Isoetecium alopecuroides* (*I. myurum*), *Rhynchostegium murale*, *Tortella tortuosa*, *Pseudephemerum nitidum*, *Jungermannia atrovirens*, *Porella platyphylla* and *Radula complanata*. Several species seen here on previous occasions, such as *Apometzgeria pubescens*, were not encountered. Stubble fields near Howlgate Wood produced the statutory grovel, with a good crop of *Brya* (*B. klinggraeffii*, *B. rubens*, *B. ruderale* and *B. violaceum*), *Ditrichum cylindricum*, *Dicranella staphylina*, *Riccia glauca* and *R. sorocarpa*. The return to the village involved a pleasant cooling paddle across the shallow river.

## FRIDAY 15 AUGUST

### Saltergate Gill

This day was spent along Saltergate Gill, about 15 km north-north-east of Pickering, and was the most productive of the week. The deep gill has a waterfall and dripping rocks, and ends at a fen by the North York Moors railway.

A bog at the commencement, quite near the road, produced *Sphagnum flexuosum* (*S. recurvum* var. *amblyphyllum*) in small quantity as well as *S. fallax* (*S. recurvum* var. *mucronatum*), and recording proceeded steadily until a climb became necessary in order to skirt the upper edge of the gill, along a fence behind which were a large number of beehives. All was well at first, but almost at the end Ron was stung through a thick shirt by a determined bee, Agneta suffered from a bee which got tangled in her hair (no doubt with aspirations to be a bat), while Cliff developed a yen for a legal career after being stung in The Temple. A rapid descent got us back to work. Graeme produced *Moerckia hibernica*\* near the waterfall, not recorded in VC 62 since 1898, and on a grassy slope Vincent spotted *Marchantia polymorpha* ssp. *montivagans*\* (ssp. *polymorpha* was on a rock in the stream nearby). Elsewhere along the stream were found *Calliergon stramineum*, *Sphagnum fimbriatum*, *S. squarrosum*, *Fissidens osmundoides*, *Climacium dendroides*, *Philonotis calcarea*, *Mnium stellare*, *Pogonatum aloides*, *Aneura pinguis*, *Calypogeia arguta*, *C. muelleriana*, *Jungermannia atrovirens*, *Leiocolea badensis*, *Preissia quadrata*, *Lophozia incisa* and *Scapania umbrosa*. One rock was plastered with the rigid saxicolous form of *Hypnum resupinatum* (*H. cupressiforme* var. *resupinatum*) - so different from the softer corticolous form. *Hymenostylium* (*Gymnostomum*) *recurvirostrum* was on wet rocks by the waterfall - only the second vice-county record this century. Cliff bumped into a big tufa rock by the stream which had *Distichium capillaceum* in a crevice and *Barbula spadicea* and *Eucladium verticillatum* c.fr. at the damp base. While Vincent suspended bryological activities to investigate hawkweeds, the rest proceeded to the fen, where fine *Scorpidium scorpioides*,

*Calliergon giganteum* and *Drepanocladus revolvens* soon took the eye. Returning to the cars by higher heathy ground the inevitable *Campylopus introflexus* c.fr. was soon seen, as well as *C. flexuosus* (*C. paradoxus*), *Leptodontium flexifolium*, *Orthodontium lineare* and *Barbilophozia attenuata*, while the sight of some fine old steam trains puffing along the railway added to the pleasure – notably the streamlined and famous Sir Nigel Gresley.

## SATURDAY 16 AUGUST

### Egg Griff, Bridestones

The morning was spent in the Bridestones area, in the event mostly in the peculiarly named Egg Griff. Penetration of this gully was only possible for a relatively short distance owing to tumbled trees and rocks having fallen in. An egg's chances of survival would have been slim. The surface soil in the area is highly acidic, but basic influence was clear from the presence of two or three colonies of *Mnium stellare*. Scrambling around among the debris produced *Anomodon viticulosus*, *Dicranum tauricum*, *Fissidens gracilifolius* (*F. pusillus* var. *tenuifolius*), *Eurhynchium pumilum*, *Rhytidiadelphus loreus*, *Seligeria recurvata* and *Jungermannia atrovirens*; the most pleasing find was *Plagiochila britannica*.

### Dundale Griff, Levisham Moor

Following Egg Griff, it had been hoped to visit Dovedale Griff, but high and impenetrable bracken above and below made for a quick lunch and a retreat to Dundale Griff, on Levisham Moor, about 11 km north of Pickering. This long, gradually deepening gully, damp in places, was more productive, and on the damp acid sandstone one had the constant feeling that good things would turn up. *Plagiochila britannica* was here also, as were *Hookeria lucens*, a little rather poor *Mnium stellare*, *Orthodontium lineare*, *Pohlia lutescens* in company with *Dicranella rufescens*, *Racomitrium heterostichum* and *Tetradontium brownianum* c.fr. in small quantity in one spot; *Cephalozia lunulifolia*, *Scapania umbrosa* and *Jungermannia obovata* were also noted. *Brachyodontium trichodes*, recorded here previously, was constantly expected but never actually seen.

Members were very much intrigued by huge numbers of burrowing bees inhabiting holes on sandy banks on Levisham Moor. The leader communicated to your scribe that Jean thought this was *Dasygaster hirtipes* and worth mention, producing an abiding feeling that I was being 'had' in retribution for an incident on a previous BBS trip. The Hairyfooted Hairyfoot, in Greek and Latin, seems a suspicious nomenclatural overkill....

## SUNDAY 17 AUGUST

### Falling Foss

Our morning's activities were centred on Falling Foss Forest Nature Reserve, and particularly around Falling Foss itself – a 10 m cap-rock waterfall on the May Beck, in a predominantly acidic area with slight base-enrichment in some rocks. Species seen included *Brachythecium populeum*, *Heterocladium heteropterum*, *Hyocomium armoricum*, *Eucladium verticillatum*, *Eurhynchium pumilum*, *Hookeria lucens*, *Orthodontium lineare*, *Ulota bruchii* (*U. crispa* var.



*norvegica*), *Jungermannia atrovirens*, *J. sphaerocarpa*, *Leiocolea turbinata*, *Nowellia curvifolia* and *Scapania nemorea*.

### **Fen Bog Nature Reserve**

In the afternoon a visit was paid to the Fen Bog Nature Reserve, about 20 km north-north-east of Pickering. This luscious-looking area, again offering the bonus of proximity to the North York Moors Railway, soon caused the party to assume the frog-like posture characteristic of bryologists in such a locality. Jean soon homed in on *Cephalozia macrostachya* var. *macrostachya*, and as the party dispersed 11 of the 13 taxa of *Sphagnum* recorded from this extensive area were found – though some, such as *S. teres*, only in small quantity. Other finds included *Calliergon stramineum*, *Warnstorfia exannulata* (*Drepanocladus exannulatus*), *D. revolvens* s.str., *Scorpidium scorpioides*, *Calypogeia neesiana*, *Cephalozia connivens*, *Cladopodiella fluitans*, *Kurzia pauciflora*, *Mylia anomala*, *Odontoschisma sphagni*, *Riccardia multifida* and *R. chamedryfolia*. Respects were paid to rather senescent *Carex limosa* and *Rhynchospora alba*, and it was pleasant to see cranberry stems trailing about here and there. We missed a few interesting species recorded here in the past, notably *Philonotis caespitosa* and *Splachnum ampullaceum*. It was only a short while before the party began to move back that rain began in earnest for the first and only time on the meeting.

### **MONDAY 18 AUGUST**

#### **Botton Head, Greenhow Moor**

This morning gave rise to the longest drive of the meeting, when a visit was paid to Botton Head SSSI, where permission had been given to gain access through Greenhow Plantation in order to reach the Botton Head gully with minimal walking. The purpose was to demonstrate *Mielichhoferia elongata* to those who had not seen it and to investigate some old records. The rarity was found with no trouble, though those who had visited the locality in 1958 had the impression that it was greatly reduced in quantity. Among the other bryophytes seen in its vicinity were *Dicranella cerviculata*, *D. palustris*, *Calliergon stramineum*, *Oligotrichum hercynicum*, *Pogonatum urnigerum*, *Nardia compressa*, *Riccardia multifida* and *Scapania scandica* in its second VC 62 locality. On a rock below the gully a grimmiaceous moss was collected as a candidate for *Coscinodon cribrosus*, recorded from the site but not seen there for many years. What this moss is remains a little uncertain, though *Grimmia montana* has been both suggested and disputed! Three members, deterred by the initial steep climb through low-growing larch branches, remained within the forest rides, finding *Fossombronia pusilla* and *Jungermannia sphaerocarpa* but little else of note. Just before leaving the area, John led the party to a bank where he had seen *Rhodobryum roseum*, and this was rapidly refound.

#### **Ashberry, Rievaulx**

The remainder of the day was spent at the Yorkshire Wildlife Trust's reserve at Ashberry, 6 km west of Helmsley, which the BBS had previously visited in 1967. Little work was done in the woodland area, the party concentrating in the marshy meadows along the stream and a dry basic grassland area by the roadside above. In the meadows were seen *Campylium stellatum*, *Philonotis calcarea*, *Plagiomnium elatum*, *Aneura pinguis*, *Jungermannia atrovirens* and *Riccardia chamedryfolia*. The dry grassland produced a good quantity of *Entodon concinnus* (one of only

two known sites in VC 62), *Trichostomum crispulum*, *Pseudocrossidium hornschuchianum* (*Barbula hornschuchiana*), *Ditrichum gracile* (*D. crispatisimum*), *Plagiomnium affine* and *Scapania aspera*. The woodland by the track connecting the two areas yielded on cursory examination *Anomodon viticulosus*, *Bryum subelegans* and *Plagiothecium undulatum*.

## TUESDAY 29 AUGUST

### Duncombe Park, Helmsley

The morning visit was to Duncombe Park, the home of Lord and Lady Feversham, and noted for its ancient trees. It is also rich in rare insects. With the exception of one small area we were able to roam freely, but in the event concentrated on the woods around the public car park and a reach of the River Rye. There were also productive old walls, one of which soon yielded a quantity of *Tortula marginata*, seen for the first time in the week. Another basic wall produced *Didymodon rigidulus* (*Barbula rigidula*), *Zygodon viridissimus* var. *viridissimus*, *Syntrichia* (*Tortula*) *intermedia* and *Leucodon sciuroides* – the latter the first record in VC 62 for 70 years. In the woods occurred *Taxiphyllum wissgrillii*, *Eurhynchium crassinervium*, *Rhynchostegium murale* and *Didymodon* (*Oxystegus*) *sinuosus*, also clearly showing basic conditions, while *Pseudephemerum nitidum* was locally common in damp bare patches in the rides. *Fissidens* growing on rocks in the river produced a little subsequent internecine growling until it was realised that both *F. crassipes* and *F. rufulus* were present, thoroughly intermixed though the latter in greater quantity. A number of scattered patches of *F. pusillus* poking up through the mats added to the confusion. There was plenty of *Amblystegium tenax*, with *Thamnobryum alopecurum* on the banks. Mucky *Orthotrichum* on roots near the floodline proved to be merely a form of *O. affine*, which would formerly have been called var. *rivale* Wils.

### Wass Bank

The final visit of the meeting was made in the afternoon to Wass Bank limestone quarry, in order to attempt rediscovery of *Seligeria diversifolia* in its only known English locality. However, as on John's two previous visits, this was unsuccessful, despite the presence of more pairs of eyes; only numerous colonies of *S. recurvata* were found, some plants with virtually straight setae giving rise to unease. Other interesting species were *Fissidens gracilifolius*, *Eurhynchium pumilum*, *Rhynchostegiella tenella*, *Taxiphyllum wissgrillii* again, *Porella platyphylla*, *Jungermannia pumila* and *Gyroweisia tenuis*.

Thus ended a week which, while not notable for a great haul of rarities, fulfilled the more laudable aim of adding a record to the vice-county list, and refinding species not seen for many years or known only in few localities. Equally important, there was as usual the opportunity of renewing old friendships and making new ones. Evenings swung violently between hilarity and sharing of knowledge, with many participants helping to finalise some of the introductory parts of Jean's forthcoming hepatic Flora. A good time was had by all, to coin a phrase, and sincere thanks are owed to John for an excellent programme. I am grateful to all those participants who sent notes and records, which have greatly helped in writing this report.

CLIFF TOWNSEND

## SUMMER FIELD MEETING, ITALIAN ALPS, 1997

The summer meeting of the BBS in the Italian Alps was organised by Giorgio Buffa and Luca Miserere from the University of Turin. Four members attended from Britain: Tom Blockeel, Chris Curtis, Ron Porley and Gordon Rothero. We were also pleased to welcome a young Serbian bryologist, Marko Sabovljevic from Belgrade. The small size of the party (perhaps due to uncertainty earlier in the year about the future of the meeting) had its advantages, and we were able to use private cars for transport. Giorgio and Luca organised a very interesting programme for us, and the meeting was a great success bryologically and socially.

Most of us arrived in Turin on Friday 25 July, and we were able to spend some time in the city during a very hot Saturday morning and afternoon. Later on the Saturday we drove to our first destination, the village of Usseglio in the Val di Viù. En route, Giorgio told us about the decline in pastoral agriculture in the alpine valleys of Piedmont, leading to the abandonment of pastures and the consequent spread of green alder thickets and coniferous woodland. Even the extensive larch wood on the hillside at Usseglio was of recent origin.

On our arrival in the village we met Gordon, who had travelled overland in his camper van. Our accommodation was at the Grand Hotel Rocciamelone. Architecturally it was indeed in the grand style, but for hungry bryologists the service at mealtimes undoubtedly lacked a sense of urgency.

### SUNDAY 27 JULY

#### Lac Falin and Arnas Superiore

As Giorgio explained to us, the valleys of the inner Alps of Piedmont are subject to surprising variations in humidity within short geographical distances, and the programme he had organised was intended to encompass the range from dry to relatively humid locations. The Val di Viù belongs in the latter category.

Our first destination was Lac Falin, a small alpine lake situated at 1690 m to the south-west of Margone. Our route took us through grassland with rock outcrops of calcareous schist, to a small col leading to the hollow in which the lake lies. We soon found species such as *Distichium capillaceum*, *Blepharostoma trichophyllum* and *Barbilophozia hatcheri* which were to prove nearly ubiquitous during the meeting. Other species noted during the ascent included *Barbilophozia lycopodioides*, *Tritomaria scitula*, *Scapania aequiloba*, *Encalypta microstoma*, *Syntrichia norvegica*, *Grimmia ovalis*, *G. sessitana*, *G. elatior*, *G. tergestina*, *Bryum elegans*, *Mnium thomsonii*, *Hedwigia ciliata* var. *leucophaea*, *Pseudoleskeella catenulata*, *Ptychodium plicatum*, *Thuidium abietinum*, *Heterocladium dimorphum*, *Campylophyllum halleri* and *Isopterygiopsis pulchella*. Vascular plants also diverted our attention, among them *Ajuga genevensis*, *Lilium martagon*, *Veratrum album* and many others.

By the defile leading to the lake Ron found a small amount of *Athalamia hyalina* on soil under the edge of a rock, and Gordon found *Brachythecium reflexum* and *Hypnum vaucheri*. The geology became more complex here, with outcrops of ultrabasic rock supporting a less obviously calcicole flora. There were large amounts of *Grimmia hartmanii* and a little *G. anomala*, along

with *Anastrophyllum minutum*, *Diplophyllum taxifolium*, *Lejeunea cavifolia*, *Paraleucobryum longifolium*, *Timmia bavarica* and *Hylocomium pyrenaicum*.

Runnels on the slope by the lake contained a magnificent *Plagiomnium*, apparently *P. elatum* but with rather shortly decurrent leaves. The vegetation of the lake itself has been studied by Luca, and is characterised by a high constancy of *Carex elata*, with *C. limosa* and *C. magellanica*. The shallow margins produced plentiful *Sphagnum teres*, with a few patches of *S. palustre* var. *centrale* and *S. capillifolium*. *Drepanocladus cossonii* and *Warnstorfia exannulata* were in the shallow water. Among the species of more base-rich niches were *Calliergon giganteum* and *Tomentypnum nitens*. A patch of dung had a little *Splachnum sphaericum*, a very rare species in Piedmont.

A temporary change of plan for the second venue of the day took us to Lago di Malcioussia, a reservoir lake higher up the Val di Viù. However, on our arrival the lake margins resembled nothing so much as a giant car park, being hopelessly congested with visitors (this was a Sunday afternoon). We quickly retreated to the venue originally planned by Giorgio, at Arnas Superiore in the Arnas valley, a lesser arm of the Val di Viù. We examined an area of grassland and rock outcrops below extensive green alder thickets, at approximately 1600 m altitude. Species additional to those found at Lac Falin included *Leiocolea bantriensis*, *Tortella fragilis*, *Schistidium flaccidum*, *Grimmia unicolor*, *Mnium spinosum*, *Pterigynandrum filiforme* and *Pseudoleskeella nervosa*. Our visit ended in a torrent gully among green alders. In their enthusiasm to see some of the mosses here both Ron and then Chris discovered how slippery the rocks were, and had to engage in some precarious manoeuvres to avoid a fall and a wetting. Damp rock on the gully side produced *Jungermannia atrovirens*, *Blindia caespiticia* and *Orthothecium rufescens*. The most significant find, however, was *Bryoerythrophyllum ferruginascens* (with rhizoidal tubers) on bare soil on the torrent banks, a species new to the Italian flora.

## MONDAY 28 JULY

### Sagna del Vallone

Our second excursion from Usseglio began at Pian Benot, a small ski development on the south side of the Val di Viù. From here we made a steep ascent to Colle delle Lance at 2170 m to cross over into the head of Il Vallone, our destination. Of course, some bryologising was done during the ascent. *Pohlia andalusica* was on a track side, and *Lophozia bicrenata*, *Dicranella grevilleana*, *Saelania glaucescens* and *Oncophorus virens* were noted on banks and on moist stony slopes. A small area of block scree produced *Bazzania tricenata*, *Gymnomitrium concinnum*, *Andreaea rupestris*, *Paraleucobryum longifolium*, *Pseudoleskea incurvata*, *Brachythecium glaciale* and *Hylocomium pyrenaicum*. Again we admired the diversity of vascular plants of these alpine pastures, particularly *Cardamine plumieri*, an endemic of the Western Alps. Other flowering plants included *Dianthus pavonius* (*D. neglectus*), *Campanula barbata*, *Gentiana nivalis*, *Centaurea nervosa* and *Arnica montana*.

Rock ledges near the col produced *Plagiobryum demissum* and *Myurella tenerrima*. From here the view into Il Vallone was splendid, and on flat ground 200 m below, encircled by craggy slopes, we could see the two adjacent mires (*sagna*), dominated by *Carex rostrata*, which were our principal objective. They were known to be bryologically rich, being the only recently

recorded site in Italy for *Scorpidium turgescens*. We spent a long time examining the upper mire, which was grazed by a herd of very friendly cattle. The mire is strongly calcareous in parts, and the long list of species present included *Tritomaria polita*, *Scapania irrigua*, *Sphagnum teres*, *S. subsecundum*, *Oncophorus virens*, *Splachnum sphaericum*, *Tayloria lingulata*, *Cinclidium stygium*, *Meesia uliginosa*, *Amblyodon dealbatus*, *Catoscopium nigrum*, *Drepanocladus cossonii*, *Calliergon sarmentosum*, *C. trifarium*, *C. giganteum* and *Scorpidium turgescens* (the latter not previously recorded in the upper mire).

During our circuit of the upper mire we also took the opportunity to examine boulders and rock outcrops at the base of the encircling slopes. These also proved to be very interesting. *Scapania gymnostomophila*, a second addition to the Italian flora, was found in a crevice on a huge boulder, associated with *Cyrtomnium hymenophylloides*. The distinctive thallose liverwort *Sauteria alpina* was found at the base of another large boulder, growing on damp humus. Other records included *Lophozia bicrenata* and *Marsupella funkii* (both on thin soil on rock), *Jungermannia confertissima* (on the bank of the outflow stream of the mire), *Cephalozia pleniceps* (on moist humus in a hollow in scree), *Leiocolea heterocolpos*, *Barbilophozia lycopodioides*, *Tritomaria scitula*, *Anthelia juratzkana*, *Scapania aequiloba*, *S. cuspiduligera*, *Dicranella grevilleana*, *Paraleucobryum longifolium*, *Encalypta alpina*, *Anoetangium aestivum*, *Blindia caespiticia*, *Seligeria donniana*, *Timmia austriaca*, *Ptychodium plicatum*, *Myurella julacea*, *Heterocladium dimorphum* and *Campylophyllum halleri*. A small rivulet had *Schistidium rivulare*, *Bryum schleicheri* and *Hygrohypnum duriusculum*.

Late in the afternoon we moved on to the lower mire by way of the connecting stream. *Scapania cuspiduligera* was found again on a damp rock outcrop by the stream, with more plants of *Sauteria alpina*. The lower mire proved to be much drier and not quite so rich as the upper one, but Luca eventually refound *Scorpidium turgescens* in the place where he had seen it previously. A jumble of boulders nearby produced *Bazzania tricenata* and *Tritomaria exsecta*, and *Brachythecium reflexum* was in block scree.

We retraced our steps to Pian Benot to the shrill accompaniment of whistling marmots. We all agreed it had been a truly excellent day.

## TUESDAY 29 JULY

### Susa Valley

This was a transfer day and involved a fairly long drive to the Val di Rochemolles near Bardonecchia at the head of the Susa Valley. However, Giorgio had arranged visits en route to two xerophytic localities at low elevations (ca 600 m) on the south-facing slopes of the main Susa valley. Our first stop was at Chianocco, to visit a reserve in a wooded ravine (*orrido*) with small stands of *Quercus ilex*. The base of the ravine contained concrete dams and had few bryophytes. On the more open upper slopes we passed through deciduous woodland, where the epiphytic flora included *Syntrichia papillosa* and *Pseudoleskeella nervosa*. *Lophocolea minor* was found on stones and tree bases, and *Grimmia laevigata* with *G. ovalis* on boulders. Later we reached an open slope with small rock outcrops supporting *Crossidium squamiferum*, *Tortella inclinata*, *Grimmia tergestina* and *G. orbicularis*.

The day was very hot and dry and we felt obliged to take an extended lunch. Giorgio duly arranged this for us at the *Ristorante del Castello* in Chianocco where we enjoyed cheeses, meats and anchovies, with an aperitif of vermouth. At mid-afternoon we moved on a little distance up the Susa valley to investigate the hillsides near Ambruna, an area of old fields with scattered trees, old walls and terraces, and low rock outcrops; the vegetation consisted of *Stipa capillata* grassland with *Melica ciliata*, *Artemesia campestris* and *Echinopsis sphaerocephalus*. There were many of the species which we had seen at Chianocco, including large quantities of the *Grimmias* (*G. tergestina*, *G. ovalis* and *G. orbicularis*). *Pleurochaete squarrosa* was plentiful on the banks, and there was a small amount of *Tortula atrovirens* on a wall.

After the hot dry day in the busy Susa valley, it was a relief eventually to make the drive to the cooler mountain air of the Vallone di Rochemolles, via Bardonecchia. We ascended past the reservoir lake to the *rifugio* Scarfiotti, which was to be our accommodation for the next three nights. We were able to drive to the refuge via a rough road, and did not need to carry our baggage. The refuge is spectacularly situated at 2156 m against a backdrop of steep crags incised by cascades and water chutes. Many of the adjacent peaks exceed 3000 m. Giorgio enhanced our enjoyment by introducing us to the local spirits, including *genipi* and *serpillo*, both infused with mountain herbs.

## WEDNESDAY 30 JULY

### Rochemolles Valley, day 1

The first of our two days in the Rochemolles valley was spent in the upper part, mainly at 2400 to 2700 m. Much of the valley is composed of calcareous schists, giving rise to a rich vascular plant flora. At this altitude there were also patches of late-lying snow. It was interesting to compare the vegetation of the snow-beds with that of their Scottish equivalents. The contrast was striking. The ground dries quickly as the snow recedes and there is relatively little accumulation of humus or peat; vascular plants are much more prominent in the flora. The calcareous nature of the bedrock, the dry climate and the warmer summers must all be contributory factors.

It was not surprising that we soon encountered unfamiliar bryophytes. *Asterella gracilis* with mature sporophytes was on humus on blocky ground. Gordon found *Lophozia decolorans*, an arctic-alpine relative of *L. bicrenata*, on thin dry humus, this being only the second record for Italy. *Dicranoweisia compacta* was in rock crevices, and *Tayloria froelichiana* was plentiful at one spot on damp humus. Also of considerable interest was *Barbilophozia quadriloba*, in its slender form with two-three-lobed leaves. This is the first confirmed record for Italy, although there is an old unsubstantiated literature record. Other finds included *Anthelia juratzkana*, *Jungermannia polaris*, *Lophozia opacifolia*, *Leiocolea heterocolpos*, *L. bantriensis*, *Tritomaria scitula*, *Scapania cuspiduligera*, *Encalypta alpina*, *Tortella fragilis*, *Syntrichia norvegica*, *Tortula euryphylla* (*Desmatodon latifolius*), *Grimmia sessitana*, *Ptychodium plicatum*, *Brachythecium fendleri* (*B. collinum*), *Platydictya jungermanniioides* and *Hypnum revolutum*. In areas of seepage and moist humus were *Oncophorus virens*, *Meesia uliginosa* and *Amblyodon dealbatus*, and *Bryum schleicheri* was by the main stream. The vascular plants were equally spectacular, with *Geum reptans*, *Pedicularis rosea*, *Primula hirsuta*, *Vitaliana primuliflora*, *Gentiana bavarica*, *G. brachyphylla*, *G. nivalis*, *Artemesia genipi*, *Achillea nana*, *Erigeron borealis*, *Leontopodium alpinum*, *Sesleria varia* and many others.

## THURSDAY 31 JULY

### Rochemolles Valley, day 2

After some discussion the previous night, we decided that the dramatic crags behind the refuge could not be ignored, and we spent the morning of our second day in the valley investigating them. We soon dispersed over different parts of the crags. The vegetation was noticeably more luxuriant here than in the upper valley, an impression enhanced by the streams and waterfalls. There were deep turfey ledges and low thickets of dwarf shrubs, including much *Rhododendron*.

Wet rock ledges and crevices produced *Scapania gymnostomophila* in a second locality, *Tritomaria polita*, *Cyrtomnium hymenophylloides*, *Rhizomnium magnifolium*, *Plagiopus oederianus*, *Amphidium lapponicum*, *Catoscopium nigrum*, *Timmia austriaca*, *Myurella julacea*, *Palustriella decipiens*, *Cirriphyllum cirrosum* and *Orthotrichum rufescens*. Other species on the crags included *Grimmia sessitana*, *G. funalis*, *G. torquata*, *G. unicolor*, *Racomitrium macounii*, *Orthotrichum alpestre* and *Hedwigia ciliata* var. *leucophaea*. On deeper humus were *Ptilidium ciliare*, *Dicranum elongatum*, *Philonotis tomentella* and *Rhizomnium pseudopunctatum*. *Tortula euryphylla* was on exposed ground. The water chutes were dominated by *Palustriella commutata* var. *falcata*, but *Hygrohypnum smithii* and *H. duriusculum* were also present.

On our return from the crags we were able to lunch *al fresco* back at the refuge, enjoying a meal which included dishes of *porcini* (*Boletus elegans*) with plenty of *polenta* (mashed corn). The afternoon was spent west of the refuge, mainly in an area of green alder thickets. There were some calcareous flushes with *Carex davalliana* near the refuge and (predictably by now) we recorded *Catoscopium nigrum*, *Amblyodon dealbatus* and *Meesia uliginosa*, along with *Hymenostylium recurvirostrum* and *Drepanocladus cossonii*. Species seen on rocks and crags and in the green alder thickets included many of those seen during the morning. Additional records were *Timmia norvegica*, *Orthotrichum rupestre*, *Brachythecium reflexum* and *Campylophyllum halleri*. The alder scrub had a rich tall-herb vegetation, among which Giorgio introduced us to a yellow-flowered crucifer with a memorable name, *Hugueninia tanacetifolia*. The return to the refuge was through flower-rich alpine pastures with species of *Bupleurum*, *Euphrasia*, *Euphorbia*, *Onobrychis*, *Anthyllis* and *Aster* - a pure delight.

## FRIDAY 1 AUGUST

### France: Valle Stretta

August brought with it not only a change of venue but also a change of country! The border with France is a few kilometres from Bardonecchia, and the town is the easiest point of access to Valle Stretta, historically once part of Italy but now in French territory. Giorgio had to return to Turin for the day, leaving Luca as our guide.

Valle Stretta is formed of dolomitic limestone, and a massive rock wall lines the south-western side of the valley. We spent the morning in an area of bouldery larch woodland, proceeding at midday to Les Granges, where there are two alpine refuges. From here a steep path climbs out of the valley emerging onto alpine grassland at Col des Thuers. The larch woodland explored in the morning was very dry, with only a few moist niches. Ron and others reached the base of a

large crag and found *Cololejeunea calcarea* and *Grimmia anodon*. Elsewhere in the woodland we noted *Barbilophozia barbata*, *Lophocolea minor*, *Scapania cuspiduligera*, *Timmia bavarica*, *Pseudoleskeella catenulata*, *Hypnum vaucheri*, *H. recurvatum* and *H. revolutum*. The path to Col des Thuers also led through larch woodland; *Seligeria donniana*, *S. pusilla* and *Campylophyllum halleri* were additional records here.

We took lunch by the little Lac Chavillon and then ascended through alpine grassland to Lac Bellety, a small pool at 2289 m. This had some well-developed mire vegetation about its margins, the bryophytes including *Calliergon trifarium*, *C. giganteum*, *Scorpidium scorpioides* and *Drepanocladus cossonii*. The surrounding grassland was not rich in bryophytes: we noted *Tortula euryphylla*, *Racomitrium canescens* and *Thuidium abietinum*. There were some small rock outcrops with *Grimmia funalis*. Later we located an area of moist turf with small runnels and flushes, supporting a fine population of *Nigritella nigra* orchids in a very attractive pink form. We had now come to expect *Catoscopium nigrum*, *Meesia uliginosa* and *Amblyodon dealbatus* in such places, and they were duly found. Also present were *Leiocolea bantriensis*, *Tritomaria polita*, *Tortella fragilis* and *Rhizomnium pseudopunctatum*. On the descent back into Valle Stretta we were able to enjoy the fine prospect towards Mont Thabor, which, though somewhat obscured by cloud, was still magnificent.

From Valle Stretta we drove to Sauze d'Oulx, where Giorgio had arranged accommodation at the agricultural experimental station. Sauze d'Oulx is now a ski resort, and, as Giorgio observed, it is an ideal place to study the ecology of abandoned pastures! The alpine station has become rather run down with the decline in pastoral agriculture, but the accommodation was free, and from an altitude of 1865 m the views were splendid. Giorgio also set a precedent for BBS meetings by cooking the evening meal, at which we sampled some ancient and interesting pieces of *toma*, the local cheese.

## SATURDAY 2 AUGUST

### Gran Bosco di Salbertrand

Il Gran Bosco di Salbertrand is an area of old woodland on the north-facing slopes of the Susa Valley. It has many relict species, including *Pinus cembra* in the upper parts and the primulaceous herb *Cortusa matthioli*. It was within walking distance of the alpine station. We took a circular route across the upper part of the wood and returned via the middle part. A wrong turning at the beginning took us higher than originally intended, from 2180 m to about 2300 m at Colle Blegier. The views from here were much admired, given special effect by the blanket of mist which shrouded the floor of the Susa Valley. Along this route tree boles produced *Dicranum tauricum* and *Pterigynandrum filiforme*. On and about rock outcrops were *Leiocolea heterocolpos*, *Scapania cuspiduligera*, *Seligeria donniana*, *S. pusilla*, *Timmia bavarica*, *Platydictya jungermannioides* and *Isopterygiopsis pulchella*. Near Colle Blegier the ground was more open. *Eurhynchium pulchellum* was in thin turf and *Lophozia opacifolia* occurred with *Cephalozia pleniceps* on a bank. A small mire had *Marchantia polymorpha* ssp. *montivagans*, *Plagiomnium ellipticum*, *Brachythecium mildeanum* and *Palustriella decipiens*.

From Colle Blegier it was a long knee-grinding descent to the vicinity of Montagne Seu, from where we began our return traverse across the wood at a little over 1800 m. On the descent we passed an area of springs and runnels with, inevitably, *Catoscopium nigrum*, *Meesia uliginosa*



and *Amblyodon dealbatus*. Also present were *Leiocolea bantriensis*, *Ditrichum gracile* and *Oncophorus virens*. The return route was through dense woodland, partly now in mist, where the *Cortusa* was just past flowering. The large sneezewort *Achillea macrophylla* was conspicuous in places. There were few rock outcrops and the bryophytes were therefore somewhat limited, but we noted *Mnium thomsonii*, *Plagiopus oederianus* and *Bartramia halleriana*. Some of us searched rotting tree stumps expectantly but they were rather dry. We found *Calypogeia neesiana*, *Dicranum montanum*, *Dicranodontium denudatum*, *Plagiothecium laetum* and *Herzogiella seligeri*.

The climb back to the alpine station took us back into bright sunshine and was hot, thirsty work. After time to freshen up, we departed for our final destination, the Orsiera-Rocciavré Natural Park. This took us back east along the Susa Valley. Our accommodation was to be at the Val Gravio Refuge. The approach took us through a traditional area of chestnut production, and we passed through groves of *Castanea* trees as we drove to the small village of Adret. From here it was a walk of about 45 minutes to the refuge, so we had to carry full rucksacks. The prospect of a glass or two of wine and/or spirits spurred us onwards and up.

### SUNDAY 3 AUGUST

#### Val Gravio

The Orsiera-Rocciavré Park occupies the wild rocky high ground between the Susa and Chisone valleys. It is a beautiful place, appearing far more remote than it really is from the valleys below. Two of the peaks exceed 2800 m.

The Val Gravio refuge is situated in woodland at 1390 m on the north side of the park. Another precedent for a BBS meeting was set the following morning when we emerged into the field at 7.40 am! Our route was to take us up the main Gravio valley, with Piano delle Cavalle as our ultimate destination. We began serious bryologising at Alpeggio Mustione, situated at 1670 m in an area of bouldery grassland flanked by craggy slopes, with a rock wall and cascade at its head. *Grimmia elatior*, *G. ovalis* and *G. hartmanii* were on the less base-rich rocks. Many of the boulders, however, were of strongly calcareous schist and supported *Tritomaria scitula*, *Scapania cuspiduligera*, *S. calcicola*, *S. aequiloba*, *Encalypta alpina*, *Mnium thomsonii*, *Cyrtomnium hymenophylloides*, *Myurella julacea*, *Ptychodium plicatum* and *Hypnum bambergeri*. Also detected in thin humus in a rock crevice was *Jungermannia borealis*, a species only recently added to the Italian flora.

Towards the cascade the ground became steeper and moister, with stands of *Polygonum alpinum*. By the stream and on nearby slopes we noted *Jungermannia confertissima*, *Lejeunea cavifolia*, *Mnium spinosum*, and small amounts of *Sauteria alpina*, *Tayloria froelichiana* and *Amblyodon dealbatus*. *Grimmia torquata* was at the base of the rock wall at about 1900 m.

The path round the cascade led us through green alder scrub to a flat open area with a small in-filled lake, Il Laghetto, at 1970 m. Here there was some mire vegetation on slightly inclined ground. Of course, we soon found our familiar trio of *Catoscopium*, *Meesia* and *Amblyodon*, along with *Oncophorus virens*, *Philonotis seriata*, *Palustriella decipiens* and *Drepanocladus cossonii*. A *Tortella* from dried-out turf in the mire has proved difficult to name but may be a form of *T. densa*.

It was a further short ascent to Piano delle Cavalle at 2050 m. An area of blocky ground en route had *Lescuraea saxicola* c.fr. and *Hylocomium pyrenaicum*. As we climbed, we were hampered for the first time during the meeting by low cloud and mist, and the visibility was poor. We spent a long time on and below a rich schist crag, assembling a good list of species: *Sauteria alpina*, *Athalamia hyalina*, *Barbilophozia quadriloba*, *Jungermannia polaris*, *Anthelia juratzkana*, *Saelania glaucescens*, *Blindia caespiticia*, *Seligeria donniana*, *Tayloria froelichiana*, *Plagiopus oederianus*, *Timmia austriaca*, *T. norvegica*, *Myurella tenerrima* and *Campylophyllum halleri*. Further along the edge of the *piano* we crossed abruptly onto serpentine rock, with a noticeably poorer flora, though *Jungermannia confertissima* was found on humus. It was difficult to locate further good sites in the dense mist, and Gordon was due to depart in the late afternoon. We therefore began a relatively early descent, in drizzly rain.

There was time during the descent to examine the woodland near the refuge, and this produced some species not seen previously during the meeting, including *Anomodon attenuatus*, *Homalothecium philippeanum* and *Homomallium incurvatum* on shaded rocks and boulders. We also noted *Seligeria donniana*, *Bartramia halleriana*, *Orthotrichum rupestre*, *Hedwigia ciliata* var. *leucophaea*, *Pseudoleskeella catenulata*, *P. nervosa* and a sterile *Cynodontium*. Gordon, meanwhile, found *Anomodon longifolius* during his descent.

## MONDAY 4 AUGUST

### Departure

We spent the last night of the meeting in the refuge, and therefore had one final walk the following morning to return to our transport at Adret. A different route from our ascent took us via an abandoned monastery, *La Certosa di Montebenedetto*. Some of us could not resist the local traditional delicacy, chestnuts preserved in a sweet syrup. The old church here once survived a landslide during which it was transported physically some distance down the mountainside! With full rucksacks and not much time to spare, we did not do any serious bryologising during the descent, but it was easy to spot *Apometzgeria pubescens* and *Anomodon attenuatus* on rocks in the woods.

So ended a very successful meeting. The alpine flora was a delight and we all saw species new to us. It was also gratifying to be able to make a useful contribution to the bryological exploration of this under-recorded part of the Alps. At the time of writing, not all of our collections have been fully worked, and it is hoped that a formal account of the more significant records will be published in due course.

We are extremely grateful to Giorgio and Luca for their efforts in arranging the meeting and for their untiring enthusiasm and helpfulness during our days in the field.

TOM BLOCKEEL, RON PORLEY & GORDON ROTHERO

## AGM AND SYMPOSIUM MEETING, CHICHESTER, 1997

The campus of Bishop Otter College in Chichester was the setting for this year's AGM and symposium meeting. Thanks are due to Rod Stern for his efforts in securing the venue and ensuring the smooth running of the weekend. It was something of an occasion, as we celebrated the 80th birthday of Dr Harold Whitehouse with a special dinner and cake on the Saturday evening. It was also delightful to be able to welcome members of Harold's family to the event. We had fine weather for the Sunday field excursion and a good time was had by all.

NICK HODGETTS

### **DR MARK HILL & DR CHRIS PRESTON (INSTITUTE OF TERRESTRIAL ECOLOGY, MONKS WOOD): *BRYOPHYTES OF BRITAIN AND IRELAND: LOCAL DISTRIBUTIONS AND WORLD RANGES***

The bryophyte flora of the British Isles comprises about 1023 species, of which 17 are endemic and 19 are introduced. This is 66% of the European total and 6% of the world total. The pteridophytes, by contrast, are a mainly tropical group, with 10,000 species worldwide. A relatively small number occur in Europe, of which 50% occur in Britain and Ireland; these are only 0.7% of the world total. The flowering-plant flora of Britain and Ireland is 14% of the European total and 0.6% of the world total.

Bryophyte distributions are characteristically large and often show wide disjunctions. *Metzgeria leptoneura*, for example, occurs widely on tropical mountains and in humid parts of the Southern Hemisphere. It is also found in high-rainfall mountains of the Northern Hemisphere. Characterisation of such enormous distributions presents difficulties. Following a scheme devised by us for flowering plants (Preston & Hill, 1997), we have assigned bryophytes to floristic elements on the basis of their patterns of occurrence in the non-tropical Northern Hemisphere, especially western Eurasia.

Latitudinal and altitudinal preferences are specified by qualifiers such as Arctic-montane, Boreal-montane, Temperate and Mediterranean. Longitudinal limits are indicated by qualifiers such as Oceanic, Euro-Siberian and Circumpolar. For bryophytes, an extra longitudinal category, Hyperoceanic, has been added to those used for flowering plants. It applies to species whose distributions are western within the Atlantic zone of Europe.

Distributions within the British Isles generally reflect broader world distributions. Thus Arctic-montane species are concentrated in the higher Scottish mountains, Oceanic Boreal-montane species are concentrated in the wettest parts of north-west Britain and western Ireland, and Mediterranean-Atlantic species are concentrated in south-west England. Temperate bryophytes show few marked trends within the British Isles. They are no more numerous than Boreal-montane bryophytes; this is a marked contrast to the vascular plants, among which the Temperate species outnumber the Boreal-montane by more than five to one.

According to Schuster (1983), Europe's oceanic bryophytes can be divided into two distinct categories, one originating from the tropics and Southern Hemisphere, the other indigenous to the Northern Hemisphere and showing a pattern which he calls 'disjunct Laurasian'. This

division generally works well, but there are some exceptions, notably *Metzgeria leptoneura*, whose distribution has attributes of both categories.

## References

- Preston CD, Hill MO. 1997. The geographical relationships of British and Irish vascular plants. *Botanical Journal of the Linnean Society* **124**: 1-120.
- Schuster RM. 1983. Phytogeography of the bryophytes. In: Schuster RM, ed. *New manual of bryology*. Nichinan: Hattori Botanical Laboratory, 463-626.

## MR FRED RUMSEY (THE NATURAL HISTORY MUSEUM, LONDON): *GENETIC VARIATION IN TRICHOMANES SPECIOSUM*

The purpose of this talk was twofold: a) to introduce a bryological audience to an overlooked organism, namely the gametophyte generation of the Killarney Fern *Trichomanes speciosum*, which they are best placed to detect; and b) to look at current patterns of genetic diversity within *T. speciosum* and attempt to elucidate migration patterns and refugial sites, using this organism as an example of the 'Atlantic' element of our flora. This group of mainly bryophyte species includes some of our most interesting taxa, and is of considerable conservation interest at a European, if not global, scale. The history of Atlantic species has been the source of considerable debate, e.g. could taxa with mainly tropical affinities have survived the last glaciation in the British Isles?

Evidence from cpDNA polymorphism indicates that the British Isles supports the greatest genetic diversity, being the meeting point of at least two separate paths of recolonisation from refugia further south. The current genetic diversity of *T. speciosum* in several possible refugial areas (the Macaronesian enclave near Algeciras, southern Spain; the Alpi Apuane, northern Italy; and the sandstone massifs of the Vosges and the Elbsandsteingebirge) was discussed. All still support nationally significant Atlantic bryophyte elements and almost certainly acted as refugial areas. The possibility remains that south-western Ireland may have maintained certain Atlantic elements throughout the last glaciation but further work is needed to support this. We are now keen to extend this study to include a range of bryophytes, e.g. *Dumortiera hirsuta*, *Cyclodictyon laetevirens* and *Plagiochila* spp., so that we may compare their patterns of genetic diversity with those of the fern element, e.g. *Dryopteris aemula*, *Hymenophyllum tunbrigense*, *H. wilsonii* and *T. speciosum*.

## MR MALCOLM C. WATLING (MARGATE, KENT): *BRYOLOGY IN KENT SINCE TRUDY SIDE*

Trudy Side's *Bryophyte Atlas of Kent* was published in 1970 by the Kent Field Club (KFC), the county's natural history society. It was my privilege to have been introduced to the Club and the BBS by Trudy herself. Our correspondence began in 1986 when I studied the bryophytes for a survey of the flora and fauna of the local district, the Isle of Thanet. After Trudy's death in 1988, I continued my interest and joined the Society in 1990. The following year, Roy Hurr and I became the recorders for the two Kent vice-counties.

At this time, Roy started the South-east Area Group meetings, some 25 of which have been held in Kent to date. A handful of the meetings of the KFC have also been devoted to bryophyte

studies. The ‘active bryologists’ of Kent are widely distributed, with a significant cluster around Orpington, where there is a keen local Field Club. Most of us are members of the KFC and the BBS; our meetings and individual efforts have produced some interesting finds:

#### New records for vice-county 16 (West Kent)

*Platygyrium repens*: Basset’s Wood (Howard Matcham & Jeff Duckett, 1995).

*Nowellia curvifolia*: Friezeland Wood (Sylvia Priestley, KFC, 1996).

#### New records for vice-county 15 (East Kent)

*Zygodon conoideus*: Kearney, Dover (MCW, 1990).

*Weissia condensa* (*W. tortilis*): Langdon Cliffs, Dover (MCW, 1990) (first record for over 50 years).

*Pottia commutata* (now subsumed within *Microbryum davallianum*): Botany Bay, Broadstair (MCW, 1992).

*P. starkeana* ssp. *minutula* (now subsumed within *Microbryum davallianum*): Gorsely Wood, Canterbury (MCW, 1993).

*Hennediella* (*Hyophila*) *stanfordensis*: Ramsgate (MCW, 1993).

*Tortula vahliana*: Ramsgate (MCW, 1993).

#### Other interesting records

*Warnstorfia* (*Drepanocladus*) *fluitans* and *D. aduncus*: new 10 km square records near Crayford (KFC, 1990).

*Scorpiurium circinatum*: the colony at Hythe revisited (KFC, 1990).

*Racomitrium fasciculare*: second record for Kent at Ightham Mote (Roy Hurr, BBS, 1990).

*Atrichum tenellum* and *A. angustatum*: Combwell Wood (Francis Rose, KFC, 1990).

*Mnium stellare* and *Orthotrichum lyellii*: new 10 km square records at Loose, Maidstone (MCW, BBS, 1994).

*Hennediella macrophylla* (*Tortula brevis*) and *Pohlia camptotrachela*: Beacon Country Park (Jeff Duckett & Roy Hurr, BBS, 1995).

*Atrichum angustatum*: refind of old record at Kingswood, Maidstone (MCW, BBS, 1996).<sup>1</sup>

All of the VC 15 records except the *Pottia starkeana* have since been found in other places locally. *Zygodon conoideus* has proved to be widespread but scarce, with seven records so far.

The county of Kent is divided geologically, with chalk to the north and the Weald/Romney Marsh to the south, but the bryologically more significant division is from east to west. The climate becomes considerably drier to the east, greatly reducing the range and abundance of species. Nevertheless, the theory that the distribution of bryophytes reflects the distribution of bryologists seems to be supported by my experience at the extreme eastern end of the county. In areas of coastal semi-natural and man-made habitats, scarcely worthy of a bryological meeting, there are occasional small suitable niches which the local resident can explore in his spare moments! The following have recent new 10 km square records in the far east of Kent: *Riccia fluitans*, *Didymodon umbrosus* (*Trichostomopsis umbrosa*), *Pterygoneurum ovatum*, *Tortula acaulon* var. *pilifera* (*Phascum cuspidatum* var. *piliferum*), *Plagiomnium cuspidatum*, *Leskea polycarpa*, *Campylium stellatum* var. *protensum*, *Amblystegium tenax*, *Brachythecium*

---

<sup>1</sup> This record has subsequently been found to be an error (see p. 64)

*mildeanum*, *Eurhynchium speciosum* and even, in Thanet, *Atrichum undulatum*, *Mnium hornum* and *Rhytidiadelphus squarrosus*.

My own copy of Trudy Side's *Atlas* is annotated with new records showing eastward extensions of the ranges of several fairly widespread species, notably *Pseudocrossidium revolutum* (*Barbula revoluta*), *P. hornschruchianum* (*B. hornschruchiana*), *Didymodon luridus* (*B. trifaria*), *Plagiomnium affine* and *Eurhynchium pumilum*. This *Atlas* is currently being updated and revised by members of the Kent Field Club, with tetrad rather than 10 km square maps.

The Thanet bryophyte atlas resulting from the 1986-7 survey is based on 1 km squares and covers the corner of Kent containing the resorts of Margate, Broadstairs and Ramsgate (an area of nearly two 10 km squares). Comparison of this and the Kent *Atlas* shows useful local detail, especially in habitats like rivers and woods, which are scarce here.

Thus, the already extensive knowledge of Kent bryophytes has been steadily added to by those of us recording here. With another full season of meetings planned, this seems likely to continue.

**PROFESSOR JEFFREY G. DUCKETT (QUEEN MARY & WESTFIELD COLLEGE, LONDON), HOWARD W. MATCHAM (CHICHESTER, SUSSEX) & DR TERRY A. HEDDERSON (UNIVERSITY OF READING): PROTONEMATA, PROPAGULES, PERISTOMES AND PHYLOGENY**

Whereas in recent years the vast majority of experimental studies on moss protonemata have focused on elucidating developmental phenomena, such as the cytoskeletal basis of tip growth, graviperception and side branch formation, and have been almost totally restricted to three taxa (*Funaria hygrometrica*, *Aphanorhegma* (*Physcomitrella*) *patens* and *Ceratodon purpureus*) grown in axenic cultures, we have accumulated comparative data on both wild and cultured protonemata of over 200 mosses. These encompass all the major groups from *Sphagnum*, *Andreaea* and the Polytrichales through the Eubryales from the Archidiales to the Hypnobryales. This body of new information permits for the first time the exploration of the following major questions: Do protonemal features shed any new light on the classification and phylogeny of mosses? If so, are protonemal features congruent with other forms of data? How far on the one hand do protonemal characteristics reinforce traditional classifications based on peristomes, and on the other how far do they support new information from molecular biology?

This novel synthesis of protonemal and molecular data, the latter comprising nucleic acid sequences for nuclear-encoded 18s RNA and the gene rps 4 plus the chloroplast encoded gene trn L-F spacer region, is a particularly apposite tribute to Harold Whitehouse. He is both a most distinguished geneticist and the only person to have previously gathered comparative information on gemmiferous protonemata (Whitehouse, 1987). It is his indomitable enthusiasm for things difficult to find in unprepossessing places that has led many of the members of the BBS, including one of us (JGD), on the downwards path to arabology.

Apart from the reassignment of *Takakia* from the liverworts to the Andreaeopsida (Renzaglia, McFarland & Smith, 1997), current classifications of mosses, apart from what might be described as 'minor tinkering' with orders and families, are much the same as those of the nineteenth century. The isolated position of *Sphagnum*, originally based on traditional morphological criteria, has been reinforced in more recent times by new data on features like spermatozoid

ultrastructure (Renzaglia & Duckett, 1988), the gametophyte/sporophyte junction (Ligrone, Duckett & Renzaglia, 1993), and its unique mode of stem elongation involving both apical and subapical meristems (Ligrone & Duckett, 1998). Its thalloid protonema, with bud formation and responses to growth regulators very different from all other mosses, further separates *Sphagnum* from all other mosses (Goode, Stead & Duckett, 1992).

The only other group of mosses lacking typical protonemata and rhizoids (defined as tip-growing uniaxial filaments with new cells being added by division of the apical cell or laterally via side branch initials) are the Andreaeopsida. The juvenile stages in both *Takakia* and *Andreaea* comprise ill-defined, sometimes multiaxial, axial to almost parenchymatous ‘filaments’ which are difficult to equate with the highly ordered protonemata and rhizoids of other mosses. Indeed, these juvenile stages more closely resemble the filamentous structures produced by the germinating spores of a few jungermannialean liverworts, e.g. *Cephalozia*. Even the so-called rhizoidless mosses (*Calliergon trifarium*, *Pleurozium*, *Pseudoscleropodium*, *Rhytidium*, *Hylocomium*, *Scorpidium*) always produce typical protonemata from spores and from rhizoids during regeneration in culture from gametophyte fragments.

Apart from *Sphagnum*, the only other well-documented non-filamentous protonemal structures are the plates in the Tetraphidales (Goode, Duckett & Stead, 1992) and the funnel-shaped upright appendages in the Buxbaumiales (Duckett, 1994). It therefore came as a considerable surprise to discover *Tetraphis*-like protonemal plates around colonies of *Oedipodium griffithianum*. A fossick through the literature revealed a passing mention of these in Goebel (1905) which was then tracked down, via Goebel (1889), to the original and apparently only first-hand description by Berggren (1873), whence they appear to have been forgotten. Culturing of *Oedipodium*, from both gemmae and spores, confirmed the *Tetraphis*-like protonema. *Oedipodium* is almost invariably placed with the Funariales - solely, it seems, on the basis of supposed similarities in capsule shape. However, *Oedipodium* lacks a peristome, and the quadrifid structure in Tetraphidales cannot be sensibly reconciled with the peristomes of other mosses. Molecular data now place *Oedipodium* and *Tetraphis* close together, and far removed from all the Eubryidae. In contrast, three of the four genera in the Gigaspermaceae (*Gigaspermum*, *Oedipodiella*, *Chamaebryum*) which all lack peristomes and are also placed close to the Funariales, all have unremarkable protonemata.

Also striking is the closeness in molecular terms of the Polytrichales and Buxbaumiales. Here again, the protonemata have a notable commonality; buds are produced from the centre of upright parenchyma-like branches, though these are not funnel-shaped in the Polytrichales. We have never seen protonemal gemmae in either group.

Within the Eubryidae examples of remarkable and sometimes totally unexpected congruence are now emerging between molecular and protonemata data. With their highly-structured basal tmema (abscission) cells and attenuated sticky acumina, the protonemal gemmae of *Calymperes*, *Octoblepharum* and *Syrropodon* (Ligrone, Duckett & Egunyomi, 1992) in the Dicranales are the most highly structured yet described in mosses. But very similar gemmae also occur in the supposedly unrelated moss, *Schistostega* (Edwards, 1978) which, like *Oedipodium*, is eperistomate. Both molecular data and the protonemal propagules indicate that *Schistostega* should now be transferred from the Diplolepideae into the Dicranales.

Pointed chloronemata are a characteristic feature of the Pottiales, a few members of the Dicranales, and the supposedly funarialean, but again eperistomate, *Ephemerum* (Duckett, Goode & Stead, 1993). Molecular data indicate strong affinities between these taxa, and support the transfer of *Ephemerum* to the Haplolepideae. Schizolytic separation of protonemal foliar and cauline gemmae throughout the Pottiales (Ligrone, Duckett & Gambardella, 1996) contrasts with the more widespread liberation mechanism involving tnema cells, and suggests that this is a natural order.

Molecular affinities between the Grimmiaceae and the Ptychomitriaceae are reinforced by similar protonemata, which in both these families comprise attenuated filaments bereft of gemmae. To date the Grimmiales is the only group which does not comply with the 'Whitehouse Rule' (Whitehouse, 1987) - mosses that produce protonemal gemmae also produce these elsewhere and vice versa. Short-celled transversely-septate protonemata and molecular data unify the Orthotrichales (Goode, Stead & Duckett, 1993) and Isobryales, whereas hypnobryalean protonemata appear to be singularly uninteresting taxonomically. All have typical funarialean chloro/caulonemata, and gemmae are remarkably rare, two notable exceptions being *Pseudotaxiphyllum* (*Isopterygium*) *elegans* and *Eurhynchium hians* (*E. swartzii*). In the latter species their occurrence could well explain the arcane occurrence of these rarely-fruited mosses in transient habitats.

The new data from molecular biology and protonemata suggest major revisions will be needed for future moss Floras.

## References

- Berggren S. 1873.** Om proembryots utveckling och byggnad hos släktena *Diphyscium* och *Oedipodium*. *Botaniska Notiser* 109-112.
- Duckett JG. 1994.** Studies of protonemal morphogenesis in mosses. V. *Diphyscium foliosum* (Hedw.) Mohr (Buxbaumiales). *Journal of Bryology* 118: 223-238.
- Duckett JG, Goode JA, Stead AD. 1993.** Studies of protonemal morphogenesis in mosses. I. *Ephemerum*. *Journal of Bryology* 117: 397-408.
- Edwards SR. 1978.** Protonemal gemmae in *Schistostega pennata* (Hedw.) Web. et Mohr. *Journal of Bryology* 110: 69-72.
- Goebel K. 1889.** Ueber die Jugendzustände der Pflanzen. *Flora* 72: 1-45.
- Goebel K. 1905.** *Organography of plants*. Translated IB Balfour. Oxford: Oxford University Press.
- Goode JA, Duckett JG, Stead AD. 1992.** Morphogenesis of the moss *Tetraphis pellucida* Hedw. in culture and in the wild. *Annals of Botany* 70: 519-530.
- Goode, JA, Stead AD, Duckett JG. 1993.** Studies of protonemal morphogenesis in mosses. II. *Orthotrichum obtusifolium* Brid. *Journal of Bryology* 117: 409-419.
- Ligrone R, Duckett JG, Egunyomi A. 1992.** Foliar and protonemal gemmae in the tropical moss *Calymperes* (Calymperaceae): an ultrastructural study. *Cryptogamic Botany* 2: 317-329.
- Ligrone R, Duckett JG, Renzaglia KS. 1993.** The gametophyte-sporophyte junction in land plants. *Advances in Botanical Research* 19: 231-317.
- Ligrone R, Duckett JG, Gambardella R. 1996.** Serial development of foliar gemmae in *Tortula* (Pottiales, Musci), an ultrastructural study. *Annals of Botany* 78: 305-315.



- Ligrone R, Duckett JG. 1998.** Development of the leafy shoot in *Sphagnum* (Bryophyta) involves the activity of both apical and subapical meristems. *New Phytologist* **140**: 581-596.
- Renzaglia KS, Duckett JG. 1988.** Different developmental processes underlie spermatozoid architecture in mosses, hepatics and hornworts. *Journal of the Hattori Botanical Laboratory* **64**: 219-235.
- Renzaglia KS, McFarland FD, Smith DK. 1997.** Anatomy and ultrastructure of the sporophyte of *Takakia ceratophylla* (Bryophyta). *American Journal of Botany* **84**: 1337-1350.
- Whitehouse HLK. 1987.** Protonema-gemmae in European mosses. *Symposia Biologica Hungarica* **35**: 227-231.

\* \* \* \* \*

### FIELD EXCURSION TO DIDLING HILL, CHALKPIT LANE AND MIDHURST COMMON, 14 SEPTEMBER 1997

In the morning, 36 members explored the steep north-facing slope of Diding Hill, including chalk grassland and semi-natural mixed broadleaved woodland. The banks of the track through the woodland had *Eurhynchium schleicheri* and there were plenty of chalk stones with *Seligeria calycina* (*S. paucifolia*) c.fr. and *Tortella inflexa*. All the more interesting chalk grassland liverworts known from this site were refound, including *Frullania tamarisci*, *Scapania aspera* (locally abundant), *Porella arboris-vitae* and *Jungermannia atrovirens*. We failed to refind the mosses *Racomitrium lanuginosum* and *Antitrichia curtipendula* from the top of the hill, in spite of careful searching led by Francis Rose, who knew these from the site previously. A good colony of *Hylocomium brevirostre*, not seen before at Diding, was some compensation. A remarkable find was a patch of *Aulacomnium palustre* on steep chalk grassland (the pH of this was determined by David Streeter as 8.4).

After lunch, a visit was made to Chalkpit Lane near the Trundle from where there is a fine view over the West Sussex coastal plain, Chichester Harbour and the Isle of Wight. *Thuidium abietinum* ssp. *abietinum* and ssp. *hystricosum* were seen growing near each other in the only extant locality for both on the South Downs. The excursion finished by Midhurst Common in an old brick pit where *Lophocolea bispinosa* (first found there by Howard Matcham a few years ago) is still abundant. *Fossombronia foveolata* and *Blasia pusilla* were also seen there.

ROD STERN

---

### BRYOLOGICAL WORKSHOP, UNIVERSITY OF EAST LONDON, 1997

Nine members attended this meeting at the University of East London on 15-16 November at which Mark Hill took the opportunity to review taxonomic problems in the genus *Sphagnum*, particularly in the light of the work of Flatberg on the much more extensive and variable continental populations - giving us an erudite breakdown of the problems engendered by

inconsistent lumping and splitting, and by using characters that apply well enough to British plants but fall down in the case of American or in some cases continental material of supposedly the same taxa. Galvanised and inspired by the meeting on the Saturday, for which he had gathered a large quantity of illustrative living material, Mark then spent the Sunday revising the *Sphagnum* list in preparation for the second edition of Tony Smith's *Moss Flora*.<sup>1</sup>

Participants were pleased to meet and welcome Allan Green, who popped over from New Zealand, via Germany, at just the right moment to attend the meeting, and who needed little persuasion to give us a fascinating account of the mass propagation and production of *Sphagnum* (dried) for the Japanese market, collected by the helicopter load from the bogs along the narrow but very wet west coast of the South Island of New Zealand.

Finally, Ken Adams summarised the distinguishing characters separating our two *Leucobryum* taxa, based on a study of the two species in Epping Forest over many years, and attempted to unravel the confusion engendered by conflicting descriptions in the literature. In discussing Yamaguchi's recent revision of the Asiatic taxa in the genus it became clear that our two species are much more closely circumscribed than Yamaguchi's *sensu lato* aggregate of *L. juniperoideum*. His Asiatic '*L. glaucum*' has setae in the range 8-11 mm, about the range of our *L. juniperoideum*, whereas our material of *L. glaucum* has setae roughly double that length. Similarly, Asiatic material of the two species is said to have capsules of roughly the same size, at 1.5-1.6 mm, whereas our *L. glaucum* has capsules on average twice the size of those of *L. juniperoideum*. Thus the crucial characters that we use to satisfactorily separate our two *Leucobryums* would seemingly not work on Asiatic material.

KEN ADAMS

---

## SUMMER FIELD MEETING, FIRST WEEK: THE ISLE OF ISLAY, 25-31 JULY 1998

Participants: John Blackburn, Tom Blockeel, Agneta Burton, Blanka Buryová (from Prague), Richard Gulliver (local secretary), David and Geraldine Holyoak, Frank Lammiman, David Long, Seán O'Leary, Jean Paton, Mark Pool, Christine Rieser, David Rycroft, Graeme Smith, Philip Stanley, Rod Stern and Harold Whitehouse.

Headquarters: White Hart Hotel, Port Ellen.

All excursions were in VC 102 (South EbuDES).

### SATURDAY 25 JULY

The majority of the members attending met at Kennacraig in time for the 18.00 Port Ellen ferry. The weather was windy and drizzling, but spirits were generally high. An evening briefing took

---

<sup>1</sup> Summary available on request.

place at Richard and Mavis Gulliver's home on the western outskirts of Port Ellen, after which members went to their assorted lodgings hopeful of a fine day to follow.

## SUNDAY 26 JULY

### Kintra and points west, NR3248 to NR3048

The day did not start particularly well, the party gathering at Kintra in lashing rain. No sooner had they struggled from their cars, however, than the rain stopped; by the time lunch was taken, on sandy banks at Port Alsaig, the sun was beating down.

The ground west of Kintra consists largely of moorland, but with considerable basic influence locally on the coast due to blown shell-sand. As is usual on such excursions, the party took a long time to cover the first few hundred metres. Initially, the bryoflora was not of consuming interest, being made up largely of common calcifuge species. Highlights included *Frullania microphylla* and *F. teneriffae* (from coastal rocks), and *Entosthodon attenuatus* (*Funaria attenuata*), *E. obtusus* (*F. obtusa*), *Lophozia incisa* and *Nardia geoscyphus* from the heathy ground above. An already respectable list was given a considerable fillip when a flush just east of Port Alsaig was reached. Plants of interest here included *Drepanocladus cossonii*, *Scorpidium scorpioides* and *Thuidium delicatulum*; sandy rocks nearby, sometimes damp, produced a number of calcicoles, such as *Bryoerythrophyllum* (*Barbula*) *ferruginascens* and *Jungermannia paroica*.

Lunch over, the party divided. Tom and Mark investigated some rocks just above the shore; the rest of the group struck uphill, passing an old concrete reservoir (or similar) which produced common calcicoles, such as *Didymodon rigidulus* (*Barbula rigidula*) and *Orthotrichum anomalum*, from its sides. David Holyoak also recorded fruiting *Splachnum ampullaceum* from hereabouts. The party coalesced in the stunted (and, in part, very wet) woodland just to the west. *Cololejeunea minutissima*\* was found here, growing on sallow; *Lejeunea patens* was seen not far away. A move further westward, onto more open ground, soon turned up *Cephalozia leucantha*; not long after this, a rock outcrop was checked and was proved to be basic by the presence of *Hymenostylium* (*Gymnostomum*) *recurvirostrum* and *G. calcareum*. Most of the party then descended into a large gully leading down towards the coast west of the Allt Fada (NR306480); this had an interesting, but not dramatic flora, perhaps the most noteworthy species being *Jungermannia pumila*. The total 'bag' from this excursion was an impressive 153 species (106 mosses and 47 liverworts).

David Long spent the day 'freelancing' south-west of Port Ellen. He visited the Carraig Fhada area (NR3444) and the vicinity of Port an Eas (NR3342); the highlights of another useful list (62 mosses, 18 liverworts) were *Jubula hutchinsiae*, *Marchesinia mackaii*, *Dicranum scottianum*, *Fissidens polyphyllus* and *Zygodon viridissimus* var. *stirtonii*.

The evening saw all those present being entertained by the Gullivers to a meal at their home. This was not only excellently prepared, but also efficiently organised; not many people would have been capable of feeding sixteen hungry bryologists at once in a domestic setting!

## MONDAY 27 JULY

### Duich Moss (NR3355, NR3356 etc.)

The party met initially at the end of a rough track a few hundred metres south of Laggan Bridge. This track proved very interesting, occupying most of those present for a considerable time. Species seen here included *Aongstroemia longipes*\*, *Didymodon ferrugineus*\* (*Barbula reflexa*), *Fossombronina incurva*\*, *Riccardia incurvata* and a number of commoner ruderals. After following the track almost to the shed at its terminus, members turned south-westwards onto the Moss proper. Initially this proved disappointing, the most noteworthy bryophyte seen being the locally abundant *Campylopus introflexus*. Members persevered, however, and after a slightly tricky stream crossing (roughly at NR333561) came to better ground. It was not long before *Sphagnum austinii* (*S. imbricatum* ssp. *austinii*) was found; soon afterwards *S. fuscum* (albeit in small quantity) turned up as well. *Cephalozia loitlesbergeri* was found by Jean growing among *Sphagnum magellanicum* and *Leucobryum*. Encouraged by these, and a steady trickle of other, less unusual, records, the group continued southwards towards the pools at Eilean na Muice Duibhe. These were also of interest, not least for the presence here and there of *Calypogeia sphagnicola*\* among the sphagna. After this, members wended their way back to the cars for lunch. Most went back by the track; Mark, pursuing a solitary route across the moss, was rewarded with several good colonies of *Polytrichum longisetum* on the sides of old peat diggings. The conifer plantation by the roadside attracted some attention, as it was seen to contain a few sycamores; these produced some common basicolous epiphytes for the list. *Nowellia curvifolia* was also noted here at one spot, on a rotting log. The total list for the morning was 77 (54 mosses, 23 liverworts).

### North of Loch Fada (NR4063, NR4064, NR4164)

The area between Loch Fada and Mullach Dubh has considerable areas of limestone, which forms incipient pavement in at least one site. The party gathered after lunch by the track-end at NR400639; this spot was obviously on limestone and a good list of calcicoles soon resulted, perhaps the best being *Didymodon ferrugineus* and *Brachythecium glareosum*. Progressing eastwards along the track, the group became somewhat scattered. David Holyoak, Rod and Mark digressed onto moorland a little to the north, where the ground was much more acidic and had a number of boggy areas. *Mylia anomala*, *M. taylorii*, *Odontoschisma denudatum* and *Pleurozia purpurea* were found here, as were no less than eight *Sphagnum* species, including *S. magellanicum*. *Andreaea rupestris*, wanted as a vice-county record, was seen on a rock outcrop hereabouts, but was not collected as it was in small quantity (it was subsequently seen, and collected, on Jura the following week). The three 'separatists' rejoined the others at the limestone pavement (NR411642), finding *Sphagnum squarrosum* in a flush on the way. The main party had given the limestone area a thorough search, and had been rewarded with (among others) *Porella arboris-vitae*, *Bryoerythrophyllum* (*Barbula*) *ferruginascens*, *Hypnum lacunosum* var. *tectorum*\* and *Thuidium philibertii*. In addition, Tom had found *Bryum subapiculatum*\* (*B. microerythrocarpum*) and *Pohlia camptotrachela* on damp soil near the track during the walk in. Due largely to the variety of habitats examined, the afternoon's list included 131 taxa (25 liverworts, 106 mosses).

## TUESDAY 28 JULY

### Ballygrant woodlands etc. (NR36, NR46)

The Ballygrant woodlands promised to be an interesting habitat, providing more shelter than is usual over much of Islay and also possessing a varied geology including much limestone. Cars were parked by the roadside just south of Ballygrant village (in NR36) and a useful list of common species was compiled from the roadside walls. Of more interest, however, was an adjacent *Brassica* field. This quickly produced *Dicranella staphylina*\* (almost unbelievably a new vice-county record); further meticulous research by Harold and others turned up *Bryum klinggraeffii*\*, *B. sauteri*\* and *Ditrichum cylindricum*\*. After such a start the woodlands could easily have been an anticlimax; this was prevented, however, by their sheer bryophyte biomass, by Christine's discovery of *Frullania teneriffae* almost at the entrance, and by the finding of *Neckera pumila*\*, on beech, soon afterwards.

Members followed the woodland track along the north side of Loch Ballygrant. Much of the ground here was decidedly acidic; the species seen, while providing a useful boost to the day's list, were in the main common ones. The best were *Lejeunea patens*, *Plagiochila britannica* (abundant), *Riccardia palmata* and *Hypnum lindbergii*. Spirits leapt when the very obvious limestone around Loch nan Cadhan was reached. Rock outcrops and walls here had *Anastrophyllum minutum*, *Plagiochila britannica*, *Scapania aspera*, *Campyliadelphus chrysophyllus* (*Campylium chrysophyllum*), *Entosthodon obtusus* c.fr., *Syntrichia* (*Tortula*) *intermedia*\* and *Zygodon viridissimus* var. *stirtonii* c.fr. An area of partly basic marsh produced *Sphagnum flexuosum*\* (*S. recurvum* var. *amblyphyllum*), *S. inundatum* (*S. auriculatum* var. *inundatum*), *Drepanocladus cossonii* and splendid *Philonotis calcarea*, while among the heather on a presumably acid rock outcrop nearby Tom and David turned up another new vice-county record in the shape of *Barbilophozia atlantica*\*.

Lunch was taken, in hazy sunshine, on a breezy knoll above the loch; the group then continued north-eastwards along the main track. Limestone was much in evidence beside the path at first, but apart from *Marchesinia* and *Porella arboris-vitae* it produced nothing unusual which had not been seen already. Some well-grown sycamores were searched in hopes of finding *Zygodon rupestris* (*Z. baumgartneri*) but unfortunately all the specimens collected were found when checked to be *Z. viridissimus*. One sub-group spent some time in an unsuccessful search for *Cryptothallus*, but were consoled by finding a good colony of Lesser Twayblade *Listera cordata*. Once away from Loch Ballygrant, the track passed through relatively uninteresting country until Loch Allan was reached. Even so, there was some interest; *Mnium stellare* was recorded on a shaded wall, *Didymodon ferrugineus* was locally abundant on the track, *Riccardia chamedryfolia*\* was found on a soil bank, and *Fossombronina wondraczekii*\* (accompanied by *F. pusilla* and *Pohlia flexuosa* (*P. myldermansii*)) on soil in a gateway. Sallow by Loch Allan sported *Cololejeunea minutissima*, while waterside rocks produced a good (but unconfirmable) candidate for *Didymodon spadiceus* (*Barbula spadicea*). As a final parting shot, David Long found *Phaeoceros laevis*\* on a bank by the track near Dunlossit House.

As expected, the day's total was high (129 mosses and 52 liverworts).

## WEDNESDAY 29 JULY

### Rubh' a' Mhàil and the coast to the west (NR47, NR37)

The headland of Rubh' a' Mhàil (pronounced 'Ruvaal') lies at the extreme north-eastern corner of the island. Following good reports of the sea-caves to the west, at least some of the party hoped to reach that area. Others, put off by the thought of the four-mile approach walk and (perhaps) by the wet morning, opted to sample the bryophytes of the area around Bunnahabhain, a small distillery hamlet at the end of a road to the south.

Both groups initially met at Bunnahabhain. The 'headland party' (Tom, Agneta, Blanka, Richard, David Holyoak, David Long, Seán, Mark and Graeme) duly set off northwards in blowing drizzle, only slightly disconcerted by having to wade a small sea-inlet before following the 'path' up a low, but vertical, quartzite crag. From then on the path was clearer, if sometimes boggy; as the drizzle turned to driving rain soon afterwards, most of the group were soon too wet to care anyway. Due to a combination of the weather and the rapid pace set by the fitter members of the party, little bryology was done during the walk in. By the time the Rubh' a' Mhàil lighthouse was reached, the rain had stopped and the sun was coming out, so heads emerged from cagoules and started to take an interest in the surroundings.

The coast west of the lighthouse is spectacular in parts, with steep-sided inlets and many sea-caves. David Long, Blanka and Mark descended into the first of these gullies, which sported a total of three sizeable caves. These were all searched thoroughly in hopes of finding *Cyclodictyon laetevirens*, which is reported from this area, but without success. There was, however, consolation in *Dicranum scottianum*, which grew in large cushions on quartzite rock faces; *Isoetecium myosuroides* var. *brachythecioides* was also present locally. The caves themselves had, among other things, *Jubula hutchinsiae* and *Lophocolea fragrans*; one contained a baulk of rotting timber which was well colonised by *Riccardia palmata*.

The rest of the group had carried on westwards to investigate the caves and cliffs of Bàgh an Dà Dhoruis. They had still not found *Cyclodictyon*, but there were compensations. These included *Isopterygiopsis pulchella*\* (*Isopterygium pulchellum*), found in fruit by Tom in a deep crevice on a cliff, more *Dicranum scottianum* (providing a habitat for *Microlejeunea* (*Lejeunea*) *ulicina* at times), *Leiocolea bantriensis* (on a flushed slope), *Marchesinia mackaii* (found by David in a cave-mouth) and *Plagiochila punctata* (on rock). The party reunited for lunch on the windy headland of Aonan an Dà Dhoruis, subsequently splitting again into a number of small sections. David Holyoak found the rare *Lejeunea holtii* in a sea-cave (which also produced *Trichomanes* gametophytes). Mark undertook a solitary exploration of several caves, but again failed to find any *Cyclodictyon*; there was, however, another baulk of timber, this one with a thriving population of *Nowellia* as well as *Riccardia palmata*. An unexpected feature of one of these caves was a seepage of obviously basic water from the joints of the normally acid quartzite; this produced *Eucladium verticillatum* and *Didymodon tophaceus* (*Barbula tophacea*). David Long, Tom and others had gone on further west as far as Port a' Chotain (in NR37), before heading inland up the valley of the Allt na h-Uamha Móire. Port a' Chotain had *Lejeunea patens* and more *Isoetecium myosuroides* var. *brachythecioides*, together with a patch of Wood Vetch *Vicia sylvatica*. The valley produced a number of western hepatics, the most notable being *Cephalozia catenulata*, *C. leucantha*, *Jungermannia subelliptica*, *Kurzia trichoclados*, *Mylia taylorii*, *Odontoschisma denudatum* (on peat) and *Pleurozia purpurea*. Members made their way back

to Bunnahabhain by a variety of routes; the weather was by now fine and sunny, and David Long's find of *Campylopus subulatus*\* on a rough track near the village rounded off a very satisfying day.

### **Bunnahabhain area and Ardnahoe Loch (NR47)**

The Bunnahabhain group was made up of John, Frank, Jean, Christine, Phil, Rod, David Rycroft and Harold. They started by checking the valley of the Abhainn Araig, north of the village; this produced such species as *Cephalozia lunulifolia*, *Frullania teneriffae* (found by Christine), *Metzgeria conjugata*, *Plagiochila punctata*, *P. spinulosa* and *Tritomaria quinqueidentata*. From here the party struck southwards, initially to the old quarries at NR422721; these had (among other things) *Pohlia annotina*, *Leiocolea turbinata* and *Scapania irrigua*. Loch Ardnahoe, checked next, produced a useful record of fruiting *Orthotrichum rupestre*.

### **THURSDAY 30 JULY**

### **Beinn Bheigeir and the Ardtalla area (NR45)**

Beinn Bheigeir is in many ways an unremarkable quartzite hill. Most of the party were, however, hoping to visit it, as it is the only non-Irish site in the British Isles for the rare liverwort *Adelanthus lindenbergianus*. The party gathered at Claggain Bay and the majority promptly set off for the hill; the others (of whom more later) stayed low, to look at some of the old woodlands of the area.

The approach to Beinn Bheigeir, as with so many similar hills, starts with boggy moorland and then progresses to steep heathery slopes. Little serious bryologising was done on the ascent; David Long did, however, find *Sphagnum contortum* in a *Juncus* flush. Higher up, a gale-force wind was blowing but this did not seem to deter the group, most of whom were soon investigating the numerous patches of 'mixed hepatic mat'. Liverworts noted here, in addition to the *Adelanthus*, included *Anastrepta orcadensis*, *Bazzania tricenata*, *Herbertus aduncus* ssp. *hutchinsiae*, *Nowellia curvifolia* (on peat) and *Pleurozia purpurea*, while the best of the mosses were *Andreaea rupestris* and *Dicranodontium denudatum*.

Lunch was taken in a sheltered spot just below the crest of the ridge; afterwards the party moved back towards the coast. Some time was spent in the ravine of the Allt nam Bodach (NR460562); this looked promising initially but turned out not to be rich in species. The reason was not obvious, but might be a combination of the ravine's relative openness and its north-easterly exposure. The most interesting species seen were *Lejeunea lamacerina*, *Metzgeria conjugata*, *Plagiochila spinulosa* and *Saccogyna viticulosa*. Progressing roughly southwards, the group reconvened in some damp coastal scrub near Ardtalla House. A potential candidate for *Ulota drummondii* was collected from here, but unfortunately keyed out as *U. bruchii* (*U. crispa* var. *norvegica*) when checked later. Large rock outcrops nearby produced *Frullania fragilifolia* (its distinctive turpentine-like smell very noticeable here) and *Plagiochila killarniensis*; coastal rocks and sand at Traigh Bhàn had *Schistidium maritimum*, *Tortella flavovirens* and (as so often) a large amount of a promising-looking, but sterile, *Bryum* sp.

### Various woodlands of south-east Islay (NR45, NR44)

The 'lowland party' had looked first at the wooded ravine of the Claggain River and the surrounding wet heathland. This produced 45 mosses and 21 liverworts, but none was rare or particularly unusual. *Drepanocladus revolvens*, *Heterocladium heteropterum* and *Plagiochila punctata* were perhaps the most interesting. From here they progressed to the rocky oak/birch woodland (an SSSI) near Trudernish Point (NR4652); this had rather more interest, with *Thuidium delicatulum*, *Cephalozia lunulifolia*, *Cephaloziella hampeana*, *Fossombronia wondraczekii*, *Scapania umbrosa* and *Tritomaria exsectiformis* heading a list of 28 mosses and 20 liverworts. This group's final visit of the day was to a wood near Calumkill, north-west of Ardbeg (NR4046). This again was not of spectacular interest, but 29 mosses and 21 liverworts were noted. The wood appeared to be slightly more basic than the other two; *Palustriella commutata* var. *falcata* (*Cratoneuron commutatum* var. *falcatum*) and *Neckera complanata* were both seen here, while highlights included *Hylocomium brevirostre* and *Trichocolea tomentella*.

### FRIDAY 31 JULY

#### Killinallan area (NR3071 to NR3374)

The day began fine and dry, if a little cloudy. Cars were parked by the track south-west of Killinallan, and it is some indication of the interest and variety of the area that the party immediately fragmented. David Holyoak and others went to look at some incipient salt-marsh on the edge of Loch Gruinart; this produced plentiful *Hennediella* (*Pottia*) *heimii*, some of it fertile, together with *Drepanocladus aduncus* and a sterile *Bryum* which was believed to be the rare *B. marratii* but which was still under investigation at the time this report was written. This party then went into the dunes to the north, finding *Climacium dendroides*, *Entodon concinnus* and a certain amount of *Thuidium philibertii*, in addition to common basicole species such as *Homalothecium lutescens*. The main group was rejoined in a decidedly marshy area which had, among other things, *Drepanocladus polygamus*\* (*Campylium polygamum*) (found by David Long) and *Calliergon giganteum*. Interest soon shifted, however, to a nearby rock outcrop; this provoked some discussion, as it appeared to consist of acid quartzite but sported a number of calcicole species (examples being *Didymodon rigidulus*, *Encalypta streptocarpa* and *Zygodon viridissimus* var. *stirtonii*), as well as others typical of coastal rocks hereabouts (e.g. *Frullania fragilifolia* and *Porella obtusata*). The conclusion was that the calcareous influence was provided by blown sand, which can build up on the tops of outcrops to provide basic flushing after rain; this effect was to be noted on several occasions later in the day.

Moving on in a basically north-easterly direction, the party fragmented again. Mark found a good colony of *Reboulia hemisphaerica* growing on flushed, sheltered rocks; after this he teamed up with Rod to see sheets of *Entodon*, with frequent *Thuidium philibertii*, on the slopes of calcareous dunes. *Dichodontium pellucidum* was also common here, a surprise for those of us accustomed to finding it by hill streams. The party reassembled in a fascinating area of the aforesaid 'basic quartzite', outcropping from ground which had been heavily poached by cattle and which, to judge from the presence of *Cinclidotus fontinaloides* on the base of a rock, held standing water in winter. This poached ground produced one of the week's best discoveries in the form of *Riccia cavernosa*\*. The rocks nearby had a considerable variety of calciphiles, of which the most noteworthy were *Orthotrichum rupestre* and fruiting *Marchesinia mackaii*.



Lunch was taken, in bright sunshine, near these rock outcrops; afterwards most of the party investigated a large and promising dune slack nearby. David Holyoak said it looked an ideal *Petalophyllum* habitat, but of course nothing could be seen of the plant (even if it was present) at this time of year. Some banter was exchanged over the possibility of a March meeting in the area, but nothing definite materialised; in the interim the Society had to be content with an abundance of *Didymodon* (*Barbula*) *fallax*, *Bryum algovicum* var. *rutheanum* c.fr. and other interesting, but sterile and therefore unidentifiable, *Bryum* spp.

The dune belt narrowed eastwards from here, and appeared less bryologically interesting. One small group of diehards (Seán, Mark and Graeme), continued as far as Gortantaoid Point, where there was a local abundance of stunted *Porella obtusata* together with *Tortella flavovirens* and a small quantity of *Isothecium myosuroides* var. *brachythecioides*. A splinter group, including Tom, Jean and others, visited a patch of birch-hazel woodland east of Bun-an-uillt (NR3069), but found it infested with *Rhododendron* and bryologically unpromising. They nonetheless managed to produce a list of 65 species (35 mosses, 30 liverworts) from the wood and the surrounding moorland. The highlight was *Cephalozia macrostachya* var. *spiniflora*\*, found by Jean; others included *Hylocomium brevirostre*, *Sphagnum magellanicum*, *Cephalozia catenulata* (on peat), *Chiloscyphus pallescens*, *Mylia anomala*, *Odontoschisma denudatum* and *Trichocolea tomentella*. The rest of the group returned to the vehicles by way of the dunes, but do not appear to have added much new to the list. This eventually totalled 92 species (78 mosses, 14 liverworts), excluding those found by the Bun-an-uillt group.

In addition to the official excursions, various unscheduled visits were made to other sites during the course of the week. David Holyoak and Rod carried out a full survey of Richard and Mavis's garden at Imeravale; they found a total of 54 taxa (46 mosses, 8 liverworts), including *Bryum bornholmense*\*, *Isothecium myosuroides* var. *brachythecioides* and *Schistidium maritimum*. Harold discovered *Bryum rubens*\* in two separate arable fields, one about 3 km north-east of Bridgend (NR359641) and the other a similar distance south-west of Bowmore (NR284579).

The week had been more than satisfactory, despite the rather indifferent weather. Although it appears to lack the best of the western Scottish oceanic-montane bryoflora, Islay was found to be a varied and interesting island. No doubt work still remains to be done, but with a total of 25 new vice-county records (16 mosses, 9 liverworts) found during the week there should be less than formerly! Our sincere thanks go to Richard and Mavis Gulliver, both for organisation of the week and for the superb catering on the Sunday night. Thanks are also due to the management and staff of the White Hart Hotel for providing the headquarters, and to the various landowners for granting permission to visit (and, in most cases, collect) on their land. My own thanks as writer of this report go to the following people, all of whom helped by sending in lists: John Blackburn, Tom Blockeel, David Holyoak, David Long, Jean Paton, Christine Rieser, Rod Stern and Harold Whitehouse.

MARK POOL

## SUMMER FIELD MEETING, SECOND WEEK: THE ISLE OF JURA, 1-7 AUGUST 1998

### SATURDAY 1 AUGUST

A reduced party from that on the Isle of Islay caught ferries for the short crossing to Jura (VC 102) during the morning: John Blackburn, Agneta Burton, Blanka Buryová, David and Geraldine Holyoak, Jean Paton, Mark Pool, Phil Stanley, Rod Stern and Harold Whitehouse.

From the ferry crossing the summits of the Paps of Jura, three conical quartzite mountains that dominate the southern part of the island, seemed quite close and binoculars revealed Red Deer scattered on the long moorland slopes leading up to the higher rocks, as well as a Golden Eagle soaring over a distant ridge.

#### Abhainn Mhór to Daimh-sgeir, NR4468 to NR4467

Agneta, Jean and John caught an early ferry and began work in earnest before the rest of the party reached Jura. A substantial list of bryophytes was recorded by them from stream banks, including *Frullania teneriffae* and *Diphygium foliosum*.

We then moved on to the Jura Hotel at Craighouse, which was to be our (very comfortable) headquarters for the week. In warm, sunny weather, we enjoyed a picnic lunch on the hotel lawns.

#### Craighouse 'ravine', NR5266

The afternoon was devoted mainly to exploration of the wooded, rocky valley of the small river that reaches the sea near the Jura Hotel. Luckily the water-level was low and, except for a climb to avoid the waterfall, there was little difficulty in following the course of the river upstream, giving access to a luxuriant bryophyte flora that included *Aphanolejeunea microscopica*, *Bartramia ithyphylla*, *Dumortiera hirsuta* (in several places), *Fissidens celticus*, *F. curnovii*, *Heterocladium heteropterum* var. *heteropterum*, lots of *Jubula hutchinsiae*, *Lejeunea lamacerina*, *L. patens*, scattered *Lophocolea fragrans*, *Metzgeria conjugata* and also *Ulota drummondii*. On the walk back, an old track into a pasture near the roadside produced *Fossombronina wondraczekii*, *Philonotis caespitosa*\*, *Pohlia bulbifera*, *P. camptotrachela*, *Riccia sorocarpa* and *R. subbifurca*.

### SUNDAY 2 AUGUST

#### Corran River valley, NR5472 to NR4973

During a dry morning the whole party followed the Corran River upstream across open moorland to Loch an t-Siob. Peaty banks along the way produced *Cladopodiella francisci*\* and *Lophozia bicrenata*\* found growing very close together by Jean, and other finds included *Anastrophylllum minutum*, *Calypogeia neesiana*, *Campylopus atrovirens*, *Cephaloziella divaricata*, *C. hampeana*, *Kurzia trichoclados*, *Pohlia bulbifera* and *Sphagnum quinquefarium*.

The edge of Loch an t-Siob had *Scapania umbrosa* in addition to patches of Water Lobelia *Lobelia dortmanna*.

During the afternoon the slopes of two of the Paps of Jura around Gleann an t-Siob and an adjacent hill were visited by small groups. The rather unprepossessing quartzite screes of the southern slopes of Beinn Shiantaidh were covered by Agneta, Jean, Harold, Phil and Rod, who found *Glyphomitrium daviesii* and *Hedwigia stellata*\* there on small boulders of basaltic rocks, whereas the quartzite boulders were bare. John and Mark tackled the wetter northern slopes of Beinn Mhearsamail, and found extensive 'mixed liverwort mats' that included *Bazzania tricenata*, *Herbertus aduncus* ssp. *hutchinsiae* and *Plagiochila carringtonii*, as well as *Racomitrium ellipticum*\*. Blanka and I searched the north-eastern slopes of Beinn Chaolais, finding similar liverwort mats but with the addition of *Anastrepta orcadensis*, *Barbilophozia floerkei* and *Dicranodontium asperulum*; *Andreaea alpina*\* occurred there on rock.

## MONDAY 3 AUGUST

### Inver Cottage area, NR4469 to NR4473

A large group braved steady light rain with occasional heavier outbursts to explore the coastal slopes northwards from the Feolin Ferry, with its stretches of raised beach and sea-caves. *Cyclodictyon laetevirens* was admired at its well-known site inside a damp cave entrance, and *Calypogeia azurea* was noticed growing nearby. Despite the poor weather, energetic recording resulted in a total list of over 100 bryophyte species, including *Blasia pusilla* and *Dicranella cerviculata* c.fr., and new records for *Pohlia flexuosa*\* (*P. myldermansii*) and *Splachnum sphaericum*\* found by Rod.

### Jura House Gardens, NR4863

Smaller groups visited the attractive gardens and woodland around Jura House, Ardfin, and amassed large lists of bryophytes, but with few real surprises among them. The 'Tea Tent' in the gardens provided welcome respite from steady light rain. The garden was created a hundred years ago, and much of it is sheltered by a wall up to five metres high. It contains many Australian and New Zealand plants especially collected for the garden.

### Coast near Daimh-sgeir, NR4468

Finally, Jean and Phil searched coastal rocks and caves above the road in continuing rain, locating *Calypogeia muelleriana*, *Gymnocolea inflata*, *Plagiochila killarniensis*, *P. punctata*, *Dicranoweisia cirrata* c.fr. and *Dicranum fuscescens* c.fr.

## TUESDAY 4 AUGUST

### Lealt, NR6690

A morning with good weather was used to explore the ravine along a small river. The steep-sided ravine above the road had several low waterfalls and required some scrambling, but it proved to be rich in bryophytes with, among others, *Bazzania trilobata*, *Blepharostoma trichophyllum*, *Fissidens taxifolius* var. *pallidicaulis*, *Harpalejeunea molleri* (*H. ovata*) and

*Lepidozia cupressina*, as well as masses of *Jubula hutchinsiae*, and plenty of *Frullania teneriffae* epiphytic on hazels. The lower part of the ravine produced *Barbilophozia attenuata* on the trunk of a living oak tree, *Cephalozia catenulata* on a log, *C. lunulifolia*, *Harpanthus scutatus* and *Microlejeunea (Lejeunea) ulicina*, but this part of the ravine also had steep and inaccessible sides.

#### **Tramaig Bay, NR6588**

Woodland on a low rocky slope near the shore had a varied bryophyte flora, including *Adelanthus decipiens*, *Barbilophozia attenuata*, *Cephalozia lunulifolia*, *Frullania fragilifolia* and *Thuidium delicatulum*. The best find was made just as we were about to leave, a patch of *Plagiochila atlantica*\* found by Blanka.

#### **Tarbert Bay, NR6082**

Brief searching around the shores of the bay resulted in finds of *Bryum subapiculatum* (*B. microerythrocarpum*), *B. rubens*\* (found by Rod), *Drepanocladus aduncus*, *Pellia neesiana*, *Pohlia campotrachela* and *Tortella flavovirens*.

#### **Loch na Mile, NR5471**

The edges of several sandy bays were searched in the hope of finding *Bryum salinum*, but only unidentifiable, non-fertile material was found. Only slight consolation was obtained from finds of *Pohlia bulbifera* and *Bryum rubens c.fr.*

### **WEDNESDAY 5 AUGUST**

#### **Jura House Gardens, NR4863**

A second visit to the gardens by a larger group resulted in two new finds there: *Anthoceros punctatus*\* in garden plant pots and *Marchantia polymorpha* ssp. *ruderalis*\* in garden beds and in pots. Other bryophytes were studied in an adjacent marshy field. Blanka, Harold and Phil left for the mainland later in the day. The remainder of the party explored a short distance along the coast to the east, then sat on the beach for lunch, watched by three wild goats high on the cliff.

#### **Inver Cottage area, NR4469 to NR4473**

A return visit to this rich area with Mark, in fine weather, resulted in a few additions to the list, including *Hedwigia stellata*, *Orthodontium lineare* and *Thuidium delicatulum*. The occurrence of numerous calciphiles, including *Eucladium verticillatum*, in a few places along the base of the quartzite sea-cliff was attributed to flushing by base-rich ground water.

#### **Ardfernal, NR5570 to NR5671**

Jean, John and Rod explored steep natural woodland, scrub, rocky grassland and salt-marsh around this coastal headland and bay. The most significant finds from a long list of bryophytes were *Bryum dunense*\* and *Barbilophozia floerkei* found by Rod, *B. subapiculatum* by John, and

*Ulota drummondii* c.fr. by Jean. The eastern part of the same area was revisited briefly the next morning.

## THURSDAY 6 AUGUST

### Beinn an Oir, NR4774 to NR4975

The remoteness of this area from the road led to arrangements being made for transport by Land Rover along rough tracks to the base of the mountain. The only day when this transport was possible unfortunately turned out to be very wet. Hence the small group (Agneta, Mark and me) who decided to walk into the mountains enjoyed steady rain and views of less than fifty metres throughout. The northern slopes of Beinn an Oir had areas with well-developed 'mixed liverwort mat', including *Herbertus aduncus* ssp. *hutchinsiae* and *Plagiochila carringtonii*, but there were no surprising finds. The long walk back to the road through the Inver Cottage area saw the weather improve, and allowed a few more additions to the bryophyte list for that by now well-worked area, including *Sphagnum girgensohnii* found by Mark.

### Near Knockrome, NR5571

During the morning the 'lowland group' (Jean, John and Rod) walked from the airstrip near Loch na Mile along the shore and up over Rubha Bhrìde to search salt-marsh and dunes around the bay before returning by way of Ardfernal. Searches for *Bryum salinum* were again unsuccessful, but the bryophytes found included *Blasia pusilla*, *Cephaloziella hampeana* and *Campylium stellatum* var. *protensum*.

### Jura Forest, NR5370

The 'lowland' group later explored the grounds of Jura Forest House, surrounding woodland and open moorland above. Despite rain and midges, the more significant finds included *Anthoceros punctatus* (outside the walled garden) and *Phaeoceros laevis* in the garden.

## FRIDAY 7 AUGUST

### West of Tarbert, NR6082, NR5982, NR5984, NR6083

John and Rod left early for the mainland. The four bryologists remaining drove north to the narrowest part of Jura and worked an area of moorland, old tracks and the sea shores of Loch Tarbert, in mostly light rain. Substantial lists of species were recorded for two 10 km squares, including the first *Sphagnum molle* to be noticed on the trip, but the best finds were of *Cephalozia macrostachya* var. *macrostachya*\* (discovered by Jean on a *Leucobryum* tussock in open moorland) and *Campylopus subulatus*. Other bryophytes recorded included *Bryum subapiculatum*, *Calyptogeia sphagnicola*, *C. neesiana*, *Cephalozia catenulata* on a peat bank, *Cephaloziella hampeana*, *Fissidens osmundoides*, *Kurzia trichoclados* and *Splachnum ampullaceum*. Mark made a long walk to patches of woodland on the western side of the head of Loch Tarbert, where numerous species were added to the list, including *Riccardia palmata* and *Sphagnum quinquefarium*.

Partly bare patches in the top edges of the salt-marsh at the head of the loch had many patches of non-fertile *Bryum*, again raising hopes of *B. salinum*, but the absence of sporophytes prevented any of it from being identified.

#### **Glen Shiel (VC 105), NG9217, NG9317, NG9318**

After leaving Jura, Blanka, Harold and Phil travelled northwards on the Scottish mainland to search for *Philonotis cernua* (*Bartramidula wilsonii*) at a locality where it had been found by Dr Warburg 50 years ago. Although the *P. cernua* was not relocated, a rich bryophyte flora was recorded on the eastern slopes of Sgurr Mhic Bharraich, including *Douinia ovata* c.fr., *Herzogiella striatella*, *Marsupella sphacelata*, *Plagiochila carringtonii*, *Scapania nimbosa* and *Sphagnum strictum*.

The Isle of Jura is geologically less varied than Islay, being composed mainly of quartzite, so it supports a less varied bryophyte flora. Larger parts of Jura are also difficult to reach, since there is access by road only along the southern and eastern coasts, and long hikes or the use of a boat are necessary to reach many northern and western parts of the island. Hence, although the Isle of Jura does not have an especially rich bryophyte flora, there are doubtless still some species awaiting discovery there. The presence of such strongly Atlantic species as *Cyclodictyon laetevirens* on Jura and Islay, and *Adelanthus lindenbergianus* and *Lejeunea holtii* on Islay, may well hint that other Atlantic species still await discovery in VC 102, such as perhaps *Bazzania pearsonii* or *Mastigophora woodsii*. Nevertheless, the 'northern mixed liverwort mats' of the mountains of Jura are species-poor compared to examples elsewhere in western Scotland, and the impression of a rather restricted bryophyte flora on the island as a whole is probably correct.

Unfortunately, the famous island distillery adjacent to our hotel was closed for the week. The frequent rain was only heavy enough to restrict bryological fieldwork on some of the days and perhaps partly as a result of the wet weather, we were less troubled by midges, horseflies or deer ticks than might be expected in some parts of Scotland. Clear spells revealed some splendid mountain and coastal scenery, and allowed sightings of Merlins, Hen Harriers, Black Guillemots and Arctic Skuas.

Thanks are due to various estates for allowing access to their land, and to Richard Gulliver for making many of the arrangements for this access. John Blackburn, Jean Paton, Mark Pool, Rod Stern and Harold Whitehouse helped with providing lists for this report.

DAVID HOLYOAK

---

#### **AGM AND SYMPOSIUM MEETING, LOUGHBOROUGH, 1998**

The University of Loughborough was the venue for this year's AGM and symposium meeting. Thanks are due to the local secretary, Dennis Ballard, who organised the weekend very ably and made sure that everything ran smoothly (or sorted it out when it didn't!). As seems to be the norm in recent years (global warming?), the day of the field excursion was warm and sunny, and

a good contingent of members were shown that even the Midlands can be bryologically interesting.

NICK HODGETTS

**MR DENNIS BALLARD (LEICESTER): *BRYOLOGY IN LEICESTERSHIRE***

The Charnwood Forest area of Leicestershire, where John Ray reported the finding of rare cryptogams in the 17th century, was described. Dr Richard Pulteney (1730-1801), an apothecary, provided the first real account of the vascular and cryptogamic flora of the Charnwood Forest, Loughborough and Leicester. The Rev. George Crabbe (1754-1832) collected and recorded in north-east Leicestershire. Their works were published in Nicol's 1795 *History of Leicestershire*. Several clergymen continued the collecting and recording in the 19th century. With the formation of the Leicester Literary and Philosophical Society in 1835, botany was put on a firm base, with a few other botanists continuing to advance bryology. The publication of their work was quoted. The activities of the Society and the Leicester Museum, which opened in 1849, resulted in the production of the 1863 Flora. Separate herbaria were maintained by the two organisations. In the 20th century a new generation of botanists carried bryology forward. Floras were produced in 1909 and 1941, and several papers published. It was not until 1984 that recording was carried out in a systematic way on a tetrad basis. More work is required before a comprehensive bryophyte Flora can be produced. Records are available at present from about one third of the 617 tetrads in Leicestershire.

**DR TERRY HEDDERSON & DR ROYCE LONGTON (UNIVERSITY OF READING):  
*MORPHOLOGICAL AND GENETIC VARIATION IN THE COSMOPOLITAN  
MOSS BRYUM ARGENTEUM HEDW.***

*Bryum argenteum* is probably the world's most widely distributed plant species, extending from continental Antarctica through the lowland tropics to the high Arctic. Something of the wide variation in microclimatic conditions experienced by different populations of this species was demonstrated by data showing summer moss-level temperature regimes at three polar and boreal forest sites; modal values for temperature during the day ranged from 0°C on Ross Island, Antarctica, to 20°C at Pinawa, Manitoba. Clones isolated from these populations nevertheless showed strikingly similar relationships between temperature and growth. All grew slowly at a day/night temperature regime of 9/1°C, and fastest at 22/15°C, with evidence of heat stress at 30/30°C. This is consistent with the temperature relationships of CO<sub>2</sub> exchange in an Antarctic population, in which the optimum temperature for net assimilation at light saturation was 25°C (Rastorfer, 1970). Antarctic and tropical (Hawaii) clones both survived but grew very slowly at 5/-5°C. Similarly, North American *B. argenteum* from normal and metal-contaminated soils showed similar levels of tolerance to copper and cadmium, whereas in *Funaria hygrometrica* there was evidence of genetic adaptation in this respect (Shaw, 1991).

These physiological responses thus give the impression that *B. argenteum* may exist as a small range of 'multi-purpose genotypes'. However, collateral cultivation experiments have demonstrated extensive morphological variation in features such as nerve length and shape of the leaf apex. Some of this variation is apparently random, but plants with strikingly obtuse leaf apices and abundant bulbils have been isolated from both Arctic and Antarctic sites. There is also evidence that the excurrent nerve giving many colonies in dry habitats a characteristically

hoary appearance (var. *lanatum*) is maintained in cultivation, in isolates derived both from gametophytes and from spores, although with no discontinuity in the range of variation between these forms and var. *argenteum*. Moreover, a study of the nuclear-encoded rRNA internal transcribed spacer (ITS) region in *B. argenteum* and related species showed that much of the total variation among these taxa resides within *B. argenteum*. Indeed, genetic distances between some populations of this species were greater than between those of some species traditionally assigned to different genera, a finding with important implications in terms of conservation strategies (Longton & Hedderson, in press). High levels of within- and between-population variation in RAPDs has also been reported in *B. argenteum* from the Antarctic and Australasia (Stotnicki, Ninham & Selkirk, 1998), emphasising the complexity of genetic variation in this most familiar of moss species. Beware lest familiarity breeds contempt!

## References

- Longton RE, Hedderson TA. In press.** What are rare species and why conserve them? *Lindbergia*.
- Rastorfer JR. 1970.** Effects of light intensity and temperature on photosynthesis and respiration in two East Antarctic mosses, *Bryum argenteum* and *Bryum antarcticum*. *Bryologist* **73**: 544-556.
- Shaw AJ. 1991.** Ecological genetics, evolutionary constraints, and the systematics of bryophytes. *Advances in Bryology* **4**: 29-74.
- Stotnicki ML, Ninham JA, Selkirk PM. 1998.** High levels of RAPD diversity in the moss *Bryum argenteum* in Australia, New Zealand and Antarctica. *Bryologist* **101**: 412-421.

## DR DAVID HOLYOAK (CAMBORNE): *TETRAD RECORDING OF BRYOPHYTES IN VC 1*

Recording of the distribution of bryophytes in West Cornwall and the Isles of Scilly (vice-county 1) by tetrads (2 x 2 km squares) was begun in 1993. Well over half of the tetrads have now been visited, with a total of 340 full days spent in 242 tetrads.

By means of numerous repeated visits to each of several tetrads, it was found that two hours recording effort per tetrad was sufficient to find at least 50% of the bryophyte species revealed in the same tetrads by ten hours of searching, but that a few additional species continued to be added even after 15 hours of searching. These results emphasise that field recording of bryophytes is a process of sampling, and that complete coverage of any large area is unattainable. Hence, in order to offer the prospect of increased reproducibility in any future surveys, the time (hours) spent searching in each tetrad and the range of habitats searched are being recorded. Practical considerations and the aim of achieving reasonably even coverage have led to a 'rule' that each tetrad is sufficiently searched when all the main bryophyte habitats have been investigated, a total of at least two hours has been spent searching, and more than 50 moss species have been found. Allowing for travel, microscopic checking of material, and input of data onto computer, this 'rule' allows one tetrad to be completed in a single, rather long, working day.

The *Atlas of the Bryophytes of Britain and Ireland* (Volume 1, 1991) described Cornwall as 'exceptionally well covered', but recent fieldwork has yielded 22 new and five updated vice-county records (approximately one for every 34 hours of fieldwork). These new finds emphasise



that knowledge of our bryophyte flora is still much less complete than that of vascular plants. In volume 2 of the *Atlas* (1992), Alan Crundwell's 'guess' was that the distribution maps gave two-thirds of potentially available records in 10 km squares, and this now seems approximately correct for VC 1 if we make the reasonable assumption that there must still be much more left to find. However, given that VC 1 was 'exceptionally' well covered it would appear that the estimate of national coverage of 10 km square records should perhaps be reduced from two-thirds to a half or less.

Mapping distributions on a tetrad scale allows patterns of occurrence in relation to environmental factors to be studied in more detail than is possible using data mapped at 10 km or 5 km grid scales. Nevertheless, many of the more detailed patterns found from tetrad studies in VC 1 were to be expected, such as *Grimmia trichophylla* being found mainly on hard rock outcrops (and walls and gravestones) or *Syntrichia ruraliformis* (*Tortula ruralis* ssp. *ruraliformis*) occurring mainly on dunes. Likewise, the occurrence of certain species (*Schistidium maritimum*, *Tortella flavovirens*) only on the coast was easily predicted, although their presence beside sheltered tidal creeks well 'inland' was not. More surprisingly, several species appear to avoid a zone within several kilometres of exposed coasts, among them *Ditrichum cylindricum*, *Pseudephemerum nitidum*, *Orthotrichum affine*, *Pleurozium schreberi* and *Ulota bruchii* (*U. crispa* var. *norvegica*), possibly because they are intolerant of excessive salt-spray. When 'standardised' data have been recorded for all tetrads it is intended to investigate some of these distribution patterns statistically.

Mrs Jean Paton collected detailed data on bryophytes over much of Cornwall during the 1960s that she has generously made available for comparisons with the data from the past five years. Several species show marked increases or decreases over this period of approximately 30 years. Among the most obvious increases are those of *Campylopus introflexus*, which has 'filled in' a pattern of distribution the outlines of which were already nearly complete by 1960. A more surprising increase is that of *Zygodon conoideus*, which has become much commoner relative to *Z. viridissimus*. Increase of *Z. conoideus* elsewhere in southern England has been attributed to a reduction in sulphur dioxide pollution, but this explanation cannot be true over much of West Cornwall where there were never high levels of SO<sub>2</sub>. A recent increase in nitrogen deposition on bark seems a more likely explanation for the increased abundance of *Z. conoideus*, at least in Cornwall, since this species commonly occurs on nutrient-rich bark types such as that of Elder *Sambucus nigra*. Among the most conspicuous decreases since the 1960s are those of several species that grow on acidic rocks, especially *Andreaea rothii*, *Racomitrium aquaticum* and *R. fasciculare*. Increased nitrogen deposition on rocks may offer the most likely explanation for the decreases of these species.

**DR ANGELA E. NEWTON (NATURAL HISTORY MUSEUM, LONDON): MOSSES  
AND CLADOGRAMS: FLORISTIC AND PHYLOGENETIC EXPLORATIONS IN  
THE AMERICAS**

After a long absence from England and the British Bryological Society, twelve years of study, research and field work in the Americas were summarised, with slides of bryological habitats in different areas visited.

Duke University, in the Piedmont of North Carolina on the east coast of the United States, is situated in an area of mixed deciduous and coniferous forests. The very hot, humid summers

(often over 35°C and 95% humidity) are not conducive to bryophyte growth in the heavily-shaded forests, but in more open areas such as rocky outcrops, and in the mountains, there is more diversity. Research projects included a phylogenetic study of relationships in the tropical moss family Pterobryaceae, especially of the largely neotropical genus *Pirella*. Characters useful for defining the species show conflicting patterns of relationships between the species. These and additional characters were studied in depth for use in cladistic analysis, allowing the relationships between the species to be resolved (Newton, 1993 & papers in prep.) This work led to further detailed study of characters such as branching architecture in pleurocarpous mosses, and of relationships between the families of the Leucodontales.

A different group of studies involved the influence of mature plants on the germination of spores and vegetative propagules, and the evolutionary role of asexual reproduction (Mishler & Newton, 1988; Newton & Mishler, 1994). Fieldwork included long trips to the south-western states and to Costa Rica, Panama and Colombia, where many fine bryophytes were seen in a range of desert, forest and montane habitats.

A move to the National Museum of Natural History (NMNH) in Washington DC, and involvement in the Biological Diversity of the Guianas Program, led to opportunities for field work in Guyana, in northern South America. Guyana currently has very large areas of untouched lowland rainforest, but like many such areas, is threatened by logging companies. Travel to the interior involves flights on small planes to very short airstrips, where cows on the runway can be a serious hazard. Further travel is then normally by dug-out canoe or on foot, and sleeping accommodation consists of hammocks, with mosquito nets an absolute necessity. One can get very stiff after eight hours sitting on a wooden plank in a canoe, broken only by portage of equipment round a waterfall. But the continually changing riverbank, with towering forest trees, riverine birds, and numerous pale yellow butterflies following each other in long undulating lines, more than compensates. Although the recorded moss diversity is not high (*ca* 315 species - Boggan *et al.*, 1997) new distributional records include species very common elsewhere in the neotropics (*Hypopterygium tamariscinum* and *Schoenobryum gardneri*), indicating that more collecting needs to be done before we can be confident that the flora is well known. Floristic studies based on political rather than biogeographic regions do not necessarily reflect biological processes, so this project also includes collating records from eastern Venezuela and northern Brazil, which together with the Guianas constitute the Guayana Highlands. An additional small project at NMNH involved studies of mosses and liverworts in amber from the Dominican Republic. The age of these collections is uncertain, but they are probably between 20 and 30 million years old. However, many of the plants found are very similar or virtually identical to extant species.

The last year was spent in Mexico, working at the Institute of Ecology in Xalapa, Veracruz. The Institute is 19° north of the equator, at 1400 m altitude (slightly higher than Ben Nevis), so all year round there is normally hot sunshine, cool nights, and frequent rain and mist, making very good conditions for mosses. The natural environment includes forests of deciduous trees, such as oaks, elms and beeches, with tropical evergreen trees and epiphytic bromeliads, and at higher altitudes forests of alders and conifers. A lot of the forests have now been replaced by coffee and citrus plantations, but nevertheless the area is rich in tropical moss families such as the Meteoriaceae, Pterobryaceae, Hookeriaceae and Calymperaceae. Research carried out here, in collaboration with Dr Efraim DeLuna, was a continuation of work on morphological characters and family relationships in the Leucodontales, started at Duke, and forms part of an international

collaborative project studying the relationships of all green plants. Both morphological data and molecular sequence data from rbcL were used in cladistic analyses of the pleurocarpous mosses. Part of this work involves further studies of complex character systems, including rhizoid distribution and structure, axillary hairs, the elements of branching architecture, and the ontogeny of the foot-vaginula-calyptra complex (Newton & DeLuna, papers in revision). Field trips to collect plants for research produced several new distributional records for Mexico, Veracruz or Chiapas. The most recent field trip, to the rainforests of Chiapas in south-west Mexico, involved flights in a six-seater, single-engine Cessna, to land on airstrips that looked like rough pasture complete with tall weeds and grazing horses! But solar cells on the roofs of the field stations provide the amazing luxury of 24-hour, silent electricity, with no diesel fumes or roaring generators. The representation of moss families in the areas visited seemed quite different from the Guianas, with more species of Hypnales but relatively few species of Hookeriales and Calymperaceae.

Back in England, at the Natural History Museum, work will continue on several of these projects, with collaborators both here and abroad.

## References

- Boggan J, Funk V, Kelloff C, Hoff M, Cremers G, Feuillet C. 1997.** *Checklist of the plants of the Guianas*, 2nd edition. Washington: Biological Diversity of the Guianas Program, Smithsonian Institution.
- Mishler BM, Newton AE. 1988.** Influences of mature plants and desiccation on germination of spores and gametophytic fragments of *Tortula*. *Journal of Bryology* **15**: 327-342.
- Newton AE. 1993.** *Phylogenetic systematics of the tropical moss genus Pirella (Pterobryaceae: Musci)*. PhD thesis. Department of Botany, Duke University.
- Newton, AE, Mishler BM. 1994.** The evolutionary significance of asexual reproduction in mosses. *Journal of the Hattori Botanical Laboratory* **76**: 127-145.

## DR MARTHA NEWTON (UNIVERSITY OF MANCHESTER): *BONUS BRYOPHYTES*

This was a miscellany of the more unusual or attractive bryophytes to have been enjoyed by bryologists attending field courses I have taken. To qualify for consideration, a bryophyte had to have captured the attention of someone on the course and to have added to the pleasure of everyone. It was hoped that, in presenting these slides, some of that pleasure could be conveyed to BBS members present at Loughborough. From a wealth of qualifying species representing all nine of the major biome categories in Britain (Hill & Preston, 1998), just 57 were chosen from seven of those geographical assemblages.

It was argued that even the most experienced bryologist could not fail to admire the attractive colours and forms of many extremely common species. *Ceratodon purpureus*, *Bryum argenteum*, *Lophocolea heterophylla*, *Dicranum majus* and *Thuidium tamariscinum* were therefore included alongside such species as *Orthothecium rufescens*, *Bryum weigelii*, *Cinclidium stygium*, *Dicranum bergeri* (*D. undulatum*), *Sphagnum lindbergii* and *Petalophyllum ralfsii*.

A larger number of species, however, demanded attention for reasons of rarity, geographical distribution and factors involved in reproductive behaviour and/or genetic isolation. The rare

*Bryum cyclophyllum*, for instance, had been discovered new to Wales, whereas the nationally scarce *Anastrophyllum hellerianum* had been found further east than any of its previous records in Wales. Not only was the gross morphology of *Pellia borealis* illustrated but also the cytological features which reveal its genetic isolation from the similar *P. epiphylla*. Their chromosomes differ numerically as well as structurally, there being 18 unique ones in gametophytes of the former species and nine in the latter (Newton, 1986). Both these species are monoecious and generally fertile but, in contrast, a number of dioecious bryophytes excite attention because of the rarity of sporophyte production, among them being fertile *Plagiomnium undulatum*, *Climacium dendroides* and *Barbilophozia floerkei*. Indeed, this was, I believe, the first illustration of sporophyte production by British *B. floerkei*.

## References

- Hill MO, Preston CD. 1998. The geographical relationships of British and Irish bryophytes. *Journal of Bryology* **20**: 127-226.
- Newton ME. 1986. *Pellia borealis* Lorbeer: its cytological status and discovery in Britain. *Journal of Bryology* **14**: 215-230.

## DR DAVID S. RYCROFT (UNIVERSITY OF GLASGOW): A CHEMIST'S VIEW OF LIVERWORTS

This paper, subtitled 'NMR (nuclear magnetic resonance) fingerprinting and chemotype classification of British *Plagiochilae*', contains some of the results obtained since the first applications of NMR fingerprinting of liverworts were presented in 1996 as a poster at the Centenary Symposium in Glasgow. Further information, including details of the chemical structures, can be found in the references cited.

This work has evolved out of the chemical studies of the secondary metabolites of liverworts that have been going on at Glasgow for over 25 years. In considering both our and other people's work in this area, a recurring question was: are the secondary metabolites characteristic of the species or just of the particular specimen? Our efforts to answer this question for particular liverworts have involved using NMR spectroscopy to develop NMR fingerprinting (Rycroft, 1996). The novel aspect of this technique is to extract the plant material with deuteriochloroform, the deuterated solvent that is normally used to measure NMR spectra; many benefits arise from the simplicity and directness of the procedure compared to more conventional methods (Rycroft, 1998a). In favourable circumstances, the amount of plant material required is only a fraction of many herbarium specimens, and the method opens up the possibility of undertaking comparative chemical studies using a wide range of fresh and/or herbarium material.

To illustrate what a NMR spectrum can tell us, we may consider the case of an extract from *Calypogeia azurea*. The blue compound responsible for the colour of the oil bodies was shown to be 1,4-dimethylazulene over 30 years ago (Meuche & Huneck, 1966); the signals in the NMR spectrum arise from different parts of this molecule and could be used to elucidate the structure. For the purposes of liverwort characterisation, identification of 1,4-dimethylazulene in the NMR spectrum is equivalent to seeing the blue oil bodies in the liverwort, and whatever weight is attached to the character of blue oil bodies could in principle also be attached to other compounds identified, with the advantage of course that they do not have to be coloured. An

additional point to emphasise is that the case of *C. azurea* is one where a secondary metabolite can be demonstrated unequivocally to be localised in the oil bodies. It is commonly assumed that this is the norm, despite the fact that what are regarded as normal liverwort compounds have also been isolated from liverworts that have no oil bodies.

*Inter alia*, we have been using NMR fingerprinting to study all (except the most recently discovered) British species of *Plagiochila*. Our work on *P. spinulosa* started originally in 1982, and the poster at the Centenary Symposium reported that there was little chemical variation between different samples of *P. spinulosa*. Subsequent work (Connolly *et al.*, 1999) has resulted in identification of more of the components: eight are 9,10-dihydrophenanthrenes (DHPs), two are methyl orsellinates, and one is a bibenzyl. In comparison with *P. spinulosa*, the *P. punctata* spectra have fewer signals; the major components have been identified, and in addition to three of the DHPs found in *P. spinulosa* there is a flavonoid.

One aspect of chemical interest in *Plagiochila killarniensis* is the characteristic smell. The proton NMR spectrum quickly revealed that the extract was dominated by methyl everminate, which is known in the perfumery world as one of the odour-impact compounds of oakmoss (the lichen *Evernia prunastri*). Another compound present is  $\beta$ -phellandrene, a monoterpenoid with a strong smell, present in essential oils from various *Eucalyptus*, *Abies* and *Pinus* species.  $\beta$ -Phellandrene is also present in *Plagiochila spinulosa* and *P. punctata*, and is responsible for the smell obtained when fresh material is crushed in the field, whereas methyl everminate is responsible for what makes *P. killarniensis* distinctive after it has been collected. Our isolated methyl everminate contained two minor constituents that were also methyl orsellinate derivatives, one of which we already knew from *P. spinulosa*. In six Scottish specimens and four from the Azores, another minor component that was always present was a more unusual type of compound, a 3-benzylphthalide that we have named 'killarniensolide' (Rycroft *et al.*, 1999). The structure of killarniensolide is related to lunularic acid, the dormancy-inducing factor that seems to be ubiquitous at low levels in liverworts. There is also a structural relationship with the bibenzyl that we isolated from *P. spinulosa*. *P. killarniensis* did not contain any of the DHPs from *P. spinulosa*, but two of the minor components corresponded to two of the DHPs reported from a Costa Rican *Plagiochila* (Anton *et al.*, 1997).

In discussions with the Saarbrücken and Göttingen bryophyte groups we learnt of the synonymy of *P. killarniensis* with the Neotropical species *P. bifaria* (Heinrichs, Grolle & Drehwald, 1998). We have now examined several Neotropical specimens, but the extract of the only sample of *P. bifaria* was dominated by a compound that is suspected to have arisen from fungal contamination. Until more material becomes available, the secondary metabolites of Neotropical *P. bifaria* remain obscure. The only work in the literature is a GC-MS study of a single Peruvian specimen that appears to differ chemically from the ten Scottish and Azores specimens studied by us. Two Madeiran samples sent from Göttingen were very similar chemically to Scottish and Azores material; however a third sample (Drehwald 960277) turned out to be very different. The NMR spectrum showed mainly a *ca* 1:1 mixture of two compounds, one of which was one of the DHPs in *P. killarniensis* and the other the bibenzyl derivative in *P. spinulosa*. Morphological examination of the plant then revealed that it was very different from *P. killarniensis* as we know it in Britain: the leaves were relatively longer, were not truncate, and the line of teeth on the postical leaf margin continued around the apex and sporadically along the antical leaf margin. An interesting development since the AGM is the discovery that the extract of a 45 year-old sample of *P. sharpii* (R.M. Schuster 40723 *ex* GL) contains a *ca* 1:1

mixture of the same two compounds. These observations may be placed in perspective by noting that chemically the difference between Drehwald 960277 and *P. killarniensis* is at least as great as that between *P. spinulosa* and *P. punctata*.

The NMR spectra of extracts of three samples of *Plagiochila exigua* from different sites in Glen Creran were fortuitously simple in the methoxyl region in giving one large peak. In the aromatic region, things were not so simple, but a simulated spectrum could be calculated to match the line positions of the experimental spectrum and show that the new compound 3,4-dihydroxy-3'-methoxybibenzyl was present (Rycroft, Cole & Aslam, 1998). This result differs from the only other work reported for *P. exigua*, from a GC-MS study of a sample from Peru: none of the compounds was identified, although two of them were subsequently recognised by Asakawa & Inoue in *P. spinulosa* (from Belgium), and we have since shown that they are two of the methyl orsellinate derivatives mentioned earlier. A study of a wider range of material would be necessary to discover if there is any significance in these differences.

Historically at least, it appears that *Plagiochila atlantica* was liable to be confused with *P. spinulosa*. In 1996 the chemistry of only one sample of *P. atlantica*, from its now classic locality of Ariundle, had been investigated. It was shown that it was very different from *P. spinulosa* in that *P. atlantica* contained plagiochiline C, a 2,3-secoaromadendrane sesquiterpenoid, rather than DHPs (Rycroft, 1996). Many 2,3-secoaromadendranes are easy to recognise in a proton NMR spectrum because they give a doublet for H-2 and a singlet for H-3 in a characteristic region of the spectrum. Subsequently we have extended the range of the study to include samples from as far as the English Lake District to the south and the Gruinard River in Wester Ross to the north, and discovered a uniform chemical pattern consistent with the idea that the population consists of one clone only, with reproduction occurring asexually.

A set of signals from a second compound was consistently present at ca 10% of plagiochiline C; the compound responsible is a new sesquiterpenoid alcohol that we have called 'atlanticol' (Rycroft & Cole, 1998b). It is a derivative of bicyclogermacrene, the sesquiterpenoid found most frequently in liverworts (and also present in *P. atlantica*); a closely-related compound has been reported by Hashimoto *et al.* (1993) from Japanese *P. fruticosa*, but without details or characterisation data.

*P. carringtonii* also contains 2,3-secoaromadendranes. The NMR spectra of five extracts are all very similar, and in this case there are two H-3 singlets, two H-2 doublets and one aldehyde and one methyl ester signal forming two sets of signals in the ratio 2:1. These signals do not correspond to any of the known plagiochilines, and the new compounds responsible were isolated using thin layer chromatography (Rycroft, Cole & Lamont, to be submitted). They are a pair of closely-related plagiochilines, T and U, that have one of the methyl groups on the cyclopropane ring of the 2,3-secoaromadendrane skeleton oxidised to either an aldehyde or a methyl ester respectively. Previously reported plagiochilines do not have these methyl groups oxidised beyond the alcohol stage, but otherwise T and U are typical plagiochilines. Therefore the *Plagiochila* that for a long time was placed in *Jamesoniella* has secondary metabolites that, although new, are of a type characteristic of other *Plagiochila* species. Lewis (1970) demonstrated a similar point by studying sugar alcohols.

*Plagiochila porelloides* has been recorded as new for China from Changbai Mountain, at a latitude of ca 42°N and less than 350 km west-south-west of Vladivostok (Söderström *et al.*,

1999). In comparison with the foregoing, the NMR spectra of this Chinese material are more complicated, but it was possible to determine that there was a major compound that did not correspond to the known plagiochilines. Again, the new compound, plagiochiline V, was isolated, and we have been able to propose a structure where one half is the same as in the known plagiochiline M, but the other half is novel. British *P. porelloides* also contains 2,3-secoaromadendranes, but we have still to complete our studies and confirm whether it contains plagiochiline V. Our preliminary studies of British *P. asplenioides* and *P. britannica* have also found evidence of 2,3-secoaromadendranes.

Our present knowledge, though incomplete, is sufficient to produce a provisional classification of British *Plagiochilae* based on the chemotypes of Asakawa (1995). In the largest group, characterised by 2,3-secoaromadendranes, we can include *P. asplenioides*, *P. atlantica*, *P. britannica*, *P. carringtonii* and *P. porelloides*. *P. exigua* can be placed in the bibenzyl group, but we need to propose a new chemotype group (Rycroft, 1998b) characterised by the presence of DHPs (with possible sub-divisions) to accommodate *P. killarniensis*, *P. punctata* and *P. spinulosa*. This DHP group has Neotropical connections but DHPs have not (yet) been reported from any Asiatic *Plagiochila*. Of particular note is the observation that, on chemical grounds, *P. atlantica* and *P. spinulosa* would be classified in different sections.

Our work has by no means been confined to *Plagiochila* and one example concerns *Cryptothallus mirabilis* (Rycroft & Cole, 1998a). A specimen from near Glasgow gave a remarkably clear NMR spectrum (Rycroft, 1998a) of a new pinguisane sesquiterpenoid derivative, a result of chemosystematic interest in view of the fact that the first pinguisane was isolated from *Aneura pinguis*. Investigation of a second specimen involved a return visit to the site in Glen Creran where Jeff Duckett had unearthed plants in 1996. The new pinguisane was detectable in this material but the dominant component in this case was a sesquiterpenoid with a different carbon skeleton, a cyclocuparanol that has also been found in *Marchantia polymorpha* (the cyclocuparanol was also detectable in the first specimen of *C. mirabilis*). Investigation of further specimens is a prerequisite to attributing any significance to this difference.

Application of NMR fingerprinting has enabled us to obtain detailed chemical results from a range of specimens that were unimaginable until very recently. It would be interesting to apply these methods in parallel with DNA techniques to phytogeographical problems.

### Acknowledgements

Others involved in this work are cited in the references and I should like to thank them, and in particular my GC-MS colleague Dr John Cole, for their collaboration. In addition I am grateful to the many BBS members who have given much advice and encouragement to a comparatively recent recruit to the Society.

### References

- Anton H, Kraut L, Mues R, Morales Z MI. 1997. Phenanthrenes and bibenzyls from a *Plagiochila* species. *Phytochemistry* **46**: 1069–1075.

- Asakawa Y. 1995.** Chemical constituents of the bryophytes. In: Herz W, Kirby GW, Moore RE, Steglich W, Tamm Ch, eds: *Progress in the chemistry of organic natural products. Vol. 65.* Wien: Springer, 490.
- Connolly JD, Rycroft DS, Srivastava DL, Cole WJ, Ifeadike P, Kimbu SF, Singh J, Hughes MP, Thom C, Gerhard U, Organ AJ, Smith RJ, Harrison LJ. 1999.** Aromatic compounds from the liverwort *Plagiochila spinulosa*. *Phytochemistry*: in press.
- Hashimoto T, Asakawa Y, Nakashima K, Tori M. 1993.** Chemical constituents of 25 liverworts. *Journal of the Hattori Botanical Laboratory* **74**: 121–138.
- Heinrichs J, Grolle R, Drehwald U. 1998.** The conspecificity of *Plagiochila killarniensis* Pears. and *P. bifaria* (Sw.) Lindenb. *Journal of Bryology* **20**: 495–497.
- Lewis DH. 1970.** Chemotaxonomic aspects of the distribution of acyclic sugar alcohols in leafy liverworts. I. Chemical evidence for the taxonomic position of *Plagiochila carringtonii* (Balfour) Grolle. *Transactions of the British Bryological Society* **6**: 108–113.
- Meuche D, Huneck S. 1966.** Azulene aus *Calypogeia trichomanis*. *Chemische Berichte* **99**: 2669–2674.
- Rycroft DS. 1996.** Fingerprinting of plant extracts using NMR spectroscopy: application to small samples of liverworts. *Chemical Communications*, 2187–2188.
- Rycroft DS. 1998a.** Chemical comparison of liverworts using NMR spectroscopy. *Journal of the Hattori Botanical Laboratory* **84**: 105–111.
- Rycroft DS. 1998b.** *Plagiochila atlantica* F. Rose newly identified in England: chemotype classification. *Journal of Bryology* **20**: 240–242.
- Rycroft DS, Cole WJ. 1998a.** 15-Acetoxytinguisone and a cyclocuparanol from the liverwort *Cryptothallus mirabilis* Malmb. *Journal of Chemical Research (Synopsis)*, 600–601.
- Rycroft DS, Cole WJ. 1998b.** Atlanticol, an epoxybicyclogermacrene from the liverwort *Plagiochila atlantica* F. Rose. *Phytochemistry* **49**: 1641–1644.
- Rycroft DS, Cole WJ, Aslam N. 1998.** 3,4-Dihydroxy-3'-methoxybibenzyl from the liverwort *Plagiochila exigua* from Scotland. *Phytochemistry* **49**: 145–148.
- Rycroft DS, Cole WJ, Aslam N, Lamont YM, Gabriel R. 1999.** Killarniensolide, methyl orsellinates and 9,10-dihydrophenanthrenes from the liverwort *Plagiochila killarniensis* from Scotland and the Azores. *Phytochemistry*: in press.
- Söderström L, Rycroft DS, Cole WJ, Wei S. 1999.** *Plagiochila porelloides* (Torrey ex Nees) Lindenb. from Changbai Mountain, new to China, with chemical characterization and chromosome measurements. *Bryobrothera*: in press.

**MR DANIEL WRENCH (SEFTON COAST LIFE PROJECT): BRYOPHYTE CONSERVATION IN THE MANAGEMENT OF DUNE SYSTEMS - A CASE STUDY OF THE SEFTON COAST**

The Sefton Coast, north-west England, is historically a well-known stronghold for several important bryophytes. In 1995 two surveys by Dr M. Newton (JNCC Report No 239) of Red Data List bryophytes and stoneworts found only four of the seven previously recorded Red Data List bryophytes. *Bryum warneum* and *Petalophyllum ralfsii* were found to have reasonably strong populations. However, *B. neodamense* was sparse, and *B. mamillatum* (tentatively identified) was confined to a single small site - its only recent British record. *B. knowltonii*, *B. uliginosum* and *B. maritimum* were not refound. It is probable that *B. maritimum* is now extinct on the Sefton Coast.



Further survey work on *Petalophyllum* was undertaken by myself in 1997, with some incidental records also made of *B. neodamense*. Populations of *Petalophyllum* were confirmed to be strong, albeit rather localised. *B. neodamense* was found to be somewhat more frequent than previously thought. Detailed maps were made of all known populations using a computerised Geographic Information System (GIS). This system allows data such as species location and abundance to be entered into a database format and then displayed and analysed by their geographic attributes. Aerial photography, either displayed on screen or printed out, is a rapid and accurate means of location in an otherwise featureless landscape. Species records can be represented by a chosen symbol on enlarged aerial photos. Relocation of sparse or scattered records benefits from the high resolution of the system, providing accuracy of a metre or less.

Primarily as a guide for the land managers, a report was produced giving precise locations and photographs of *Petalophyllum* populations with an estimate of plant numbers (based on counts of individual thalli) plus other field notes. This report also listed possible threats and management recommendations for each population. The report also assisted in providing the information required by the Sefton Coast LIFE Project to produce a conservation strategy for *Petalophyllum* at Sefton.

Current management of dune slack habitat on the Sefton Coast rarely shows any consideration toward the conservation of bryophytes. This may be a consequence of the lack of recording effort and limited awareness of the conservation requirements of bryophytes, but may also reflect the level of importance given to bryophytes by conservation managers compared with other groups such as herptiles and birds. Natterjack Toad conservation is the main reason for management of many dune slacks in the frontal dunes of the Sefton Coast. This often involves heavy machinery re-profiling or excavating new dune slacks, and the use of herbicides to treat scrub re-growth. While this form of management is likely to continue in the short term, it is hoped that future management will give greater emphasis to dune geomorphological processes. Such management may include the implementation of appropriate grazing regimes and the spatial and temporal zoning of activities associated with recreation, such as beach car parking. The environmental impact of beach cleansing activities on dune processes also requires careful consideration. Most dunes in Britain are mature and in a phase of sediment recycling. Natural dune slack creation and development should therefore be encouraged as a desirable quality.

Footpath management is also an important consideration, particularly in areas of little or no grazing. Light levels of trampling can keep some dune slack areas open in structure that may otherwise become dominated by scrub and coarse grass species. While it is necessary to ensure heavy trampling does not destroy valuable habitat, the construction of boardwalks should only be undertaken after an adequate impact assessment and for overriding recreational management reasons. This is because boardwalks cover valuable habitat, remove trampling pressure, and encourage scrub to spread right up to the edge of the boards.

The most critical factor on the Sefton Coast for several of the Red Data Book bryophytes is water quality. The stronghold for *Petalophyllum* and several other bryophytes at this site is flooded regularly by eutrophic water from a nearby lake. Aside from the direct effects this may be having on these species, indirect effects include an increased vigour of vascular plants and growth of an algal mat which coats the ground when the water subsides. This algal mat then either hardens on drying or is puddled into a muddy mess.

An innovative recording approach is required for important dune bryophytes in the face of the environmental stress and rapidly changing conditions that occur in sand dune systems. This must aim to provide an adaptable and updatable system with a level of detail that can translate the information gathered in a manner that is accessible to land managers.

\* \* \* \* \*

#### FIELD EXCURSION TO CHARNWOOD FOREST, 20 SEPTEMBER 1998

In warm autumn sunshine, 24 of us explored the grassland and woods near Charnwood Lodge (VC 55). The way from the cars to the woods led past a dark Precambrian rock outcrop with *Barbilophozia atlantica*\*, *Ptilidium ciliare* and *Racomitrium heterostichum*, showing at once that this was not an ordinary part of the English Midlands. Our leader, Dennis Ballard, walked us briskly for about half a mile to Burrow Wood, but we tarried by the way and found *Ulota bruchii* (*U. crispa* var. *norvegica*) c.fr. In the wood, we saw several plants that are often thought of as western, including *Cryphaea heteromalla*\* on elder, *Hypnum andoi* (*H. mammillatum*) c.fr. on a stone wall, and *Lejeunea lamacerina*\*, *Scapania undulata* and *Heterocladium heteropterum* var. *heteropterum*\* in a small stream gully. *Dicranum tauricum* on dead wood, however, indicated that we were still some distance from the west coast, as did the presence of plentiful *Plagiothecium curvifolium* and *Orthodontium lineare*. In nearby Cat Hill Wood, there was a steep shaded rock outcrop with more *Barbilophozia atlantica* and *Racomitrium heterostichum* and also *Barbilophozia attenuata*, *B. floerkei* and plenty of a *Cephaloziella* without perianths.

Another party broke away at an early stage and visited some woodland near a reservoir southwest of Charnwood Lodge. There was some damp ground with *Polytrichum commune* and three species of sphagna. They also found *Brachythecium plumosum* and *Scapania undulata*. Richard Fisk and Rod Stern found *Calypogeia arguta* in a ditch in a nearby plantation, but did not collect it because they had no reason to suppose that the species would be bracketed in the new *Census Catalogue*.

Two parties went to look for *Syntrichia* (*Tortula*) *amplexa*. *S. amplexa* was duly refound in three separate places, none of which was its *locus classicus*, which has now become a deep hole in the ground with water at the bottom. On the advice of Dennis Ballard, one group went to look for it in an opencast mine area east of Moira (SK3215). After much searching, they eventually found it in the lower part of the site, and in the process recorded *Cephaloziella divaricata*, *C. hampeana*\*, *Fossombronina incurva*\*, *Riccia sorocarpa*, *Aloina ambigua* (*A. aloides* var. *ambigua*), *Bryum dunense* and a scrap of *Sphaerocarpos*, which was not identifiable to species. The other party found *S. amplexa* in small quantity near Lount (SK3819) and more plentifully in a ditch by a stone and earth dump near Boothorpe (SK3117). In the last locality, Harold Whitehouse found *Ephemerum serratum* var. *serratum*\* with immature capsules on bare soil near a stream and successfully grew it on to achieve an identification.

While the cognoscenti were especially gratified to see that great speciality of the area, *Syntrichia amplexa*, there was pleasure for all in the beauties of Charnwood Forest, and for some in making new records for the vice-county. Some of these update old records that had been bracketed in the new *Census Catalogue*, but others are completely new. We are grateful to Dennis Ballard

for organising an interesting meeting and for showing us that there are many good bryophytes to be found in the centre of England.

MARK HILL

---

## REPORTS OF LOCAL MEETINGS

### THE BORDER BRYOLOGISTS, 1997

During the latter half of the 20th century, field botanists have become evermore preoccupied with mapping the geographical distributions of species, an interest which causes us to look for plants in places which we would otherwise have passed by. Every so often we find unusual plants in unexpected places, yet many more species doubtless remain overlooked, even when a site is searched as thoroughly as time, weather and inclination allow. Most botanists know they cannot identify every plant, and rightly fear that they overlook other species, while our most accomplished field botanists often over-estimate their own abilities to exhaustively record a site in the course of one visit. It is hard enough to comprehensively record the more conspicuous vascular plants in a 10 km square, and comparable coverage for cryptogams is even more difficult because of their diminutive stature and the great similarities of some congeners, which consign diligent botanists to hours of labour at the microscope after a collecting spree.

How many times must a site or hectad be visited before its bryodiversity is comprehensively catalogued? How many habitats have to be scoured? How much do botanists differ from one another in what they recognise and reliably identify? And to what extent does season influence which bryophytes one notices on a particular outing, either because of temporal variations in the appearances of bryophytes themselves, or because vascular plants obscure them as they grow, and expose them to view again when they die back?

One seasonal influence affecting the detection of bryophytes became all too apparent on our first outing in 1997 at Wilstone, Caer Caradoc, near Church Stretton, for snow lay all around, isolating us from the carpet of cryptogams beneath. Despite apprehensive discussion about whether we would find anything at all, six arctic adventurers passed the day in continuing good spirits. The green lane we set out along, though white for our visit, nevertheless gave us *Cryphaea heteromalla*, *Syntrichia* (*Tortula*) *latifolia*, *Eurhynchium praelongum* var. *stokesii* and *Plagiothecium curvifolium*. After a cool picnic we warmed up by splashing about in a wet flush, where diligence was rewarded with *Sphagnum fimbriatum*, *Hamatocaulis* (*Drepanocladus*) *vernicosus*, *Fossombronina wondraczekii* on the edge of a peat-cutting, and *Bryum alpinum* beside the track. This last species peters out on the English side of the Welsh border, but also turned up later in the year on Brown Clee Hill.

February found us at Soudley Quarry, also near Church Stretton. We passed the morning exploring stream, quarry and woodland. The world of bryology suffered no revolution as we exerted ourselves; the vicinity of the stream provided *Leskea polycarpa*, *Lejeunea cavifolia* and *Metzgeria fruticulosa*, with *Bryum subelegans* (*B. flaccidum*), *Brachythecium velutinum*,

*Plagiothecium curvifolium* and *Rhynchostegiella tenella* nearby. *Didymodon* (*Barbula*) *vinealis* turned up too; this moss is very similar to the commoner *D. insulanus* (*B. cylindrica*), but thins out westwards in our region. Our afternoon passed pleasantly and peacefully along the paths and amongst the oak trees of Helmeth Wood. *Bryum caespiticium*, *Pogonatum urnigerum* and *Zygodon viridissimus* var. *viridissimus* went on the list, and a pile of clinker and builder's refuse in the field at the entrance to the wood was sprouting *Bryum bicolor* with prominent bulbils in the axils of the leaves.

For our excursion in early March we crossed into Radnorshire to meet Ray Woods at the Marteg Gorge, Gilfach. Few Border Bryologists remain surprised at the dramatic bryological difference travelling 40 miles west can make. Plants which wouldn't - and cannot - be seen dead in England spring into prominence in the wetter districts of east Wales. Even so, we found ourselves spoilt at Marteg, as more than 100 species came to light during the day. Choice among these was *Isothecium holtii*, whose elongated purplish shoots grew next to *I. myosuroides* on boulders in the ravine. Rock ledges away from the water sported bright green cushions of *Leucobryum juniperoideum* and *Cynodontium bruntonii*, with *Sanionia uncinata* (*Drepanocladus uncinatus*), *Ptilidium pulcherrimum* and *Metzgeria temperata* close by. *Hygrohypnum ochraceum* came off a boulder by the rushing water, and *Schistidium alpicola* s.l. likes it just as fast and wet. By quieter, less rocky reaches of river, shiny sheets of *Hookeria lucens* impressed everyone, and *Oligotrichum hercynicum* turned up too. The leaves of Smooth-stalked Sedge *Carex laevigata* made a prominent feature of the woodland's ground flora even in late winter, and Ray pointed out a withered Wood Bitter-vetch *Vicia orobus* on the riverbank. Away from the river, on dripping rock near the entrance to a tunnel, *Trichostomum tenuirostre* (*Oxystegus tenuirostris*) furrowed brows at first, but succumbed later to indoor investigation.

By the end of March we had retreated to Shropshire again, where laneside and the deciduous woodland of Sallow Coppice, near Craven Arms, yielded *Homalia trichomanoides*, *Chiloscyphus polyanthos*, *Radula complanata* with very fine perianths, *Orthotrichum pulchellum*, *Bryum pallens*, *Brachythecium populeum*, *B. velutinum* and *Didymodon vinealis*. *Trichostomum brachydontium*, *Neckera crispa*, *N. complanata* and *Rhynchostegiella tenella* attested lime in the ground. Lunch was taken at a high-level Faculty meeting in The Crown at Wistanstow to chew over next year's programme, but fortunately our bryological faculties remained sufficiently intact to tackle the west end of the Onny Trail in the afternoon, just up-river from where the BBS explored on their AGM weekend three or four years ago. *Eurhynchium* (*Cirriphyllum*) *crassinervium*, *Ulota crispa*, *Homalia trichomanoides* and *Tortula muralis* var. *aestiva* (as well as var. *muralis*) went onto the list.

A measure of success for a Local Interest Group such as ours comes when members from the lower reaches of the learning curve develop sufficient confidence to explore and record alone on extra-curricular jaunts. One reprobate from the ranks even strayed south over the Shropshire border, briefly disturbing the somnolent repose of Bryologia Herefordensis. The National Nature Reserve in Downton Gorge, despite having hosted several visits in the past from crack cryptogamists, nevertheless surrendered several new finds: *Frullania fragilifolia*, *Cololejeunea rossettiana* (not seen in Herefordshire since Miss Armitage's day, 80 or more years ago), *Fissidens crassipes* in the River Teme, and *Hyocomium armoricum* - common enough in Wales, but scarce this far east. A minute acrocarp from the foot of Castle Bridge in the gorge proved impossible to determine, being sterile. A battery of experts agreed it was a *Seligeria*, but the

leaves had rounded apices, quite unlike those of *S. recurvata* which grows in plenty in the gorge.

Elsewhere in north Herefordshire, *Trichocolea tomentella* leapt into a packet on Wigmore Rolls, *Diplophyllum obtusifolium* came off a bank at the side of a forestry track on Gatley Long Coppice, Leinthall Starkes (a first record for Herefordshire), *Hygrohypnum luridum* was recorded from the River Lugg above Aymestrey, and *Microlejeunea (Lejeunea) ulicina* was found on an ash tree in the Fishpool Valley at Croft.

All this romping round the Herefordshire countryside off the lead couldn't go on, of course: there's no telling what might get picked up next. Sure enough, the air turned blue when Our Man in Shropshire caught wind of what was afoot, and the errant explorer was swiftly brought to heel with some well-aimed blows of the tongue. But the whiff of freedom had become addictive, and the wilful wandering continued apace in south Shropshire, where the flanks of Titterstone Clee Hill proved productive, with *Leptodontium flexifolium*, *Grimmia domniana*, *Heterocladium heteropterum* var. *flaccidum* and *Plagiomnium cuspidatum* from the common on the east side of the hill. *Kurzia pauciflora* (with perianths) turned up in Cramer Gutter, and *Acaulon muticum* appeared on an anthill above Knowle Wood.

But this is a team report, and with fall of leaf after the summer recess, our class of cryptogamists met again in October to browse among the bryophytes at Cound, near Cressage, south-east of Shrewsbury. The church wall kept us occupied at the start, with *Didymodon rigidulus (Barbula rigidula)* among a diverse array of other acrocarps. *Bryum imbricatum (B. inclinatum)* and *Trichostomum brachydontium* also found their way into packets, and wooded streamside supplied *Leskea polycarpa* and *Plagiothecium laetum*, a moss very like *P. curvifolium*, but with leaf tips not curving down when moist. Nearby, a strange horsetail attracted puzzled glances, and seemed to be the hybrid between Field Horsetail *Equisetum arvense* and Water Horsetail *E. fluviatile* (Shore Horsetail *E. x litorale*). In a cabbage-field we found *Tortula acaulon (Phascum cuspidatum)* and *Ephemerum serratum* var. *minutissimum*.

For our last meeting of the year we went south to Common Hill near Fownhope, south-east of Hereford. Fifteen folk turned up, some from as far afield as Aberystwyth, and our activities took on the appearance of a rugby scrum as we swarmed over an old orchard at the Cider House, and unploughed hilly pasture nearby. Ancient apple trees supported a fine collection of epiphytes, while in the pasture *Fossombronia pusilla* and *Tortula acaulon* owed their occurrence to the earth-moving activities of moles and ants. Thin turf and bare soil over the calcareous Silurian rock of the Woolhope Dome on the scarp-side of Common Hill supported *Bryum klinggraeffii*, *Homalothecium lutescens*, *Racomitrium canescens*, *Ditrichum gracile (D. crispatisimum)* and *Trichostomum tenuirostre*, with *T. brachydontium* and *T. crispulum* growing next to each other. We finished the day in gathering gloom at Rudge End Quarry, adding *Brachythecium populeum* and *Eurhynchium schleicheri* to the day's tally.

What impact have these activities had on the known occurrences and distributions of bryophytes in the Marches? When the central Biological Record Centre's disks flopped onto the County Recorders' doormats recently, carrying details of regional bryological records, it became apparent that the recording of mosses and liverworts in our region has been uneven and incomplete. A few attractive sites have been repeatedly explored and well recorded, but our extant corpus of records gives a misleading impression of which species are common and

widespread in the border counties. Bryologists can be sure of an exciting haul from an ancient woodland or a calcareous flush - habitats which understandably attract particular attention. But the distribution maps in the *Atlas of the Bryophytes of Britain and Ireland* do not tell us which are the frequent species in the commonest habitats of our region: sown pastures, roadside verges, suburbia etc. Species shown in the *Atlas* as being widespread, but thinly distributed, may turn up much more frequently than currently supposed if we alter our search-patterns and strategies for recording. In Shropshire nearly 20% of all the 10 km square records have been gathered in the last five years, and if this rate of accreting records continues, we may be sure of substantially altering our understanding of what occurs in our area, and where, and how frequently.

How often is failure to find species on a site or in a grid square as reliable as their reported presence elsewhere? Our globe may have been charted long since, with coastlines and continents satisfactorily mapped in olden times, as the world turned pink. But much exploring and mapping of a more subtle kind remain to be done before we can be as confident of where many widespread species do not grow as we can of where they do. The distribution maps in the *Atlas of the Bryophytes of Britain and Ireland* show blank 10 km squares which our experiences are beginning to expose not as boundaries or gaps in occurrence, but rather as gaps in our understanding of the distribution of bryophytes - markers of ignorance rather than absence. When white spots indicate absence as certainly as black dots indicate presence, we can regard them as scientific facts, as we so like to do when admiring our beloved distribution maps. So fill your pockets with packets, hang a lens round your neck, and go into the countryside to look for new plants in familiar places, and familiar plants in new places.

MARK LAWLEY

## THE BORDER BRYOLOGISTS, 1998

‘Bother,’ said the botanist. He had been working hard indoors all morning. ‘Hang the housework,’ and he bolted outside. Through meadows he rambled, along quiet lanes, among the rustling trees.

....Soft breezes caressed the brow of Kenneth Grahame’s workshy wanderer on his first ramble of the year, but a biting north wind practically froze the pants off ten Border Bryologists on their January jaunt up the western slopes of Hopesay Hill, west of Craven Arms, in south Shropshire. Hopesay Hill came into the National Trust’s possession in 1952, a serendipity which saved it from the post-war excesses of agricultural development, creating an ecological time-warp of rough grazing around springs and flushes, home to a substantial, though unremarkable, array of mosses and liverworts: *Sphagnum denticulatum* (*S. auriculatum*), *S. capillifolium*, *S. palustre*, *S. fallax* (*S. recurvum* var. *mucronatum*), *S. subnitens*, *Climacium dendroides*, *Calliergon stramineum*, *Warnstorfia exannulata* (*Drepanocladus exannulatus*), *W. fluitans* (*D. fluitans*), *Drepanocladus revolvens*, *Riccardia chamedryfolia*, *R. multifida*, *Odontoschisma sphagni*, *Scapania irrigua*, *S. undulata*, *Calypogeia muelleriana* and *Cephaloziella rubella*.

In February we met in north Herefordshire to explore Brimfield and Wyson Commons near Woofferton, south of Ludlow, and beef up a very modest list of bryophytes recorded from SO56 since Binstead’s day. Brimfield is an old-style common where cattle and sheep crew-cut the vegetation. Squatters’ cottages encircle the grazing area, and the sight of eleven crazed

cryptogamists crawling over anthills and through saturated fen pushed the natives' curiosity beyond bursting point. As the curtains twitched, two girls came over to find out what was afoot, and then began filling their egg-boxes with mosses, and delighting to peer through a hand-lens for the first time. *Rhodobryum roseum* grew on the anthills with *Polytrichum juniperinum* and *P. formosum*. On the wetter ground in summer a botanist will find Bog Pimpernel *Anagallis tenella*, Tubular Water Dropwort *Oenanthe fistulosa*, Flat-sedge *Blasmus compressus* and a variety of commoner sedges, but the bryophytes proved less noteworthy: *Campylium stellatum*, *Fissidens adianthoides*, *Palustriella commutata* (*Cratoneuron commutatum*), *C. filicinum*, *Philonotis fontana*, *Bryum pseudotriquetrum* and *Riccardia multifida*. Perhaps the intensive grazing and poaching of the ground deterred more delicate species.

We passed the morning of our March meeting exploring an oak wood at Mainstone, west of Bishop's Castle. *Metzgeria fruticulosa*, *Encalypta vulgaris*, *Orthotrichum stramineum*, *Plagiothecium succulentum* and *Zygodon rupestris* (*Z. baumgartneri*) went on the list. *Z. rupestris* has turned up several times in diverse localities during the year; perhaps, like *Bryum subelegans* (*B. flaccidum*), it is a commoner epiphyte in our region than was previously thought. After lunch we changed habitat and venue to explore wet moorland at Rhos Fiddle in the Kerry Hills, near the westernmost extremity of Shropshire. As time ran out we had not done justice to this interesting site, although *Ditrichum gracile* (*D. crispatissimum*) came to notice before we vacated the field for high tea.

1998 repeated the previous year's pattern of extra-curricular excursions, and a number of *ad hoc* explorations brought interesting developments in our understanding of Shropshire's bryoflora. Early in the year we explored a disused quarry at Farlow, near Oreton, north-west of Cleobury Mortimer, where a band of Carboniferous Limestone outcrops. The quarry is on private land, but we secured the required permission after a felicitous exchange in the pub at lunchtime, where the resident dog made off with a mouthful of moss gathered that morning. Efforts to retrieve it caused considerable merriment amongst the natives, one of whom had an aunty who owned the quarry in question. She, apparently, had gone shopping for the day, so would be none the wiser if we looked over her ground. Only two elderly nags, who had not seen our like before, balefully protested the disruption to their routine, as half-an-hour's grubbing about on lime-rich rock and soil yielded *Aloina aloides*, *Encalypta streptocarpa*, *E. vulgaris*, *Microbryum* (*Phascum*) *curvicolle* with its arcuate seta, *M. rectum* (*Pottia recta*) with hardly any seta at all, *M. starckeanum* (*Pottia starckeanum* ssp. *starckeanum*), *Bryum klinggraeffii*, *Leiocolea badensis* and *L. turbinata*.

A week or two later, mixed woodland, tracks, streams and pasture on the north-eastern slopes of Brown Clee Hill produced *Didymodon spadiceus* (*Barbula spadicea*), *Fissidens viridulus*, *Racomitrium aciculare*, *R. affine*, *Zygodon rupestris* and *Plagiomnium ellipticum*.

Flushed with these successes, the same three stooges sallied out the following week to Clun, where the car-park and castle grounds gave us *Microbryum starckeanum* and *Didymodon luridus* (*Barbula trifaria*). Up the road at Bicton, an old quarry contained *Hedwigia ciliata* s.l., but the day's activities were curtailed by the demise of our leader, who had over-imbibed at lunchtime and spent the afternoon resting in the car, listening to the Test Match. The tidings from Trinidad were suitably sobering.

In a seldom-visited and little-known upland corner at the most westerly extremity of Shropshire, where the Rhuddwr stream feeds the upper reaches of the River Teme, *Calliargon giganteum*, *Schistidium alpicola* s.l., *Heterocladium heteropterum* var. *heteropterum* and *Frullania tamarisci* grew in a wooded gorge. Above the stream, a forestry plantation provided *Ptychomitrium polyphyllum*, a moss which, liking it wet and westerly, is common on many Welsh hills, but peters out in England. Nearby, *Diplophyllum obtusifolium* made its Salopian debut. Very similar to its ubiquitous congener, *D. albicans*, and where it occurs nearly always growing with its commoner cousin on steep banks of soil at the sides of forestry tracks, this liverwort subsequently came to notice at the Rhiddings in the next hectad to the east (SO28), further south in Shropshire at Kinsley Wood, near Knighton (SO27) and in Bucknell Wood (SO37), as well as in north Herefordshire on the High Vinnals, near Ludlow (SO47) and at Sned Wood, Aymestrey (SO46). With these records coming in as many weeks, perhaps we should regard *D. obtusifolium* as a normal member of the flora of steep, disturbed soil-banks at the side of forestry roads in the Marches. *D. obtusifolium* looks somewhat smaller and fresher than *D. albicans*, and remains flat against the soil instead of curling up its leaves, so is not too daunting to distinguish in the field, although fresh young *D. albicans* may fool the unwary.

In March, needing a quiet afternoon after liquid lunch in Newcastle-on-Clun, we tottered along a back lane to the churchyard, with its pleasant, open aspect on a well-lit, south-facing slope. Choice among the gatherings on and between the graves were *Pseudocrossidium revolutum* (*Barbula revoluta*), *Didymodon luridus*, *Entosthodon* (*Funaria*) *fascicularis*, *Rhynchostegiella tenella* and *Scleropodium cespitans*.

A summer's break from the rigours of recording vascular plants found us at Cramer Gutter, a Shropshire Wildlife Trust reserve on Catherton Common, east of Titterstone Clee Hill. This marsh had previously attracted surprisingly little attention from bryologists, despite the fact that really wet mires come few and far between in the Midlands, and Cramer Gutter's list of bryophytes continues to grow with each visit. Pottering contentedly about in warm sunshine, and recalling the fading light of a cold winter's afternoon on our previous visit to the Gutter, we added to the reserve's list several liverworts worthy of notice, including *Cephalozia connivens*, *Kurzia pauciflora* (previously also found on Catherton Common to the south of the stream), *Odontoschisma sphagni* and its gemmiferous congener *O. denudatum*, and *Riccardia latifrons*, as well as *Dicranum bonjeanii*. *Mylia anomala* and *Sphagnum tenellum* had already been recorded from the reserve. Wet flushes to the south of the stream added *Drepanocladus revolvens*, *Scorpidium scorpioides* and *Calypogeia sphagnicola*, with *Didymodon spadiceus* and *Tortella tortuosa* nearby.

The frontiers of field-science were also pushed a little further back in north Herefordshire during 1998, with a *Gymnostomum* appearing on calcareous rubble and mortar at Nash Quarry, near Presteigne. Nash Scar was the scene of many a triumph for Binstead a century ago, but the *Gymnostomum* is new, and at first defied expert analysis. However, belated discovery of gemmae among the leaves settled it as *G. viridulum*, whose shorter, more ovate leaves also help to distinguish it from the very similar *G. calcareum*. *G. viridulum* then turned up at Mocktree Quarry near Leintwardine; interestingly, the quarries at Leintwardine and Nash are also north Herefordshire's only two sites for Pale St John's-wort *Hypericum montanum* - an example of a moss and a flowering plant agreeing what's what.



In Nash Wood, above the quarry, *Cephalozia lunulifolia* and *Calypogeia muelleriana* embraced each other on a rocky outcrop. Long ago, Miss Armitage found *Calypogeia azurea* in the same wood.

The landscape of the Welsh Marches is littered with little abandoned quarries, sources long ago for building and road stone. Nowadays they attract bryologists as nectar attracts bees, particularly where there is lime in the rock and trees do not cast unbroken shade. Just such a quarry in Rotting Wood on Whettleton Hill, south of Craven Arms, turned up *Microbryum curvicolle*, *Didymodon ferrugineus* (*Barbula reflexa*) and *Gyroweisia tenuis*.

With such a wet autumn, some of us took advantage of the farmers' inability to promptly replough their stubble, turning up *Acaulon muticum* and *Bryum violaceum* from a fallow field on the Herefordshire side of Bringewood Chase, near Ludlow, while in south Shropshire, *Ephemerum serratum* var. *minutissimum* came before us at Wistanstow and near Red Wood, north of Clun. The latter field also carried *Acaulon muticum* and *Fossombronina wondraczekii*. In plantations nearby, *Brachythecium salebrosum* and *Blasia pusilla* grew by the forestry tracks.

The Border Bryologists resumed their formal programme at Ratlinghope in October, exploring Bilbatch on the west side of the Long Mynd. With several bryological débutantes in the party, our outing turned into an easy-going training day for the rising stars of the 21st century. 'Is this a Final Notice?' .... 'Mm, *fontana*, I think'. The warm autumn sunshine encouraged a relaxed approach throughout the day, with a good variety of species from the stream, wet flushes, grassy banks, alder trees and boulders. Edna Allbut found *Schistostega pennata* glowing in the dark recesses of fox-holes on the hillside. *Ditrichum gracile*, *Calliergon cordifolium*, *Bryum pallens* and *Trichostomum crispulum* also came before us.

Our final meeting of 1998 became the annual trespass into Wales, to meet Ray Woods at Harley Dingle, near New Radnor. The Welsh contingent pushed numbers up to 14, and bryophytes proved similarly diverse and numerous in the valley, prospering from the combination of lime from below and rain from above. The valley looked full of liverworts. *Jungermannia hyalina*, *Trichocolea tomentella*, *Saccogyna viticulosa*, *Plagiochila punctata* and *Riccia subbifurca* sprang to our attention, and *Barbilophozia hatcheri* became a first vice-county record for Radnorshire. The mosses chipped in with *Sphagnum teres*, *Fissidens celticus*, *Diphyscium foliosum*, *Plagiobryum zieri*, *Racomitrium ericoides*, *R. elongatum*, *Brachythecium glareosum*, *Philonotis calcarea* and *Hygrohypnum ochraceum*. Bewitched by the bryodiversity, we moved barely 300 yards in the day, not even coming close to the rocks further up the valley which had been reserved for our inspection. Instead we tripped round to the sheltered gorge at Water-break-its-neck for half-an-hour before the light failed. Here *Metzgeria temperata* and *Plagiochila spinulosa* promenaded over the rocks and trees. These delicate plants depend upon the shelter and humidity of the moist ravine, and shun the desiccating effects of wind-blasted open ground.

Sheltered gorges, like abandoned quarries, are the stuff of bryological dreams, but the meadows, mires, moors, rills and rivers, waysides and woods of the Marches all have variety and interest, and a botanist in the Welsh borders loses track of time as he wanders the quiet byways and streamsides, where the wind softly whispers in the willows.

\* \* \* \* \*

If you would like a copy of our programme for 1999-2000, please send a stamped and addressed envelope to Mark Lawley, 12A Castleview Terrace, Ludlow, SY8 2NG in September. You are also most welcome to suggest venues for meetings.

MARK LAWLEY

## **SOUTH-EAST GROUP**

### **Bookham Common (VC 17)**

The first South-east group meeting for 1997/98 took place at Bookham Common on 4 October, the party comprising Rod Stern, Derek Hill and myself. Bookham has an impressive history of natural history recording going back to the early 1940s, and although the main purpose of the day was to provide the National Trust with an updated species list, it also gave Rod Stern the opportunity to re-visit a site where he carried out survey work during the 1970s.

One hundred and fourteen taxa have previously been recorded at Bookham over a lengthy period. We managed to find 57 species (49 mosses and seven hepatics) on our visit despite the dry conditions. The site has a variety of habitats, including oak woodland on clay, open grassland areas, and several ponds and stream beds. A railway bridge yielded *Grimmia trichophylla* early on, a species new to the site. Several stands of elder provided *Orthotrichum affine* and *O. diaphanum*. *Riccia fluitans* was recorded from one of the large pond sites. Other hepatics seen included *Metzgeria furcata*, *Frullania dilatata*, and from a clay ditch bank *Fossombronina pusilla*, another new taxon. Moss records included *Dicranum tauricum*, *Hypnum jutlandicum* and *Ulota bruchii* (*U. crispa* var. *norvegica*) on *Salix caprea*, a third new record for Bookham.

Bookham is a site that requires more work to update the species list, and there is also scope for further bryological study. I would like to thank Rod Stern for making our visit very enjoyable and for his suggestions for a new Bookham bryophyte flora, which I hope to be able to produce for the future.

PAUL ADAMS

### **Corrigendum - *Atrichum angustatum* at Kingswood**

In *Bulletin* 69: 38 it was reported that *Atrichum angustatum* had been refound at Kingswood, near Lenham, Kent, VC 15 (TQ8451) during the meeting of the South-east group on 14 December 1996. However, Malcolm Watling has since re-examined the material, and it is simply *A. undulatum*.

DAVID NEWMAN

## FUTURE MEETINGS OF THE SOCIETY

Members are reminded to read the BBS Safety Code, which is published in *Bulletin* 43 and is available from local secretaries for inspection during BBS meetings. Please inform local secretaries well in advance if you intend to join a meeting, even if you are not staying at the headquarters hotel.

### SPRING FIELD MEETING 1999, Abergavenny, Gwent, 14-21 April

Local secretary: Dr Jonathan Sleath, The Villa, Kingstone, Herefordshire, HR2 9ET; tel: 01981 251634; e-mail: jonathan.sleath@virgin.net.

The last time the Society met in this area was the Brecon meeting of 1984, and before that the Ross meeting of 1968, so I hope we will be able to visit some interesting sites, new to most of those attending. We will concentrate on localities in the Brecon Beacons and the Black Mountains. This will include the upland Old Red Sandstone crags of Craig Cerrig Gleisiad NNR (*Jungermannia borealis*, *J. subelliptica*, *Eremonotus myriocarpus*), the north-facing wooded Carboniferous Limestone escarpment of Craig y Cilau NNR (*Funaria muhlenbergii*, *Seligeria trifaria*), and relatively unknown sites in the Black Mountains, including Cwmyoy (*Grimmia longirostris* (*G. affinis*)) and the upper Grwyne valley and reservoir. *Bryum gemmiparum* has been recorded from the river Grwyne, where we hope to refind it, and also at Llangynidr bridge by the BBS in 1984. There will also be a day spent on the acid conglomerates of the lower Wye valley.

The venue for this meeting will be the Ty'r Morwydd Environmental Study Centre in Abergavenny. I would encourage all those planning to attend to stay here, although of course other places are available locally. This establishment provides reasonably priced accommodation similar to that offered by the Field Studies Council, and is approved by the Wales Tourist Board. Laboratory facilities will be available, and there is a library with a respectable bryological component. The prices per day will be B&B £14.60, dinner £7.00 and packed lunch £3.50.

Booking will be via the local secretary, who would be grateful for all those planning to attend to make contact as soon as possible, if they have not already done so.

### SUMMER FIELD MEETING 1999, Waterford and Wexford, Ireland, 7-21 August

Local secretary: Dr Grace O'Donovan, Department of Environmental Resource Management, Agriculture Building, University College Dublin, Belfield, Dublin 4, Ireland; e-mail: godonov@ollamh.ucd.ie.

The Society has not visited Ireland for some years, and this promises to be a memorable and important meeting, concentrating on under-explored but potentially rich parts of the country. More details will follow in the next *Bulletin*.

**ANNUAL GENERAL MEETING AND SYMPOSIUM MEETING 1999, University of Manchester, 10-12 September**

Local secretary: Dr Sean Edwards, The Herbarium, Manchester Museum, The University, Manchester, M13 9PL; tel: 0161 2752671; e-mail: sean.edwards@man.ac.uk.

The AGM and paper-reading meeting will take place at the University of Manchester, with a Sunday excursion into the limestone dales of the Peak District. More details will be given in the next *Bulletin*.

**BRYOLOGICAL WORKSHOP 1999, Liverpool Museum, 23-24 October**

Local secretary: Dr John Edmondson, Keeper of Botany, Liverpool Museum, William Brown Street, Liverpool, L3 8EN; tel: 0151 2070001; e-mail: john.edmondson@dial.pipex.com.

The theme of this year's workshop will be bipolar bryophytes. Many genera, and indeed species, of mosses and liverworts are represented in the temperate and cold latitudes of both northern and southern hemispheres. The purpose of this workshop is to use the extensive herbarium of Liverpool Museum, which includes many southern hemisphere collections, to examine the differences and similarities in these bipolar bryophytes. Participants are also encouraged to bring their own material. This promises to be a fascinating meeting, with the opportunity to take part in some interesting and original work.

**SPRING FIELD MEETING 2000, Bude, North Cornwall, 12-19 April**

Local secretaries: Mrs Jean Paton, Fair Rising, Wagg Lane, Probus, Truro, Cornwall, TR2 2JU; tel: 01726 882164. Dr David Holyoak, 8 Edward Street, Tuckingmill, Camborne, Cornwall, TR14 8PA; tel: 01209 716042.

The relatively little-known north coast of Cornwall promises to be an excellent venue for the first meeting of the new millennium. We will be based at the Burn Court Hotel, Bude. More details will appear in future *Bulletins*.

---

**LOCAL MEETINGS PROGRAMME, 1999**

**NORTH WESTERN NATURALISTS' UNION & BRITISH BRYOLOGICAL SOCIETY  
BRYOPHYTE AND LICHEN GROUP**

All meetings commence at 10.30 am. Map references are meeting places. Please confirm date and venue with contacts if you intend to join us. Bring packed lunch and ensure that you are properly equipped.

**Contacts:**

NWNU	Mr E.P. McCann	0161 962 1226
BBS	Mr A.V. Smith	01663 744499

Sunday 21 February. BIRK ACRE; SD571152. Messrs A. & N. Bamforth.  
 Saturday 13 March. GRAIG FAWR; SJ056801. Mrs W. McCarthy.  
 Saturday 27 March. CAVE DALE; SK127827. Prof. B.W. Fox.  
 Saturday 24 April. MERSEY FOREST (Winsford); SJ657669. Mr M.A. Walton.  
 Saturday 22 May. TURTON MOOR; SD704185. Dr M.E. Newton.  
 Saturday 12 June. WALKER FORD; SD676118. Mr J. Lowell.  
 Saturday 24 July. RATTEN CLOUGH WOOD; SD888271. Mr J. Lowell.  
 Saturday 7 August. BERESFORD DALE (Hartington); SK126600. Dr M.E. Newton.  
 Saturday 25 September. CWM IDWAL; SH653602 (lay-by). Mr G. Battershall.  
 Saturday 23 October. GARDOM'S EDGE; SK280721. Miss J. Egan.  
 Saturday 20 November. TURN SLACK CLOUGH; SD934173. Messrs A. & N. Bamforth.  
 Saturday 4 December. MIDDLEWOOD WAY; SJ947844 (Pool House Road). Mr A.V. Smith.

---

### OTHER BRYOLOGICAL MEETINGS, 1999

- 23-25 April 1999: *SPHAGNUM* WEEKEND. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. A chance to learn how to recognise most of the British species in the field, and to study them alongside keys. Details from the Warden, Mr J. Ellis.
- 12-19 May 1999: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Orielton Field Centre, Pembroke, Dyfed, SA71 5EZ. Offering individual guidance at all levels. Details from the Warden, Dr R.G. Crump.
- 30 May - 6 June 1999: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Malham Tarn Field Centre, Settle, North Yorkshire, BD24 9PU. Offering individual guidance at all levels. Details from the Warden.
- 18-20 June 1999: INTRODUCTION TO MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. Especially for beginners, but others welcome too. Details from the Warden, Mr J. Ellis.
- 6-9 July 1999: *SPHAGNUM* MOSSES. Tutor: Dr Martha Newton, Kindrogan Field Centre, Enochdu, Blairgowrie, Perthshire, PH10 7PG. Three days to practise field identification of most species of this ecologically important genus. Details from the Warden.
- 10-17 July 1999: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Kindrogan Field Centre, Enochdu, Blairgowrie, Perthshire, PH10 7PG. Offering individual guidance at all levels. Details from the Warden.
- 30 July - 6 August 1999: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Preston Montford Field Centre, Montford Bridge, Shrewsbury, Shropshire, SY4 1DX. Offering individual guidance at all levels. Details from the Warden, Ms S. Townsend.

- 14-21 August 1999: MOSSES AND LIVERWORTS OF THE LAKE DISTRICT. Tutor: Dr Martha Newton, Blencathra Field Centre, Threlkeld, Keswick, Cumbria, CA12 4BR. Offering individual guidance at all levels. Details from the Warden, Dr R. Lucas.
- 3-10 September 1999: UNDERSTANDING CONSERVATION THROUGH BRYOPHYTES. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. Offering individual guidance at all levels. Details from the Warden, Mr J. Ellis.
- 8-10 October 1999: BRYOPHYTES AS TOOLS FOR TEACHING. Tutors: Miss Jennifer Ide & Dr Martha Newton, Slapton Ley Field Centre, Slapton, Kingsbridge, Devon, TQ7 2QP. Especially for biology teachers of the National Curriculum and A-level courses. Details from the Warden, Mr K. Chell.

## **HEDWIG SYMPOSIUM, GÖTTINGEN, GERMANY, 29-30 MAY 1999**

In 1999 it will be 200 years since Johannes Hedwig (1730-1799), the 'founder of bryology', died. Hedwig, a professor of botany at Leipzig, is known for his pioneering studies on the morphology and systematics of cryptogams, especially mosses. He discovered the function of antheridia and archegonia, and provided the first detailed descriptions and illustrations of the peristome. His posthumously published *Species muscorum frondosorum* (1801) is the starting point for the nomenclature of mosses.

The symposium includes lecture sessions on Saturday 29 May and a one-day excursion to the Harz Mountains on Sunday 30. During a ceremony in the Aula of the University, an honorary doctorate will be presented to Riclef Grolle (Jena).

### **SYMPOSIUM PROGRAMME**

#### **Saturday 29 May**

- 08.00-10.00 Registration, morning coffee and tea. Foyer, Albrecht von Haller Institute.
- 08.30-16.00 Exhibition: Life and works of Johannes Hedwig. Foyer, Albrecht von Haller Institute. Organisation: G. WAGENITZ, V. WISSEMANN (Göttingen).
- 10.00 Opening and welcoming addresses.
- 10.15-12.30 Johannes Hedwig and his contributions to bryology. Chair: T. KOPONEN (Helsinki).
  - 10.15 J.-P. FRAHM (Bonn): The life and work of Johannes Hedwig.
  - 11.00 W. MORAWETZ (Leipzig): Johannes Hedwig and the history of botany in Leipzig.
  - 11.30 Coffee break
  - 12.00 P. GEISSLER (Geneva): The Hedwig herbarium and its importance for nomenclature of mosses.
- 12.30-14.00 Lunch

- 14.00-15.45 Bryology 200 years after Johannes Hedwig. Chair: W. FREY (Berlin).  
 14.00 D.H. VITT (Edmonton): The classification of mosses 200 years after Hedwig.  
 14.45 T. HEDDERSON (Reading): The impact of molecular data on the systematics of mosses.  
 15.15 H. BISCHLER-CAUSSE (Paris): Molecular approaches to the systematics of liverworts.  
 15.45 Coffee break  
 17.15-19.00 Ceremony in the Aula of the University, Wilhelmsplatz: award of an honorary doctorate to R. Grolle (Jena).  
 Laudatio: S.R. GRADSTEIN (Göttingen).  
 Plenary lecture: J.G. DUCKETT (London): Whither bryophyte systematics and phylogeny?  
 20.00 Dinner in the 'Ratskeller', Marktplatz

### Sunday 30 May

- 08.30-18.00 Excursion to the Harz Mountains. Leaders: U. DREHWALD, M. KOPERSKI (Göttingen).

For further information (including details of registration fees and accommodation) contact:

*Prof. S.R. Gradstein, Albrecht von Haller Institute of Plant Sciences, Department of Systematic Botany, Untere Karsspüle 2, 37073 Göttingen, Germany; e-mail: sysbot@gwdg.de; tel: (0)551/395732; fax: (0)551/4062329.*

---

## ELECTION OF OFFICERS AND ELECTED MEMBERS OF COUNCIL

Mr T.L. Blockeel (Vice-President) will become President in 2000. The terms of eight other officers, the General Secretary, Treasurer, Bibliographer, Conservation Officer, Curator, Librarian, Publicity Officer and Recording Secretary, expire at the end of 1999. The present incumbents of only four of these posts, the Treasurer, Curator, Librarian and Recording Secretary, are eligible for re-election. The other four are not eligible for re-election in their present capacity unless nominated from the chair and seconded by the Vice-President or an ex-President. Two Elected Members of Council will retire at the end of 1999, and neither Dr M.O. Hill nor Dr D.T. Holyoak is eligible for re-election in this capacity until two years have elapsed. There is also a third vacancy for Elected Membership caused by the appointment of Mr D. Wrench as Meetings Secretary. Members are invited to submit nominations for Officers and Elected Members, sending them, in an envelope marked PRIVATE, to the General Secretary of the BBS, Dr M.E. Newton, c/o Botany Department, Liverpool Museum, William Brown Street, Liverpool, L3 8EN, to arrive no later than 14 August 1999. A nomination must not be made without the consent of the person whom it is wished to nominate. If elections are needed, they will be held at the AGM in Manchester, on 11 September 1999.

---

## BBS LIBRARY SALES AND SERVICE, 1999

### FOR LOAN (UK Members only)

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

- a) Approximately 250 bryological books and journals and several thousand offprints of individual papers. A catalogue of the books and journals is available, price £1.00.
- b) Transparency collection, list available (s.a.e.). 630 slides in the collection. Loan charge (to cover breakage of mounts) 50p plus return postage. Only 50 slides may be borrowed at a time to minimise loss or damage.
- c) Microscope stage-micrometer slide for calibration of eyepiece graticules. 10µm divisions. Loan deposit £45.00.

### FOR SALE

#### Bulletins and journals

British Bryological Society *Bulletins*: back numbers from no 23 @ £1.00 each.

*Transactions of the British Bryological Society/Journal of Bryology*:

Vol. 1: parts 1-4	£2.40 each; part 5 out of print
Vol. 2: parts 1-4	£3.00 each
Vol. 3: parts 1-5	£2.40 each; £12.00 per volume
Vol. 4: parts 1,3-5	£2.40 each; part 2 out of print
Vol. 5: parts 1,3,5	£3.00 each; parts 2 & 4 out of print
Vol. 6: parts 1-2	£6.00 each; £12.00 per volume - ends series of <i>Transactions</i>
Vol. 7: parts 1-4	£5.00 each; £20.00 per volume - renamed <i>Journal of Bryology</i>
Vol. 8: parts 2,3	£5.00 each; parts 1 & 4 out of print
Vol. 9: parts 1-3	£5.00 each; part 4 out of print
Vol. 10: parts 1,3,4	£8.00 each; part 2 out of print
Vol. 11: parts 1-3	£10.00 each; part 4 out of print
Vol. 12: parts 1-3	£11.50 each; part 4 out of print
Vol. 13: parts 1-4	£15.50 each; £62.00 per volume
Vol. 14: parts 2-4	£18.00 each; part 1 out of print
Vol. 15: parts 1-4	£22.50 each; £90.00 per volume
Vol. 16: parts 1-4	£29.75 each; £119.00 per volume
Vol. 17: parts 1-4	£39.50 each; £158.00 per volume
Vol. 18: parts 1-4	£42.25 each; £169.00 per volume
Vol. 19: parts 1-4	£47.25 each; £189.00 per volume
Vol. 20: part 1	£49.50

#### BBS Special Volumes

Volume 1. Longton RE, Perry AR. 1985. *Proceedings of Jubilee Meeting 1983*, 89 pp. £6.00



Volume 2. Newton, ME. 1989. <i>A Practical Guide to Bryophyte Chromosomes</i> , 19 pp.	£2.50
Volume 3. O'Shea, BJ. 1989. <i>A Guide to Collecting Bryophytes in the Tropics</i> , 28 pp.	£3.50
Volume 4. Edwards, SR. 1992. <i>Mosses in English Literature</i> , 44 pp.	£2.50
Volume 5. Edwards, SR. 1997. <i>English Names for British Bryophytes</i> .	£2.50

### Census Catalogues

Duncan, JB. 1926. <i>Census Catalogue of British Mosses</i> , 2nd edition.	20p
Sherrin, WR. 1946. <i>Census Catalogue of British Sphagna</i> .	20p
Warburg, EF. 1963. <i>Census Catalogue of British Mosses</i> , 3rd edition.	20p
Paton, JA. 1966. <i>Census Catalogue of British Hepatics</i> , 4th edition.	20p
Corley MFV, Hill, MO. 1981. <i>Distribution of bryophytes in the British Isles: a census catalogue of their occurrence in vice-counties</i> .	Price incl. p&p: members £5.00, non-members £6.00, trade £4.00

### Other items

Evans, DE, Perry, AR. 1987. Moss Wall Chart.	Price incl. packing: £2.80
Grolle, R. 1983. <i>Hepatics of Europe and the Azores: an annotated list of species with synonyms</i> .	Price incl. p&p: £2.50
Newton, ME <i>et al.</i> , eds. 1988. <i>Bryology: modern research and the ways forward</i> .	£5.50
Pearman, MA. 1979. <i>A short German-English bryological glossary</i> .	£0.50
Perry, AR. 1992. <i>Mosses and liverworts of woodland</i> , 41 pp.	£2.95
BBS tie, claret with single BBS logo	£4.95
Swift x20 handlens and case	£18.75
Patterson no 2 stainless steel forceps	£4.00
Idealtek no 3 stainless steel forceps	£7.25
Eyeiece graticule 1 cm x 10 micrometer, 16 mm diameter	£25.00
BBS car stickers	£1.00 & SAE

PLEASE DO NOT INCLUDE CASH WITH ORDERS. Customers will be invoiced for the correct amount including p&p (postage and packing is extra unless stated). A legibly printed address label would be appreciated. All the above are available from the BBS librarian:

*Kenneth J. Adams, 63 Wroths Path, Baldwins Hill, Loughton, Essex, IG10 1SH, UK.*

## BBS MICROSCOPES

### Microscopes for loan

Two new Chinese microscopes have been purchased by the BBS for loan to new members who wish to experience using a microscope for six months prior to making a purchase of their own. The funds to purchase these microscopes came from the sale of three antique brass microscopes left to the Society by the late Eustace Jones. They are basic easy-to-use monocular instruments requiring a small adjustable table lamp for operation, and have x40, x10 and x4 objectives together with a x10 eyepiece, a simple manual stage and sub-stage condenser, iris, and adjustable mirror.

Any new member wishing to borrow a microscope may collect one from the BBS librarian at a BBS meeting by prior arrangement (not by parcel or postal service). The loan must, however, be secured by an indemnity signed by the borrower agreeing to replace the microscope at its current replacement value if lost/stolen, or to pay the current cost of replacement of any parts damaged/lost either during the loan or in return transit.

### Second-hand monocular microscopes

A small number of second-hand monocular microscopes are available for purchase from the BBS librarian on a first-come first-served basis.

*Ken Adams, BBS librarian; tel (direct line/ansa): 0181 849 3620; e-mail: K.J.Adams@uel.ac.uk*

---

## **MOSESSES AND LIVERWORTS OF HONG KONG: COMPLIMENTARY COPIES AVAILABLE FOR INSTITUTIONS/LIBRARIES IN DEVELOPING COUNTRIES**

The two volumes of *Mosses and Liverworts of Hong Kong* (Vol. 1 by M.L. So, 1995; Vol. 2 by R.L. Zhu & M.L. So, 1996) recorded 300 bryophytes in the region with colour photographs and drawings. This first complete survey of the bryophytes of Hong Kong documented many new records and previously unknown distribution patterns, and included many tropical and sub-tropical species.

Complimentary copies of *Mosses and Liverworts of Hong Kong* are now available free to institutions/libraries in developing countries. To obtain, please send your name, affiliated organisation and mailing address to:

*Mr Kwok Leung Yip, Department of Biological Sciences, University of Cincinnati, Cincinnati, OH 45221-0006, USA; e-mail: yipkl@email.uc.edu; fax: (513)556-5299.*

---

## AVAILABLE SET OF *JOURNAL OF BRYOLOGY*, 1972-1996

Mr Graham Bell (11 Waulkmill Drive, Penicuik, Midlothian, EH26 8LA) wishes to dispose of these copies of the *Journal* in a way that will benefit a young professional bryologist or keen amateur. He is generously offering them free to such a person, who could either pick them up from his house, or, alternatively, he himself is happy to deliver them locally within the Edinburgh area for subsequent transport elsewhere. If you are interested, please contact Mr Bell at the above address.

---

## NEW HEPATIC FLORA OF THE AUVERGNE

R. Schumacker & J. Sapaly (1997) (assisted by I. Bisang, Ph. De Zuttere, J. Duda, A.-M. Mollet, A. Lecointe, R.B. Pierrot, M.A. Rogeon, S. Jovet-Ast, R. Skrzypczak & J. Vana). Catalogue critique des hépatiques (Anthocerotophyta et Marchantiophyta) de l'Auvergne (Cantal et Puy-de-Dôme, France). Published in *Documents de la Station scientifique des Hautes-Fagnes* **25**; 130 p., 7 maps, paperback.

### Summary

The hepatic flora of the Auvergne (Cantal and Puy-de-Dôme départements) has been intensively studied in the field during the last 20 years, and this work has been supplemented by reference to many herbaria and by an exhaustive survey of the literature. After critical review, 189 hepatics are recognised in this territory of 13,796 km<sup>2</sup>: 175 for the Cantal and 168 for the Puy-de-Dôme, 156 species (83%) being common to both. A comparison is made with the excellent catalogue produced by Héribaud in 1899. Since 1899, the number of hepatics recorded has increased by 62%.

This work, started in 1980, is based on *ca* 7000 information units. It includes many species not recorded in the region prior to 1980: 27 species new for the Auvergne, among which 12 new for the Massif Central, 37 species new for the Puy-de-Dôme, and 21 new for the Cantal. On the other hand, 19 species previously mentioned in the literature appear to be based on erroneous or extremely doubtful records.

The bryofloristical and bryogeographical character of the region is described by comparison with neighbouring départements and other montane massifs of western Europe. This shows the exceptional richness and unique nature of the region. The richest sites are around the major peaks: puy de Sancy (126 species), puy Mary (113 species), Lioran (104 species) and Plomb du Cantal (77 species). The importance of the alpine element *s.l.* (22 species, 12.2% of the hepatic flora) at the highest altitudes, and the penetration of the oceanic and mediterranean elements *s.l.* into the south-west of the Cantal, are underlined.

Some indications regarding the evolution of the hepatic flora are provided, and attention is drawn to the urgent need for better protection of certain sites which are clearly exceptional, not just for France, but for Europe as a whole.

The Flora is available for 600 BEF (incl. carriage) payable by Eurocheque labelled in BEF (card number on the back) or by International transfer (+ transfer charges) to:

*R. Schumacker, 620, Becco 4910, Theux, Belgium.*

---

## WANTED TO BUY

Lett HW. 1902. *Hepatics of the British Isles*. Published by the author; printed by VT Sumfield, Eastbourne.

Please contact:

*Dr Philip Stanley, 48 Glisson Road, Cambridge, CB1 2HF; tel: 01223 460888; fax: 01223 461777; e-mail: stanley@crtt.demon.co.uk*

---

## OFFER OF BOOKS FROM THE LIBRARY OF THE LATE E.W. JONES

The following books are offered for sale to members from the library of the late E.W. (Eustace) Jones. Dr Jones left his bryological library (with the exception of his African books and papers) to the BBS in the expectation that they would be made available to members to assist them in their research and study (see also Council Newsletter Number 10, in *Bulletin* **63**: 39). Some volumes have been retained for the Society's library. The remainder are listed below, and members are invited to apply for any items they wish to obtain. Dr Jones did not wish his books to be used primarily as a means of raising money, and the books are therefore offered at less than the usual antiquarian/second-hand price. They are offered on the understanding that purchasers will not subsequently dispose of them for profit.

The books are offered at a fixed price. Members should be aware that not all of them are in perfect condition, as noted in the descriptions. Where there is more than one applicant for a particular item, that item will be allocated strictly by lot. Preference in all cases will be given to paid-up members of the BBS. Postage and packing (and insurance if required) will be charged extra, at cost. However, it should also be possible to collect items at BBS meetings during 1999.

Requests for items should be made to Tom Blockeel by **19 March 1999**, in writing to 9 Ashfurlong Close, Dore, Sheffield, S17 3NN, UK, or by e-mail to [Tblockeel@aol.com](mailto:Tblockeel@aol.com).

1. **Allison KW, Child J. 1975.** The Liverworts of New Zealand. Dunedin: University of Otago Press. Pp. 300; 34 photographic plates and many text figures.  
*Black cloth covers, with worn dust wrapper. Slight damage to upper edge of back cover, and binding split between pp. 16 and 17. A few pencilled annotations, text otherwise clean. £10*
2. **Amann J. 1933.** Matériaux pour la Flore Cryptogamique Suisse. Flore des Mousses de la Suisse. Vol III. Revision et Additions. Pp. xiii, 186.  
*Paper covers. Text clean. £15*
3. **Annales Bryologici (F. Verdoorn, ed). 1928-1939.** Vols 1-12, with supplements to vols 1, 2, 3, and 4.  
*Vols 9-12 are in paper covers, partly torn, those of vols 9 and 10 detached. Vols 1-8 and the supplements are bound in dark blue cloth boards, which have been damaged (some badly) by dampness and invertebrates. The contents of most of the vols are in near fine condition, but the unbound parts are somewhat used, with a few annotations. £200*
4. **Arnell S. 1956.** Illustrated Moss Flora of Fennoscandia. I. Hepaticae. Lund: CWK Gleerup. Pp. 309; 98 figs, folded map.  
*Paper covers, as issued. Contents clean. Signed copy from the author. £20*
5. **Bartram EB. 1949.** Mosses of Guatemala. *Fieldiana: Botany* Vol. 25. Chicago Natural History Museum. Pp. 442; 190 figs.  
*Soiled paper covers, edges also soiled and spotted, but contents clean. £10*
6. **Berkeley M.J. 1863.** Handbook of British Mosses. London: Lovell Reeve & Co. Pp. xxxvi, 324; 1 b&w and 23 coloured plates.  
*Dark green cloth covers, slightly rubbed at hinges. A few pencilled annotations, contents otherwise clean. £45*
7. **Braithwaite R. 1880-1905.** British Moss Flora. 3 Vols. London: L. Reeve & Co. Pp. 315, 268, 274; 128 plates.  
*Dark green cloth covers, slightly rubbed at hinges. Some (mostly slight) foxing, as usual with this publication, but contents generally good. £80*
8. **The Bryologist. 1935, 1945-1954, 1956-1966.** Vols 38, 48-57, 59-69, plus index to vols 1-60.  
*All vols bound in cloth. Clean condition. £60*
9. **Cavers F. 1911.** The Inter-relationships of the Bryophyta. New Phytologist Reprint No 4. Cambridge: Botany School. Pp. vii, 203.  
*In amateurish binding of paper boards and cloth spine, edges very roughly cut; original covers bound in, soiled; contents otherwise clean. Some marginal annotations in pencil and ink. £5*
10. **Dixon HN. 1924.** The Student's Handbook of Mosses. 3rd edition. Eastbourne: VV Sumfield. Pp. xlvii, 582; 63 plates.  
*Rebound in cloth boards with original spine and covers pasted down. Covers worn, plates IV and V mottled, contents otherwise clean. A few pencilled annotations. £8*
11. **Eddy A. 1988.** A Handbook of Malesian Mosses. Vol. 1. Sphagnales to Dicranales. London: Natural History Museum. Pp. 204; 165 figs.  
*Paper covers. Nearly new condition. £10*
12. **Fulford M. 1946.** The Genus *Bazzania* in Central and South America. *Annales Cryptogamici et Phytopathologici* III. Waltham, Mass.: Chronica Botanica Company. Pp. xv, 175; 59 figs. Also included is an offprint of Fulford's supplements to 'The Genus *Bazzania* in Central and South America' in *Bulletin of the Torrey Botanical Club* 86: 308-341, 394-412.  
*Paper covers, somewhat soiled. Contents clean. £20*

13. **Fulford M. 1963, 1966, 1968.** Manual of the Leafy Hepaticae of Latin America. Parts 1 to 3. *Memoirs of the New York Botanical Garden* **11**, numbers 1, 2 & 3. Pp. 1-392; 107 plates.  
*Paper covers, as issued. Part 1 somewhat used, parts 2 and 3 clean. Part 4, comprising pp. 393-535, is not included. £20*
14. **Groult A.J. 1903.** Mosses with hand-lens and microscope. New York: the author. Pp. 416; 220 figs.  
*Cloth covers, damaged by damp and invertebrates. Front pages stained, contents otherwise clean. £25*
15. **Groult A.J. 1936-1940.** Moss flora of north America north of Mexico. 3 Vols. Pp. vii, 264, 285, 277; 324 plates. Newfane, Vermont: the author.  
*In dark blue cloth covers, very slightly affected by damp. Contents in good, clean condition. £130*
16. **Hesselbo A. 1918.** The Botany of Iceland. Vol. 1, part II (4). The Bryophyta of Iceland. Copenhagen: J. Frimodt. Pp. 395-675; 39 figs.  
*In amateurish binding of paper boards and cloth spine, edges very roughly cut. Contents clean. Would greatly benefit from sympathetic rebinding. £18*
17. **Hill M.O., Preston C.D., Smith A.J.E. 1991.** Atlas of the Bryophytes of Britain and Ireland. Vol. 1 (of 3). Liverworts. Colchester: Harley Books. Pp. 351.  
*Paper boards. Good, clean condition. £15*
18. **Husnot T. 1922.** Hepaticologia Gallica. 2nd edition. Athis (Orne): T. Husnot. Pp. 163; 23 plates.  
*In amateurish half-leather binding, edges very roughly cut. Contents clean. £25*
19. **Krusenstjerna E von. 1945.** Bladmossvegetation och Bladmossflora I Uppsala-Trakten (*Acta Phytogeographica Suecica* XIX). Uppsala: Almqvist & Wiksells Boktryckeri AB. Pp. 250; 4 plates, folded map.  
*Paper covers, as issued. Contents clean. £8*
20. **Macvicar S.M. 1926.** The Student's Handbook of British Hepatics. 2nd edition. Pp. xxxi, 464, xiii; numerous text figures.  
*Rebound in cloth boards with original spine pasted down. Covers worn. Some pages slightly soiled, but contents generally clean. A few pencilled annotations. £14*
21. **Margadant W.D. 1968.** Early Bryological Literature. Pittsburgh: Hunt Botanical Library. Pp. viii, 277.  
*In faded paper covers. £10*
22. **Meijer W. 1951.** The Genus *Orthodontium*. Amsterdam: North-Holland Publishing Company. Pp. xii, 80; 18 plates, 4 maps. Also included is an offprint of **Margadant W.D., Meijer W. 1950.** Preliminary remarks on *Orthodontium* in Europe. *Transactions of the British Bryological Society* **1**: 267-274.  
*Paper covers. Contents clean. £12*
23. **Meylan C. 1924.** Beiträge zur Kryptogamenflora der Schweiz. Band VI. Heft 1. Les Hepatiques de la Suisse. Pp. 318; 213 figs.  
*Paper wraps, as issued. Contents clean. £18*
24. **Müller K. 1912-13.** Die Lebermoose (Musci Hepatici). Band VI of Dr L Rabenhorst's *Kryptogamen-Flora von Deutschland, Österreich und der Schweiz*. Parts 15-18 only of the first edition, comprising pp. 1-272 of volume 2.  
*Paper covers, as issued. £15*

25. **Müller K. 1939-1940.** [Die Lebermoose Europas. 2nd edition.] Band VI, lief 1 & 2, of Dr L Rabenhorst's *Kryptogamen-Flora von Deutschland, Österreich und der Schweiz*. Pp. 320; 54 figs.  
*Lacking original paper covers. A few pencilled annotations, otherwise in clean condition. Publication was curtailed by the war. These parts were re-written and re-published in the completed 3rd edition (see item 26). £10*
26. **Müller K. 1951-1958.** Die Lebermoose Europas. 3rd edition. 2 Vols. Band VI of Dr L Rabenhorst's *Kryptogamen-Flora von Deutschland, Österreich und der Schweiz*. Pp. xii, viii, 1365; 515 figs.  
*Bound in dark green cloth, somewhat scuffed. Some sections of volume 1, mostly between pages 489 and 756, are browned and brittle, as usual in the original printing. £130*
27. **Nyholm E. 1958.** Illustrated Moss Flora of Fennoscandia. II. Musci. Fascicle 3 only (Bryaceae to Meesiaceae). Lund: CWK Gleerup. Pp. 189-288; figs 94-163.  
*Paper covers. Damaged by water and insects but a usable working copy. £2*
28. **Parihar NS. 1961.** An Introduction to Embryophyta. Vol. 1. Bryophyta. 4th edition. Allahabad: Central Book Depot. Pp. vi, 338; folded table.  
*Cloth covers. £5*
29. **Polunin N, ed. 1947.** Botany of the Canadian Eastern Arctic. Part II. Thallophyta & Bryophyta. National Museum of Canada, Bulletin No 97. Pp. v, 573; 18 plates, 5 figs, folded map. The Bryophyta include chapters on Musci by WC Steere (pp. 370-490) and Hepaticae by N Polunin (pp. 491-512). Other chapters cover Algae, Fungi and Lichens.  
*Paper covers. Contents clean. £15*
30. **Revue Bryologique et Lichénologique. 1945-1957, 1959-1961, 1964-1967, 1971-1972.** Vols 15&16, 17&18, 19&20, 21&22, 23&24, 25&26, 28, 29, 30, 33, 34, 35, 38.  
*Vol 38 in 3 parts unbound, with torn paper covers; remaining parts bound in cloth. Clean condition. £80*
31. **Schuster RM. 1966.** The Hepaticae and Anthocerotae of north America, east of the hundredth meridian. Vol. 1. New York: Columbia University Press. Pp. xvi, 802; figs 1-84.  
*In green cloth binding with torn dust wrapper. A very few pencilled annotations. £70*
32. **Schuster RM. 1969.** The Hepaticae and Anthocerotae of north America, east of the hundredth meridian. Vol. 2. New York: Columbia University Press. Pp. xii, 1062; figs 85-301.  
*In green cloth binding with torn dust wrapper. A very few pencilled annotations. £70*
33. **Smith AJE. 1978.** The Moss Flora of Britain & Ireland. Cambridge: Cambridge University Press. Pp. viii, 706; 333 figs.  
*Bound in green cloth, covers somewhat worn. Front hinge broken and board loose; fore-edge soiled. £10*
34. **Smith AJE. 1978.** Provisional Atlas of the Bryophytes of the British Isles. Abbots Ripton, Huntingdon: Natural Environment Research Council. Pp. 112.  
*Paper covers; spirally bound. £2*
35. **Spruce R. 1884.** Hepaticae Amazonicae et Andinae. *Transactions and Proceedings of the Botanical Society, Edinburgh*, Vol XV. Pp xi, 588; 22 plates.  
*Bound in half leather, spine and corners very worn. Text in clean condition, with a few pencilled annotations; the plates with some slight foxing, plate 22 torn in upper rh corner and pasted to backing sheet. £70*

36. **Verdoorn F, ed. 1932.** Manual of Bryology. The Hague: Martinus Nijhoff. Pp. ix, 486; many text figures.  
*In original dark blue cloth binding, damaged by invertebrates. Contents clean. £40*
37. **Watson EV. 1968.** British Mosses and Liverworts. 2nd edition. Cambridge: Cambridge University Press. Pp xvi, 495; 18 plates, 242 figs.  
*In dark green cloth binding, with dust wrapper. Contents clean. £10*
38. **Wilson W. 1855.** Bryologica Britannica. A new (third) edition of The Muscologia Britannica of Hooker & Taylor. London: Longman, Brown, Green & Longmans. Pp. xx, 445; 60 plain plates.  
*Rebound retaining original cloth boards and pasted down spine. Inserts at p. 214 and p. 334 showing the arrangement of the genera Bryum, Mnium, Leskea and Hypnum are very badly foxed and have affected the immediately adjacent pages. Contents otherwise clean. £70*
- 

## BBS COMMITTEES AND WORKING GROUPS

### Executive Committee

Present composition (*ex officio*): Dr G.C.S. Clarke (President), Mr T.L. Blockeel (Vice-President), Dr M.E. Newton (General Secretary & Chief Executive Officer), Mr E.R. Hurr (Treasurer).

Terms of reference: To decide on matters of immediate importance.

Convener: Dr M.E. Newton, c/o Botany Department, Liverpool Museum, William Brown Street, Liverpool, L3 8EN.

### Honorary Membership Committee

Present composition (*ex officio*): Dr G.C.S. Clarke (President), Dr M.E. Newton (General Secretary), Dr R.E. Longton & Mr A.R. Perry (Ex-Presidents).

Terms of reference: To advise Council on the nomination of Honorary Members.

Convener: Dr M.E. Newton (address as above).

### Editorial Board

Present composition: Dr J.W. Bates (Editor of *Journal of Bryology*), Mr T.L. Blockeel, Dr D.H. Brown, Prof. J.G. Duckett, Dr J. Enroth, Dr S.R. Gradstein, Dr L. Hedenäs, Prof. J.A. Lee, Mr D.G. Long, Dr R.E. Longton, Dr M.E. Newton & Dr J.A. Shaw (Associate Editors), Dr P.E. Stanley (Indexing & Editorial Assistance), Mr H.W. Matcham (Editorial Assistance).

Terms of reference: Appointed by the Editor of the *Journal of Bryology* and reported to Council.

Convener: Dr J.W. Bates, Department of Biology, Imperial College at Silwood Park, Ascot, Berkshire, SL5 7PY.



### **Conservation Committee**

Present composition: Dr R.C. Stern (Conservation Officer), Mr J. Blackburn, Mr T.H. Blackstock, Dr G.C.S. Clarke, Mr A.C. Crundwell, Mr N.G. Hodgetts (Secretary), Dr D.T. Holyoak, Mr R.D. Porley, Mr G.P. Rothero, Mr N.F. Stewart (co-opted).

Terms of reference: As set out in *Bulletin 52*: 56.

Convener: Mr R.C. Stern, 15 Selham Close, Chichester, West Sussex, PO19 4BZ.

### **Recording Committee**

Present composition: Mr R.D. Porley (Recording Secretary), Dr K.J. Adams, Mr C.D. Preston, Dr M.O. Hill, Mr G.P. Rothero (Recorder for Mosses), Mr T.H. Blackstock (Recorder for Hepatics).

Terms of reference: As set out in *Bulletin 56*: 20.

Convener: Mr R.D. Porley, English Nature, Foxhold House, Crookham Common, Thatcham, Berkshire, RG19 8EL.

### **Tropical Bryology Group**

Present composition of Executive Committee: Mr B.J. O'Shea, Mr D.G. Long, Dr R.E. Longton, Dr A.J. Harrington, Mr R. Stevenson.

Terms of reference: a) To promote the study of tropical bryophytes; b) to involve as many members of the BBS as possible in this activity; c) to support bryologists working in the tropics.

Convener: Mr B.J. O'Shea, 141 Fawnbrake Avenue, London, SE24 0BG.

### **Bequest Committee**

Present composition: Mr E.R. Hurr (Treasurer, *ex officio*), Dr G.C.S. Clarke, Prof. J.G. Duckett, Mr D.G. Long, Mr H.W. Matcham.

Terms of reference: To put forward recommendations for administering this fund.

Convener: Mr E.R. Hurr, 6 The Woodlands, Chelsfield, Orpington, Kent, BR6 6HL.

### **Publications Committee**

Present composition: Dr J.W. Bates (Journal Editor, *ex officio*), Mr M.J.M. Yeo (Bulletin Editor, *ex officio*), Mr E.R. Hurr (Treasurer, *ex officio*), Dr G.C.S. Clarke, Prof. J.G. Duckett, Miss J.M. Ide.

Terms of reference: a) To consider the marketing of BBS publications; b) to oversee the progress of publications in preparation; c) to monitor the Society's periodicals and suggest improvements; d) to initiate new publishing projects.

Convener: Dr J.W. Bates, Department of Biology, Imperial College at Silwood Park, Ascot, Berkshire, SL5 7PY.

---

## REFEREES (JANUARY 1999)

The refereeing service is intended to provide assistance to members who have genuine difficulty in naming their collections. **It is not intended as a 'free-for-all' identification facility**, least of all for bulk collections. Please therefore respect the following guidelines when submitting material.

- If possible, avoid sending large quantities at any one time. Do not send material if you are not prepared to examine it yourself in advance.
- Please ensure that fragile specimens are adequately protected in the post. This applies particularly to material with lumps of soil attached. It is dispiriting to open a packet and find nothing but a pile of dust inside! Small boxes or tins are ideal for protection from crushing.
- Please label all packets clearly with full collection details, including habitat, locality, altitude and at least a 10 km grid reference.
- Always enclose a stamped addressed envelope (or label), even if material is sent to universities or institutions. Otherwise you may not receive a reply.

The General Referee will help beginners who are having difficulty in placing their material in a genus. If you encounter any other problems send it to the appropriate Recorder: Mr Tim Blackstock for hepatics (Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ) or Mr Gordon Rothero for mosses (Stronlonag, Glenmassan, By Dunoon, Argyll, PA23 8RA).

The numbers below refer to genera in *A Check-list and Census Catalogue of British and Irish Bryophytes* by T.L. Blockeel & D.G. Long (1998).

### GENERAL REFEREE

H.W. Matcham, 21 Temple Bar, Strettington, near Chichester, W. Sussex, PO18 0LB.

### HEPATIC REFEREES

- 1, 64-69, 75-82:** Dr M.E. Newton, c/o Department of Botany, Liverpool Museum, William Brown Street, Liverpool, L3 8EN. (All mail to be marked 'Private'.)
- 2-5, 9, 11-17, 52:** T.L. Blackstock, Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ.
- 6-8, 10, 18, 19, 32, 36-38, 50, 51, 53, 83-86:** D.G. Long, Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR.
- 20-29, 39, 45, 46:** M.F.V. Corley, Pucketty Farm Cottage, Faringdon, Oxfordshire, SN7 8JP.
- 30, 31, 33-35, 47-49, 70-74:** G.P. Rothero, Stronlonag, Glenmassan, By Dunoon, Argyll, PA23 8RA.
- 40-44, 54-63:** N.G. Hodgetts, Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough, PE1 1JY.

## MOSS REFEREES

- 1-10, 156-160:** Dr M.O. Hill, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS.
- 11-33:** G.P. Rothero, Stronllog, Glenmassan, By Dunoon, Argyll, PA23 8RA.
- 34, 35, 67-70, 187-195:** Dr A.J.E. Smith, School of Biological Sciences, Brambell Building, University College of North Wales, Bangor, Gwynedd, LL57 2UW.
- 36, 71-89, 104-111:** N.G. Hodgetts, Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough, PE1 1JY.
- 37-66:** Dr D.F. Chamberlain, Royal Botanic Garden, Inverleith Row, Edinburgh, EH3 5LR.
- 90-98, 112:** Dr E.V. Watson, Little Court, Cleeve, Goring on Thames, Reading, Berkshire, RG8 0DG.
- 99-103:** A. Orange, Department of Biodiversity & Systematic Biology, National Museum & Gallery Cardiff, Cathays Park, Cardiff, CF1 3NP.
- 113-146:** R.D. Porley, English Nature, Foxhold House, Crookham Common, Thatcham, Berkshire, RG15 8EL.
- 147-155, 161-174:** T.L. Blockeel, 9 Ashfurlong Close, Dore, Sheffield, S17 3NN.
- 175-187:** D.T. Holyoak, 8 Edward Street, Tuckingmill, Camborne, Cornwall, TR14 8PA.
- 

## COUNCIL NEWSLETTER NUMBER 15

It would be no exaggeration to say that Council has been faced with an immense amount of work during the past year. 'That is not new', you might say, and perhaps you are right. Even so, you would certainly be right in expecting to see positive results, whatever the difficulties, and I am pleased to be able to tell you that we are now in the midst of a very productive phase.

### Honorary Membership

Perhaps I may begin by telling you about three new Honorary Members, who were elected at the recent AGM. Dr Lewis E. Anderson, Dr Howard A. Crum and Dr Francis Rose were proposed by Council in recognition of their contributions to bryology, and are all to be warmly congratulated on their appointment.

### New Publications

Two new books have resulted from BBS initiatives. So different are they that, together, they will cater for an extremely wide range of interests. Moreover, each, individually, is ideally placed to advance bryology. The BBS centenary symposium volume, *Bryology for the Twenty-first Century*, appeared first. Edited by Dr Jeff Bates, Dr Neil Ashton and Prof. Jeff Duckett, its 23 full-length papers and summary of another span a wide spectrum of modern fields of research, and can be predicted to become a frequently-used source of reference. The book is a fitting milestone in the Society's history. More recently, we have also seen the publication of a new *Census Catalogue*, prepared by Messrs Tom Blockeel and David Long. Like its

predecessors, it can be relied upon to stimulate the sort of fieldwork that has always been one of the Society's greatest strengths.

### **E.W. Jones' Bryological Books**

As you will know, Dr Eustace Jones left his bryological books, with the exception of African ones, unconditionally to the Society, but expressed the wish that any duplicates that were not required by the library would be made available to members. He was particularly concerned that their distribution should be as even-handed as possible. Council has given considerable thought to the detail of his wishes, and has now devised a scheme about which you will read on p. 74 of this *Bulletin*.

### ***Journal of Bryology***

After five successful years with the publisher, W.S. Maney & Son Ltd, Council agrees that the time is now right to accept a proposal to enter into negotiations, which may result in a new agreement being drawn up, to the mutual benefit of both parties. The Publications Committee will open negotiations with a view to putting the *Journal of Bryology* on a firmer financial footing, promoting sales, and providing support for our Editor.

### ***Ex situ* Conservation of Bryophytes**

Pioneering work instigated by Mr Ron Porley, English Nature and the Royal Botanic Gardens, Kew, will address problems of conservation by the use of *ex situ* culture techniques. Council, on behalf of the Society, has endorsed the project, for it is seen as providing a potentially valuable tool in dealing with seriously threatened species.

These, therefore, are some of our successes as a Society. There have inevitably been disappointments, among them the need to cancel the spring meeting because of insufficient bookings. The underlying reasons are not entirely clear to Council, but we are pleased to see that other meetings have been well received. Even those meetings, however, could be improved by higher attendance figures.

There continues to be a lot of business in the hands of Council members, but I must not omit to mention one item that was by no means routine. The successful production of *Bulletin* 71 by Mr Marcus Yeo, and of an interim list of meetings by Mr Mike Walton, was an outstanding demonstration of what can be achieved by generous offers of help when assistance is greatly needed.

Do, please, continue to support Council in its endeavours on your behalf. Dialogue is beneficial, and I hope the updated list of BBS committees, published on p. 78 of this *Bulletin*, will help to promote an exchange of ideas.

MARTHA NEWTON

## RECORDING MATTERS 16

In the last *Bulletin* I wrote about bryophyte Biodiversity Action Plans (BAPs). There is much expertise that members can contribute, and many already have, but co-ordination is essential to ensure that the diverse membership of the BBS is focused on the published targets. English Nature is exploring the feasibility of funding a co-ordinator post to ensure that the BBS (and other botanical Societies) can more effectively feed into the BAP process. As a prelude, some members may be consulted in order to develop a clear understanding of the issues that need to be considered if the BBS is to be effective in delivering conservation objectives.

In mid December we had a meeting with BRC, with JNCC also represented. The meeting was chaired by Giles Clarke. We had a broad-ranging and frank discussion about the roles and expectations from both 'sides'. A positive outcome of the meeting was a commitment to formulate a Memorandum of Agreement, an approach that has already been developed between BRC and the BSBI. Data management is currently undergoing a renaissance, with the National Biodiversity Network promising to make exchange of data a much more straightforward process. This, however, is not likely to affect the BBS until a few years hence. In the meantime, an Agreement with BRC will help to provide members with some of the services we require. Initially we will need to know how many Regional Recorders possess their own PC, or have access to one, and the type of software used; to this end, BRC have agreed to produce a questionnaire to elicit relevant information. A number of Regional Recorders have received data sets from BRC; others have requested them and I am confident they will be available soon. If there are other Regional Recorders who would like data sets giving details for all the species occurring in a particular vice-county let me know by **30 April 1999** and I will co-ordinate; please do not contact BRC direct. Data will be supplied on standard diskettes.

One thing that I have been very aware of since holding the post of Recording Secretary is the enthusiasm shown by Regional Recorders and members in organising local recording initiatives. This is one of the great strengths of the BBS. There are many local groups who are doing valuable recording work and one of these is in VC 69, led by Keith Raistrick. With information supplied by BRC, Keith has produced 10 km square species lists as the basis for a proposed bryophyte flora of Cumbria. Armed with this he has galvanised several volunteers (but never enough!) into action and has even produced the first Westmorland bryophyte newsletter. I wish him every success. On this subject, I am always happy to hear from members about recording activities, and if you wish to put something on disk I can include it in *Recording Matters* in the future.

### REGIONAL RECORDERS

The last update to the Regional Recorder list was given in *Bulletin* 68, and several subsequent changes justify presenting it in full here.

David Holyoak takes over from Rose Murphy in VC 1 and 2, Paul King replaces Katie Cocking for VC 100, and Nick Hodgetts takes VC 104 from Martin Corley. I would like thank those who have relinquished vice-counties for their contributions, and to welcome the new Regional Recorders. If anyone spots any anomalies in the list please let me know - it is not easy keeping an up-to-date list, especially when the data are held on more than one PC! The following vice-

counties are currently vacant: 37, 38, 39, 56, 71, 75, 76, 77, 78, 85, 89, 90, 91, 93, 94, 95, 106, 107, 108, 109 and 112. If any members are interested in adopting one or more of these vice-counties please let me know.

- 1,2:** Dr D. Holyoak, 8 Edward Street, Tuckingmill, Camborne, Cornwall, TR14 8PA.  
**3,4:** Mr M. Pool, 91 Warbro Road, Babbacombe, Torquay, Devon, TQ1 3PS.  
**5:** Mr B. Gale, 6 Roker Way, Fair Oak, Eastleigh, Hampshire, SO50 7LD.  
**6,33,34:** Mr P. Martin, Cutwell Cottage, 60 West Street, Tetbury, Gloucester, GL8 8DR.  
**7:** R.D. Porley, English Nature, Foxhold House, Crookham Common, Thatcham, Berkshire, RG19 8EL.  
**8,11:** Mr R.C. Stern, Botany Bay, Main Road, Fishbourne, Chichester, West Sussex, PO18 8AX.  
**9:** Dr M.O. Hill, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS.  
**10:** Mrs L. Snow, Ein Shemer, Upper Hyde Farm Road, Shanklin, Isle of Wight, PO37 7PS.  
**12:** Mr A.C. Crundwell, Acorn Cottage, 12 Kay Crescent, Headley Down, Hampshire, GU35 8AH.  
**13,14:** Mr H.W. Matcham, 111 Winterbourne Road, Summerdale, Chichester, West Sussex, PO19 4PB.  
**15:** Mr M.C. Watling, 23 Dane Hill, Margate, Kent, CT9 1QP.  
**16:** Mr E.R. Hurr, 6 The Woodlands, Chelsfield, Orpington, Kent, BR6 6HL.  
**17:** Mr P.G. Adams, 5 Elm Cottages, Bytton Hill, Mickleham, Dorking, Surrey, RH5 6EL.  
**18,19,21:** Dr K.J. Adams, 63 Wroths Path, Baldwins Hill, Loughton, Essex, IG10 1SH.  
**20:** Mr G. Smith, 59 Tippet Court, Stevenage, Hertfordshire, SG1 1XR.  
**22:** Dr J.W. Bates, Imperial College at Silwood Park, Ascot, Berkshire, SL5 7PY.  
**23:** Mr G. Bloom, 15 Tatham Road, Abingdon, Oxfordshire, OX14 1QB.  
**24:** Dr S.V. O'Leary, J.J. Thomson Physical Laboratory, PO Box 220, Whiteknights, Reading, RG6 2AF.  
**25,26:** Mr R.J. Fisk, 1 Paradise Row, Ringsfield, Beccles, Suffolk, NR34 8LQ.  
**27,28:** Mr R. Stevenson, 111 Wootton Road, Kings Lynn, Norfolk, PE30 4DJ.  
**29:** Dr H.L.K. Whitehouse, Botany School, Downing Street, Cambridge, CB2 3EA.  
**30:** Mr A.R. Outen, 15 Manor Close, Clifton, Shefford, Bedfordshire, SG17 5EJ.  
**31,86-88,99,104:** Mr N.G. Hodgetts, Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough, PE1 1JY.  
**32,60:** Mr M.J. Wigginton, 36 Big Green, Warmington, Oundle, PE8 6TU.  
**35,41,44:** A.R. Perry, Department of Biodiversity & Systematic Biology, National Museum & Gallery Cardiff, Cathays Park, Cardiff, CF1 3NP.  
**36:** P.J. Port, Hollybush Cottage, Newton Lane, Kington, Hereford, HR5 3NG.  
**40:** Mr R. Shoubridge, 8 Mary Elizabeth Road, Ludlow, Shropshire, SY8 1LW.  
**42,43,47:** R.G. Woods, Countryside Council for Wales, 3rd Floor, The Gwalia, Ithon Road, Llandrindod Wells, Powys, LD1 6AA.  
**45:** Dr P.M. Rhind, Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ.  
**46:** Mr A. Hale, Northfield, Cliff Terrace, Aberystwyth, Ceredigion, SY23 2DN.  
**48-52:** Marcus Yeo, Countryside Council for Wales, Plas Penrhos, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ.  
**53-54:** Professor M.R.D. Seaward, School of Environmental Science, University of Bradford, Bradford, BD7 1DP.  
**55:** D.W. Ballard, 84 Leicester Road, Groby, Leicester, LE6 0DN.

**57,61,63-65:** T.L. Blockeel, 9 Ashfurlong Close, Dore, Sheffield, S17 3NN.  
**58:** A.V. Smith, 1 Carr Meadow Cottages, Glossop Road, Little Hayfield, via Stockport, Cheshire, SK12 5NR.  
**59:** Mr J. Lowell, 37 Henley Avenue, Cheadle Hulme, Cheshire, SK8 6DE.  
**62:** Mr J.M. Blackburn, 6 Bylands Grove, Fairfield, Stockton on Tees, Cleveland, TS19 7BG.  
**66:** Mr B.M. Humphreys, 10 Maple Crescent, Crook, County Durham, DL15 9LE.  
**67,68:** Mr T.S. Wharton, c/o Ms J. McCutcheon, 33 Ennerdale Drive, Watergate Estate, Crook, County Durham, DL15 8NT.  
**69,92:** Mr K. Raistrick, 1 Drewton Avenue, Heysham, Lancashire, LA3 1NU.  
**70:** F.J. Roberts, Eden Croft, Wetheral Pasture, Carlisle, Cumbria, CA4 8HU.  
**72-74:** Dr C. Miles, Braeside, Boreland, Lockerbie, Dumfries, DG11 2LL.  
**79-80:** R.W.M. Corner, Hawthorn Hill, 36 Wordsworth Street, Penrith, Cumbria, CA11 7QZ.  
**81:** D.G. Long, Royal Botanic Garden, Edinburgh, EH3 5LR.  
**82-84:** Dr D.F. Chamberlain, Royal Botanic Garden, Edinburgh, EH3 5LR.  
**96:** Mr J.A. McMullen, 5 Alder Road, Mansewood, Glasgow, G43 2UY.  
**97,98,105,108:** G.P. Rothero, Stronlonag, Glenmassan, By Dunoon, Argyll, PA23 8RA.  
**100:** Mr P. King, 13 Meadowsides Gardens, Rushmere St Andrew, near Ipswich, Suffolk, IP4 5RD.  
**101-103,110:** M.F.V. Corley, Pucketty Farm Cottage, Faringdon, Oxfordshire, SN7 8JP.  
**111:** Mrs. R. McCance, West End House, Burray, Orkney, KW17 2SS.

**Channel Islands:** C.D. Preston, Monks Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS.

#### **Ireland:**

**H36-40:** Mr P. Hackney, Ulster Museum, Botanic Gardens Belfast, Belfast, BT9 5AB.

*Ron Porley, English Nature, Foxhold House, Crookham Common, Thatcham, Berkshire, RG19 8EL; e-mail: ron.porley@english-nature.org.uk.*

## **INTERNATIONAL ASSOCIATION FOR PLANT TAXONOMY (IAPT) - REGISTRATION OF PLANT NAMES**

### **ANNOUNCING A TEST AND TRIAL PHASE FOR THE REGISTRATION OF NEW PLANT NAMES (1998-1999)**

#### **Introduction**

Subject to ratification by the XVI International Botanical Congress (St Louis, 1999) of a rule already included in the *International code of botanical nomenclature* (Art. 32.1-2 of the *Tokyo Code*), new names of plants and fungi will have to be registered in order to be validly published after 1 January 2000. To demonstrate the feasibility of a registration system, the International Association for Plant Taxonomy (IAPT) (<http://www.bgbm.fu-berlin.de/iapt/default.htm>) has undertaken a trial of registration, on a non-mandatory basis, for a two-year period starting 1

January 1998. The co-ordinating centre will be the secretariat of IAPT, currently at the Botanic Garden and Botanical Museum Berlin-Dahlem, Germany. Co-ordination with current indexing centres for major groups of plants is being sought, in view of their possible active involvement at the implementation stage. The International Mycological Institute in Egham, UK, has already agreed to act as associate registration centre for the whole of fungi, including fossil fungi.

### **Registration procedure**

The co-ordinating registration centre (IAPT Secretariat), and any associated centre operating under its auspices, will register and make available all names of new taxa, all substitute names, new combinations or rank transfers that are brought to their attention in one of the following ways:

- by being published in an accredited journal or serial;
- by being submitted for registration (normally by the author or one of the authors), either directly or through a national registration office; or
- as a result of scanning of other published information by the registration centres' own staff (for the non-mandatory trial phase only).

### **Registration by way of publication in accredited journals or serials**

For a journal or serial to be accredited, its publishers must commit themselves, by a signed agreement with the IAPT, to

- point out any nomenclatural novelties in each individual issue of their journal or serial, either by including a separate index of novelties or in another suitable, previously agreed way;
- submit each individual issue, as soon as published and by the most rapid way, to a pre-defined registration office or centre.

Accredited journals and serials will be entitled, and even encouraged, to mention that accreditation on the cover or title page, or in the imprint.

A permanently updated list of accredited journals and serials is being placed on the World Wide Web (<http://bgbm3.bgbm.fu-berlin.de/iapt/registration/journals.htm>). This list will be published annually in the journal *Taxon*.

### **Registration by way of submission to registration offices**

Authors of botanical nomenclatural novelties that do not appear in an accredited journal or serial (but, for example, in a monograph, pamphlet, or non-accredited periodical publication) are strongly encouraged to submit their names for registration - and will be required to do so once registration becomes mandatory - in the following way:

- all names to be registered are to be listed on an appropriate registration form, using a separate form for each separate publication;
- the form (in triplicate) must be submitted, together with two copies of the publication itself, either to a national registration office (see below) or, optionally, directly to the



- appropriate registration centre. Reprints of articles from books or non-accredited periodicals are acceptable, provided their source is stated accurately and in full;
- one dated copy of each form will be sent back to the submitting author in acknowledgement of effected registration.

Registration forms can be obtained free of charge, (a) by sending a request to any registration office or centre, by letter, fax or e-mail, or preferably (b) by printing and copying the form as available on the World Wide Web (<http://bgbm3.bgbm.fu-berlin.de/iapt/registration/regform.rtf>).

Registration offices are presently being arranged for in as many different countries as possible. They will serve (a) as mailboxes and forwarding agencies for registration submissions, and (b) as national repositories for printed matter in which new names published locally appear.

A permanently updated address list of all functioning national registration offices is being placed on the World Wide Web (<http://bgbm3.bgbm.fu-berlin.de/iapt/registration/offices.htm>). This list will also be published annually in the journal *Taxon*.

### **Registration date**

The date of registration, as here defined, will be the date of receipt of the registration submission at any national registration office or appropriate registration centre. For accredited journals or serials (and, for the duration of the trial phase, for publications scanned at the registration centres), it will be the date of receipt of the publication at the location of the registration centre (or national office, if so agreed).

For the duration of the trial phase, i.e. as long as registration is non-mandatory, the date of a name will, just as before, be the date of effective publication of the printed matter in which it is validated, irrespective of the date of registration. Nevertheless, the registration date will be recorded, for the following reasons:

- to make clear that the name was published on or before that date, in cases when the date of effective publication is not specified in the printed matter;
- to assess the time difference between the (effective or stated) date of the printed matter and that of registration, since it is envisaged that the date of registration will be accepted as the date of names published on or after 1 January 2000.

It is therefore in the interest of every author to submit nomenclatural novelties for registration without any delay, and by the most rapid means available.

### **Access to registration data**

Information on registered names will be made publicly available as soon as feasible, (a) by placing it on the World Wide Web without delay in a searchable database (<http://www.bgbm.fu-berlin.de/registration/QueryForm.htm>), (b) by publishing non-cumulative lists biannually, and (c), hopefully, by issuing cumulative updates on a CD-ROM-type, fully searchable data medium at similar intervals.

### **A call to everyone: help test the system so as to make it work**

To make the test effective and significant, it is important that everyone publishing nomenclatural novelties on or after 1 January 1998 should participate by registering all new names and combinations on a voluntary basis. Please help (a) by doing so yourself, and (b) by spreading the message to others!

Do not be put off if shortcomings or errors occur in the initial months. Remember, this is a test phase. Let us know of any bug or crinkle in the system, and we will iron it out. What matters is that everything operates smoothly by the end of 1999, and that by the next Congress all have satisfied themselves that it will.

We believe that registration of new names, once implemented in a functional way, will be a great benefit for all concerned – and so did the Nomenclature Section at Yokohama in 1993. Nomenclature must be fit for a good start into the next millennium. Let us work together to make it happen.

*L. Borgen, W. Greuter, D.L. Hawksworth, D.H. Nicolson & B. Zimmer; Officers of the International Association for Plant Taxonomy (IAPT).*

---

### ***DIDYMODON MAMILLOSUS* (CRUNDW.) M.O. HILL RELOCATED AT ITS TYPE LOCALITY IN SCOTLAND**

NICK HODGETTS

*Joint Nature Conservation Committee, UK*

*Didymodon mamillosus* was described (as *Barbula mamillosa*) by A.C. Crundwell from material collected by E.C. Wallace in 1967 at the head of Kirkton Glen, West Perthshire, VC 87 (Crundwell, 1976).

The type locality was visited on 7 July 1998 as part of a programme of fieldwork on rare and threatened species. A single-tuft of *D. mamillosus* was found growing on a small Loch Tay limestone rock at an altitude of ca 580 m by Lochan an Eireannaich on the watershed between Glen Dochart and Balquhadder. The tuft consisted of a pure patch of *D. mamillosus* measuring ca 1 x 2 cm. No fertile material was found among the collection (the type collection was male). There were no particularly close associates but several calcicolous bryophytes were found growing elsewhere on the same rock and on nearby rocks, including *Bryoerythrophyllum* (*Barbula*) *ferruginascens*, *B. recurvirostrum* (*Barbula recurvirostra*), *Didymodon ferrugineus* (*Barbula reflexa*), *Fissidens adianthoides*, *Orthotrichum cupulatum*, *Schistidium apocarpum* s.l. and *Trichostomum crispulum*. Predominantly west-facing limestone cliffs directly above the site, on Meall an Fhiodhain, also supported a range of calcicoles, including *Encalypta ciliata*, *E. rhaptocarpa*, *Grimmia funalis*, *Gymnostomum aeruginosum*, *Hymenostylium* (*Gymnostomum*) *recurvirostrum*, *Mnium thomsonii*, *Neckera crispa*, *Seligeria donniana* and

*Scapania aspera*. Rarer species, including *Splachnum vasculosum*, *Timmia norvegica* and *Scapania gymnostomophila*, have also been found in the area on other occasions.

*D. mamillosus* is a distinctive plant under the microscope, the abundant and rather large spherical gemmae in the leaf axils being very striking, and the leaf in cross-section showing the conspicuously mamillate cells on both dorsal and ventral surfaces. The leaves are relatively shorter and broader than those of *D. rigidulus* (*Barbula rigidula*) and the slightly catenulate appearance of the shoots when dry, described by Crundwell (1976), is characteristic. The recent collection differs in two minor points from the description given by Smith (1978): both plant and gemmae are green when fresh, rather than brown, and the leaves are rather loosely imbricate when dry, not at all closely appressed. In the field *D. mamillosus* could easily be overlooked.

Although *D. mamillosus* was growing in close proximity to a path, threats at this site are likely to be minimal. However, a few stems have been taken into *ex situ* cultivation as a precaution. There may be further colonies in the area but the extent of limestone at the head of the glen is very limited, so the total population there is likely to be small. Moreover, as it was growing on a relatively sheltered rock near the lochan, but was apparently absent from the cliffs above, it seems likely that *D. mamillosus* may be quite specialised in its habitat requirements.

Apparently a European endemic, *D. mamillosus* is known from four localities outside Scotland: Jan Meyen Island, Englische Bucht, 1899, Dusén; Bavaria, Garmisch, on limestone at ca 2000-2050 m altitude, 1979, Düll; Czech Republic, Praha, on dry limestone boulder in botanic garden, 1996, Soldán; NE Spain, Casas (Crundwell, pers. comm.).

## References

- Crundwell AC. 1976.** *Barbula mamillosa*, a new species from Scotland. *Journal of Bryology* 9: 163-166.
- Smith AJE. 1978.** *The moss flora of Britain and Ireland*. Cambridge: Cambridge University Press.

---

## THE ARMCHAIR TROPICAL BRYOLOGIST

A chance remark about liking a certain group of mosses, and a few months later the post brings a huge box of 150 packets, with a sheaf of literature: half a dozen keys and other notes and checklists. My task is to sort out the Hypnaceae from the Malawi expedition in 1991.

As an amateur bryologist who for some years had thought that mastering the British flora was a daunting task, the idea of getting involved with tropical plants had seemed improbable. However, the pleas in the articles from the Tropical Bryology Group had not been in vain, and from my experience so far I can assure the rest of you that it really is worthwhile.

First impressions of the mosses themselves. Here are the packets, all now neatly laid out in a shallow box next to my desk. A random look, just to get an idea what's ahead. First packet -

looks like *Ctenidium molluscum*. Another one further back - also looks like *C. molluscum*. A third, oh no! it looks the same again - I hope they're not all like this. The next one is much more impressive, like a giant *Hypnum lacunosum*. A few more sneak previews reveal a range of forms, lumps of wood and leaf litter, some packets bulging with thick curly swards, others containing 'Russian Doll' effects with inner packets leading to optimistic pencilled remarks like 'whole specimen', with the tiniest scraps, seemingly pleading not to be torn apart any further!

Eventually the serious work had to be done. Since there are no overall keys for the family, I was sent several from various parts of Africa and other parts of the world. Fortunately this work goes only to genus level, but there are enough genera in the keys to make it look daunting to start with. My method was to take each genus and work backward through the key, noting down the features, especially for the last two or three couplets. By the time I had gone through the six keys this gave a reasonable batch of information on each genus. I had 14 to look out for.

About two thirds of the specimens had already been provisionally identified by the collectors. This gave me a degree of encouragement on the assumption that they would know more than I did. I started with these packets, making notes and drawings as I went, and before long I was learning to recognise the plants with the hand lens and 'jizz' alone! My *C. molluscum* lookalike is called *Ectropothecium*; another new friend is *Mittenothamnium*, named after Mitten, the nineteenth century bryologist. It has a branching pattern much like that of a miniaturised *Thamnobryum*.

As well as the job in hand, there was the ever-present distraction of other species in with the main sample. Some of these were more exciting microscopically. Although the Hypnaceae are attractive with their golden curls and fuzzy branches and so on, there isn't really much that can happen with linear leaf cells and neat alar regions! To catch sight of large new *Dicranum*-like plants, strange looking Fissidentales, and liverworts with enormous spiky cells going in all directions....! Well, at least my fellow bryologists will understand.

After a couple of months of using intermittent leisure time, the task, as far as I am able to take it, is over. Only six genera from the Hypnaceae seem to have been represented in the collections, and I have found several packets with specimens from other families! I do hope I have been right. It remains now for me to pack these mosses up again and send them on their journey, eventually to the experts who will check the species.

So as you read the Mulanje Expedition accounts in your *Journal of Bryology*, and you see those little lists that go M0013a, M0203b, M2026c, M2471b, etc., remember that each represents a packet that has been carefully opened and examined by someone. 'It could be you!!'

MALCOLM WATLING

## MOSES IN ENGLISH LITERATURE: SUPPLEMENT FOUR

This supplement is the fourth part of an occasional column in the *Bulletin*. Although the matter of Hasselquist's Hyssop might stretch the definition of English literature, it follows up and hopefully concludes the question that was raised in the original volume (Edwards, 1992), as to whether moss was mentioned in the Bible.

### Hasselquist's Hyssop

In the second supplement to *Mosses in English literature* (Edwards, 1993), in the section MOSSES IN THE BIBLE, it was suggested that the 'hyssop that springeth out of the wall', which Solomon compared with the Cedar of Lebanon (*I Kings* 4: 33), was *Pottia truncata* (now *Tortula truncata*).

During the production of *English names for British bryophytes* (Edwards, 1997), I came across the following correction of this view in Smith & Sowerby (1790-1814), entry [175] *Gymnostomum truncatulum* (now *Tortula truncata*):

'This moss has been celebrated as the "Hyssop of Solomon which springeth out of the wall," but what that really is may be seen in our 18th vol. t. 1245.'

The entry [1245] for *Gymnostomum fasciculare* (now *Entosthodon fascicularis*) includes the paragraph:

'Few mosses have been more celebrated, very few less understood, than this. The herbarium of Linnaeus shows it to be what Hasselquist gathered on the walls of Jerusalem, and supposed might be the Hyssop of Solomon 'which springeth out of the wall;' an ingenious idea which Linnaeus adopted, and others have retailed in various places. Our great master, however, has led us all astray by very inaccurately referring Hasselquist's excellent specimens to his own *Bryum truncatulum*. Mr Dickson, who could not be aware of this, finding the same moss in Britain, described it as new by the name of *B. fasciculare*. To sum up all, the German botanists have mistaken for this plant of Dickson a most slight variety, or rather no variety at all, of *B. pyriforme*, figured by Hedwig as *Gymnostomum fasciculare*, *Sp. Musc. t. 4*; for which last observation, confirmed by authentic specimens, we are indebted to Mr D. Turner.'

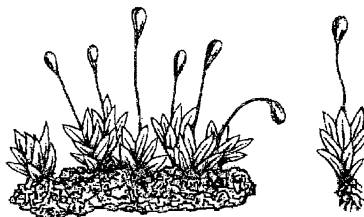


Figure 1. *Entosthodon fascicularis*, or Hasselquist's Hyssop, from Sowerby & Smith (1790-1814), Figure 1245.

From this it seems clear, pending any further information, that Hasselquist's Hyssop (if not Solomon's) is *Entosthodon fascicularis*.

### Further quotations

Although I now have a large quarry of unused quotations, I should still like members to send in anything of particular interest. If quotations you have sent in already have not been used, they probably will be, as I am trying to present them in linked groups rather than simply as random fillers. The criteria are the same as for Edwards (1992).

### References

- Edwards SR. 1992.** *Mosses in English literature*. British Bryological Society Special Volume no 4. Cardiff.
- Edwards SR. 1993.** Mosses in English literature: supplement two. *Bulletin of the British Bryological Society* 62: 28-29.
- Edwards SR. 1997.** *English names for British bryophytes*. British Bryological Society Special Volume no. 5. Cardiff.
- Sowerby J, Smith JE. 1790-1814.** *English botany; or, coloured figures of British plants, with their essential characters, synonyms, and places of growth*, 36 vols. London.

Please send any quotations (with as full references as possible) to: *Sean Edwards, The Manchester Museum, Manchester University, Oxford Road, Manchester, M13 9PL; e-mail: sean.edwards@man.ac.uk.*

---

## BRYOPHYTE LISTS ON WEB SITE

The Joint Nature Conservation Committee (JNCC) web site now includes a list of all species which receive special protection under the Wildlife and Countryside Act 1981 (Schedule 5 for animals and Schedule 8 for plants and fungi). As most BBS members will already know, four more bryophytes, all mosses, were added to Schedule 8 in 1998: *Anomodon longifolius*, *Bryum neodamense*, *Tortula cernua* (as *Desmatodon cernuus*) and *Hygrohypnum polare*.

Also on the site are lists of species status for a number of groups, including bryophytes. All Red List species (*Extinct*, *Critically Endangered*, *Endangered*, *Vulnerable*) and species in the categories *Lower Risk (near threatened)* and *Nationally Scarce* are listed. The bryophyte lists will be revised shortly so that they agree with the bryophyte Red Data Book, due to be published later this year. It is intended to update the status lists at regular intervals, using the revised IUCN criteria (IUCN, 1994), so all suggestions for improvements to the lists will be welcome, and should be submitted to me at the address below.

The address of the JNCC web site is <http://www.jncc.gov.uk/advisors/species/pstatus/index.htm>.

*Nick Hodgetts, JNCC, Monkstone House, City Road, Peterborough, PE1 1JY; e-mail [hodget\\_n@jncc.gov.uk](mailto:hodget_n@jncc.gov.uk)*

---

## NEW VICE-COUNTY RECORDS AND AMENDMENTS TO THE CENSUS CATALOGUE

All undated records are based on specimens collected in 1997; for specimens collected in earlier years the year of collection is given before the collector's name. Where the specimen bears a collector's number, this is given after the collector's name. All specimens are deposited in BBSUK, except where otherwise indicated. Numbers and nomenclature follow Blockeel & Long (1998), *A Check-list and Census Catalogue of British and Irish Bryophytes*.

### HEPATICAЕ

D.G. LONG

- 4.1 *Blepharostoma trichophyllum*, place 23 in (), not seen since 1967 and considered extinct (Jones & Perry, 1998).
- 5.1 *Trichocolea tomentella*, on stones in stream, Barnalyra Wood, N of Kilkelly (H26), 1982, Synnott (DBN).
- 7.3 *Kurzia trichoclados*, delete 14, the only voucher traced (The Ardingly Rocks, 1904, W.E. Nicholson (E)) is *K. sylvatica*.
- 10.4 *Calypogeia neesiana*, in gully on moorland, SSW of Tafarn-y-bwlch, Mynydd Preseli, SN03 (45), Lowell & Newton; on log under scrub in mixed deciduous woodland, Alderley Edge, SJ87 (58), Newton.
- 10.5 *C. integristipula*, ditch bank, West Common Plantation, Walden, West Grimstead, SU22 (8), Stern; delete 17, the voucher (stump, Conehurst Hill, Hurtwood, 1947, A.D. Banwell & E.F. Warburg, BBSUK) is *C. muelleriana*, det. & comm. Paton.
- 10.6 *C. sphagnicola*, in hummocks of *Sphagnum capillifolium* in mire on margin of loch, 120 m alt., Loch na Leothaid, North Assynt, NC12 (108), Rothero 97/003.
- 12.3 *Cephalozia catenulata*, place 13 in (), (Rose *et al.*, 1991).
- 12.4 *C. macrostachya* a var. *macrostachya*, amongst *Sphagnum* on bog, 160 m alt., Fen Bog, North York Moors, SE89 (62), 1992, Bowes, conf. Blackstock, comm. Blackburn; delete 69, no voucher traced.
- 12.8 *C. loitlesbergeri*, delete 52, the voucher (among *Sphagnum tenellum* in damp heath, between Brynrefail and Llanallgo, SH48, 1988, Yeo (BBSUK)) is *C. macrostachya* var. *spiniflora*, det. & comm. Paton.
- 13.1 *Nowellia curvifolia*, delete 16, the published locality (on sandstone rocks, 'High Rocks', Friezland Wood, TQ53, Priestley, *Bull. BBS* 70: 40, 1997) is in 14, comm. Mitchell.
- 14.1 *Cladopodiella fluitans*, delete 71, no voucher traced (Paton, 1971).
- 17.2 *Odontoschisma denudatum*, on peat at edge of raised bog, 297 m alt., on S side of Clearburn Loch, NT31 (79), 1988, Corner.
- 18.4 *Cephalozia hampeana*, place 23 in (), not seen since 1945 (Jones & Perry, 1998).
- 18.5 *C. baumgartneri*, place 17 in (), not recorded since 1948 (Gardiner, 1981).
- 18.9 *C. nicholsonii*, on sandy ground of disused copper-mined area, Alderley Edge, SJ87 (58), Newton.
- 18.13 *C. calyculata*, thin soil on masonry retaining mine spoil, N of Crow's Nest, NE of Liskeard, SX26 (2), Holyoak (herb. Holyoak), det. & comm. Paton.
- 21.4 *Barbilophozia atlantica*, place 83 in (), not recorded since 1902, comm. Long.
- 23.2 *Lophozia ventricosa*, delete 23, all records doubtful (Jones & Perry, 1998).

- 23.13 *L. bicrenata*, Blackfarland Burn, North Bute (100), 1965, H. McAllister (LIV); delete 112, entry based on doubtful literature record and no voucher traced (Paton & Hill, 1975).
- 24.6 *Leiocolea heterocolpos*, in dense cushion of other bryophytes on wet ledge, 100 m, Gleann Sgoilte, Assynt, NC11 (108), Rothero 97/011.
- 25.1 *Gymnocolea inflata*, on patch of heathy ground, margin of College Wood, Goring Heath (23), 1977, Watson (herb. E.V. Watson); place 23 in (), not refound in 1984, presumed extinct (Jones & Perry, 1998).
- 28.1 *Anastrophyllum minutum*, place 60 in (), not recorded since ca 1900, (Wigginton, 1995).
- 31.1 *Mylia taylorii*, on N-facing bluff, 265 m alt., about 15 ft above road to Avon Dam, below Black Tor, Avon Valley, SX66 (3), O'Leary.
- 32.11 *Jungermannia hyalina*, place 17 in (), not recorded since 1948 (Gardiner, 1981); place 23 in (), not recorded since 1949 (Jones & Perry, 1998).
- 33.1 *Nardia compressa*, in seepage area of disused slate quarry, Rosebush, SN03 (45), 1994, Newton *et al.*
- 33.3 *N. geoscyphus*, on compacted soil in crevice of wall on moor E of Brynberian, Mynydd Preseli, SN13 (45), 1995, Newton *et al.*
- 34.1 *Marsupella emarginata* b var. *aquatica*, delete 112, entry based on doubtful literature record and no voucher traced (Paton & Hill, 1975); c var. *pearsonii*, place 112 in () (Paton, 1973).
- 34.3 *M. sphacelata*, delete 112, entry based on doubtful literature record and no voucher traced (Paton & Hill, 1975).
- 35.1 *Gymnomitrium concinnatum*, delete 112, entry based on doubtful literature record and no voucher traced (Paton & Hill, 1975).
- 37.3 *Diplophyllum obtusifolium*, bank beside forest track, Gatley Long Coppice, SO46 (36), Lawley.
- 38.18 *Scapania paludosa*, in flushed patches in block scree in area of late snow lie, 1000 m alt., gully E of summit, Aonach Mor, Nevis, NN17 (97), 1989, Rothero 89/308.
- 40.4 *Lophocolea semiteres*, on base of *Pseudotsuga menziesii* in arboretum, 190 m alt., Dawyck Arboretum near Stobo, NT13 (78), Long 27352.
- 43.2 *Harpanthus scutatus*, delete 112, the voucher (Unst, 1907, D. Lillie (GL)) is *H. flotovianus*, comm. Paton.
- 46.2 *Plagiochila porelloides*, 21 in (), (Wiltshire & Ellis, 1995).
- 46.3 *P. asplenioides*, H21 (Kelly & Synnott, 1993).
- 46.4 *P. britannica*, shaded limestone beside coastal footpath, Black Head, Torquay, SX96 (3), Paton 8032; on limestone rocks under trees, 50 m alt., Barley Harbour N of Portlick Castle, E side of Lough Ree, N05 (H24), Long 27320.
- 46.5 *P. atlantica*, base of oak tree in open broadleaf wood, 150 m alt., E edge of Rydal Beck, ca 35 m N of High Fall, Birk Hagg, NY30 (69), Rycroft 97086; on almost vertical NE-facing rock face in wide cleft in SE-facing rock wall shaded by trees, 180 m alt., Low Stile Wood, Seatoller, Borrowdale, NY21 (70), Rycroft 97141, new to England.
- 46.6 *P. spinulosa*, Glen Queich, Ochils (85 in ()), iv 1904, W. Evans (E); banks in wooded ravine, Barnalyra Wood, N of Kilkelly, M49 (H26), 1982, D. Synnott (DBN).
- 46.7 *P. killarniensis*, vertical side of conglomerate rock outcrop shaded by other rocks and trees, 20 m alt., just S of southern limit of Milarrochy Bay, E side of Loch Lomond, NS49 (86), Rycroft 97032.
- 51.2 *Radula lindenbergiana*, delete 48, no localised record or voucher traced, comm. Hill.



- 51.5 *R. aquilegia*, delete H38, no record or voucher traced.
- 51.6 *R. carringtonii*, delete H33, no voucher traced.
- 53.1 *Porella platyphylla*, place 21 in (), not seen since 1927, comm. Adams.
- 53.2 *Porella cordaeana*, growing with *Thamnobryum alopecurum* on rock in stream, Thringstone, Grace Dieu Wood, SK41 (55), Woodward.
- 53.3 *P. arboris-vitae*, on basic rock face in small gully in ravine, 295 m alt., Linn Dean Water, Soutra, NT45 (82), 1990, Long 18118 (E).
- 54.1 *Frullania tamarisci*, delete 24, no record or voucher traced; place 32 in (), not recorded since 1893 (McFarlane, 1962).
- 54.3 *F. microphylla* a var. *microphylla*, delete 87, the voucher (Aberfoyle, 1913, J. McAndrew (E)) is *F. fragilifolia*, det. Long; in sheltered chasm on edge of cliff above sea, 70 m alt., Stoer cliffs W of lighthouse, NC03 (108), Rothero 97/004.
- 60.1 *Lejeunea cavifolia*, delete 10, the locality (Bear Wood, 1968, E.C. Wallace) is in VC 36 (fide E.C. Wallace *in litt.* to L. Snow), comm. Snow; place 21 in (), (Wiltshire & Ellis, 1995).
- 60.3 *L. patens*, on serpentine boulder amongst crags high on slope of side of small valley, above Kynance Cove, SW61 (1), Holyoak 97-340.
- 61.1 *Colura calyptrifolia*, trunk of *Nothofagus obliqua*, 450 m alt., Fernworthy Forest, Dartmoor, SX68 (3), Stern.
- 64.3 *Fossombronina caespitiformis*, place 23 in (), not recorded since 1949 (Jones & Perry, 1998).
- 64.7 *F. wondraczekii*, place 23 in (), not recorded since 1948 (Jones & Perry, 1998).
- 64.9 *F. incurva*, in sandy grass outside visitor centre, Dawlish Warren, SX97 (3), O'Leary, Paton & Holyoak.
- 64.10 *F. fimbriata*, on moist peaty soil overlying a stone at edge of *Juncus* flush, Hollingworth Clough, High Peak, SK08 (57), Blockeel 26/253.
- 66.2 *Pellia neesiana*, peaty ground, 40 m alt., Landford Common, near Plaitford, SU21 (8), Stern.
- 68.1 *Moerckia hibernica*, place 57 in (), not recorded since 1923, comm. Blockeel; by side of waterfall, 180 m alt., Havern Beck, Saltergate, near Sleights, SE89 (62), Smith.
- 69.1 *Blasia pusilla*, 23 in (), (Jones & Perry, 1998).
- 72.1 *Riccardia multifida*, delete 21, doubtful literature record with no traceable voucher, comm. Adams.
- 72.3 *Riccardia incurvata*, waterlogged ground on floor of old quarry, Yarwell, TL09 (32), Wigginton.
- 73.1 *Metzgeria fruticulosa*, on elder in sheltered limestone valley, 175 m alt., Musden Wood near Ilam, SK15 (39) Blockeel 26/656; H21 (Kelly & Synnott 1993).
- 81.1 *Preissia quadrata*, delete 71, no voucher traced (Paton, 1971); the voucher for 84 (Binny Craig, Winchburgh, 1908, J. McAndrew (E)) is *Reboulia hemisphaerica*, det. Long; replace by: wet base-rich face on bank above stream, Ochiltree Mill, Ecclesmachan Burn, NT07 (84), 1975, Long 4688b (E).
- 82.1 *Marchantia polymorpha* a ssp. *polymorpha*, frequent on stones in small stream, ca 500 m alt., below Bannau Sir Gaer, Black Mountain, SN82 (44), 1994, Blackstock & Yeo; b ssp. *ruderalis*, junction of pavement and wall in town street, Menai Bridge, SH57 (52), 1992, Blackstock; c ssp. *montivagans*, on steep hillside, ca 180 m alt., above Havern Beck, Saltergate, near Sleights, SE89 (62), Jones.
- 83.1 *Ricciocarpos natans*, in pool in cattle-grazed pasture, 100 m alt., The Lum, near Madeley, SJ74 (39), Wrench.

- 84.5 *Riccia rhenana*, forming dense 'scum' on water surface of ditch and several pools, Uplees Gravel Pits near Oare, TR06 (15), Stewart & Swandale; on silt at edge of small pond, Alderley Edge, SJ87 (58), Newton.
- 85.1 *Anthoceros punctatus*, delete 23, no record or voucher traced (Jones & Perry, 1998); delete 50, no voucher traced, comm. Hill.
- 86.1 *Phaeoceros laevis*, place 81 in (), (Long 1990).

#### Contributors of hepatic records, 1997

K.J. Adams, T.H. Blackstock, T.L. Blockeel, P.C. Bowes, R.W.M. Corner, M.O. Hill, D.T. Holyoak, V. Jones, M. Lawley, D.G. Long, J. Lowell, D. Mitchell, M.E. Newton, S.V. O'Leary, J.A. Paton, A.R. Perry, G.P. Rothero, D.S. Rycroft, G. Smith, L. Snow, R.C. Stern, N.F. Stewart, T. Swandale, D.M. Synnott, E.V. Watson, M.J. Wigginton, S.F. Woodward, D. Wrench, M.J.M. Yeo.

#### References

- Gardiner JC. 1981. A bryophyte flora of Surrey. *Journal of Bryology* **11**: 747-841.
- Jones EW, Perry AR. 1998. The liverworts and mosses of Oxfordshire (VC 23). In: Killick J, Perry R, Woodell S, eds. *The flora of Oxfordshire*. Newbury: Pisces Publications.
- Kelly DL, Synnott DM. 1993. Bryophytes of the Phoenix Park, Dublin. *Glasra* **2**: 73-81.
- Long DG. 1990. Bryophytes. In: Braithwaite ME, Long DG *The botanist in Berwickshire*. Berwickshire Naturalists' Club, 69-98.
- McFarlane MG. 1962. A liverwort flora of Northamptonshire. *Journal of the Northamptonshire Natural History Society and Field Club* **34**: 139-147.
- Paton JA. 1971. A bryophyte flora of the Isle of Man. *Proceedings of the Isle of Man Natural History and Antiquarian Society* **7**(3) Supplement: 1-68.
- Paton JA. 1973. Hepatic flora of the Shetland Islands. *Transactions of the Botanical Society of Edinburgh* **42**: 17-29.
- Paton JA, Hill MO. 1975. *The bryophytes of Shetland*. Institute of Terrestrial Ecology, 107 pp.
- Rose F, Stern RC, Matcham HW, Coppins BJ. 1991. *Atlas of Sussex mosses, liverworts and lichens*. Brighton: Booth Museum of Natural History.
- Wigginton MJ. 1995. *Mosses and liverworts of West Lancashire*. Lancaster: Lancaster University.
- Wiltshire E, Ellis LT. 1995. John Benbow (1821-1908) and the bryophytes of north-west Middlesex. *London Naturalist* **74**: 21-53.

#### MUSCI

G.P. ROTHERO

- 1.4 *Sphagnum palustre* a var. *palustre*, edge of *Sphagnum* lawn under bracken, Nettlebed Common, SU78 (23), Jarvis, det. Hill; b var. *centrale*, damp ground, Carn Fadryn, Lley, SH23 (49), 1974, Hill; bogs near Docker (60 in ()), 1902, A. Wilson & J.A. Wheldon (NMW); marshes, Strensall Common, (62 in ()), 1888, J.A. Wheldon, det. Warnstorf & Horrell (NMW), and marshes, Strensall Common (62 in ()), 1888, J.A. Wheldon, det. Horrell & Wheldon (NMW); bogs, The Curragh, Isle of Man, (71 in ()), 1916, H.J. Wheldon & J.A. Wheldon (NMW), and bogs, Moaney Moor, South Barrule,

- Isle of Man (71 in ()), *c.fr.*, 1909, J.H. Hartley & J.A. Wheldon (NMW); all specimens conf. Hill.
- 1.13 *Sphagnum capillifolium* a ssp. *capillifolium*, damp forestry ride near Cyffylliog (50), 1975, Hill; raised bog, Malham Tarn Moss (64), *c.fr.*, 1991, R.E. Andrus; marsh by Akenshaw Burn, Kielder Forest, NY68 (67), 1987, Hill; bank in blanket bog, Moor House NNR (70), *c.fr.*, 1991, Hill; all specimens conf. Hill.
- 1.15 *Sphagnum subnitens* a var. *subnitens*, around the base of robust *Carex* sp. in wet *Salix* carr, Whitewater, TF00 (32), Wigginton.
- 1.20 *Sphagnum subsecundum*, margin of pools with *Carex limosa* and *C. chordorrhiza*, W end of Loch Naver, Altnaharra, NC53 (108), Kirby.
- 1.21 *Sphagnum inundatum*, edge of sphagnum lawn under bracken, Nettlebed Common, SU78 (23), Jarvis, det. Hill.
- 1.24 *Sphagnum platyphyllum*, in flushed ground with *Calliergon sarmentosum*, Cors Tewgyl, Mynachlog-ddu, SN13 (45), Newton; on flushed hillside, E end of Coire Domhain, S of Dalwhinnie, NN67 (89), Newton, 1/18.
- 1.30 *Sphagnum fallax* b ssp. *isoviitae*, abundant in valley bog, Dersingham Fen, near Wolferton (28), 1997, Hill; valley bog, Cors Graianog at Garn Dolbenmaen, SH44 (49), 1980, K.I. Flatberg (Flatberg, 1992); S of Broadford, Skye, NG62 (104), 1987, K.I. Flatberg, (Flatberg, 1992); between Heilam and Achuvoldrach, NC55 (108), 1987, K.I. Flatberg (Flatberg, 1992).
- 1.31 *Sphagnum flexuosum*, flushed moorland, Brynberian, Mynydd Preseli, SN13 (45), 1995, Newton *et al.*; in flush, Druidale, SE of Kirk Michael, Isle of Man, SC38 (71), Newton, 1/27a.
- 2.6 *Andreaea rothii* b ssp. *falcata*, on Ordovician rock outcrop, 230 m alt., Loch Doon, near dam at N end, NS40 (75), 1996, Blane.
- 3.2 *Pogonatum aloides*, shaded clay bank of damp ditch, Hounslow Heath, TQ17 (21), Wiltshire.
- 14.1 *Ditrichum cylindricum*, on sandy soil on bank of pit, 5 m alt., New Farm, 3 km W of North Cliffe, SE83 (61), Blockeel, 26/637.
- 14.9 *Ditrichum flexicaule*, on limestone scar, 150 m alt., Warton Crag, SD47 (60), Wigginton.
- 14.10 *Ditrichum gracile*, delete 32, all herbarium and recent records belong to *D. flexicaule s.str.*
- 16.1 *Distichium capillaceum*, on earthy mortar of remains of low wall near ruin of mine building, mine building W of Minions, SX27 (2), Holyoak 97-319.
- 17.2 *Ceratodon conicus*, the distribution has been revised by Burley (1986); replace the existing entry with: 22, 23, (32, 33), 38, (53).
- 30.2 *Dicranodontium asperulum*, on steep, moist rock surface with a thin humus cover in wooded ravine, ravine by Loch Eisort, Skye, NG61 (104), 1990, Averis.
- 33.2 *Leucobryum juniperoideum*, N end Park Wood, Ruislip Woods, TQ08 (21), 1993, Wiltshire; on soil, Misterton Churchyard, SP58 (55), 1995, Pedley (herb. D.W. Ballard 36/2).
- 34.3 *Fissidens limbatus*, delete 13, the locality (Tilgate Forest, leg. C.P. Smith, 1886) is in 14; S-facing clay bank of ditch, Elstronwick, TA23 (61), Dolling, det. Blockeel.
- 34.5 *Fissidens gracilifolius*, delete 43, no specimen traced, comm. R.G. Woods.
- 34.17 *Fissidens taxifolius* b var. *pallidicaulis*, rock crevice in low coastal cliff, Tarskavaig Bay, Achnacloich, Skye, NG50 (104), Hodgetts 3252.

- 35.1 *Octodicerias fontanum*, on rocks in river, Monnington Falls, River Wye, Byecross, SO34 (36), Sleath.
- 39.1 *Tortella tortuosa*, on limestone boulder in rockery constructed in 1832, Shrubland Hall, Coddendam, TM15 (25), Fisk.
- 39.8 *Tortella flavovirens* a var. *flavovirens*, on skerry 0.5 km from shore, Sgeir Liath, Drumbeg, Assynt, ND13 (108), Evans.
- 40.2 *Trichostomum crispulum*, dry, open chalk on top of dyke, 2 m alt., Feltwell, by the cut-off channel, TL68 (28), Stevenson.
- 47.2 *Leptodontium gemmascens*, peaty soil, decaying grass and *Juncus* in damp hollows in grassland, 15 m alt., Barnhamcross Common, Thetford, TL88 (26), Whitehouse, Fisk *et al.*
- 54.12 *Didymodon sinuosus*, on moist sheltered boulders on river bank, 45 m alt., just N of old bridge, Kirby Lonsdale, SD67 (69), Blockeel, 26/649.
- 54.14 *Didymodon spadiceus*, calcareous flushed turf by R Teme near its source, SO18 (43), 1975, Hill (herb. Hill; cf. Hill (1988), p. 448).
- 58.4 *Aloina ambigua*, on ground in dune-slack, Broad Haven, SE of Bosherton, SR99 (45), Newton.
- 60.6 *Tortula vahliana*, delete 13, the specimen (sandy lane, Angmering, Mr Davies & W.E. Nicholson (CGE)) is *T. muralis*, det. Whitehouse, comm. Matcham; delete 17, no reliable records traced (Gardiner, 1981).
- 60.14 *Tortula viridifolia*, delete 14, no specimen or localised record traced, comm. Matcham.
- 60.17 *Tortula protobryoides*, in dune slack, N end of Bu' Links on Burray, ND49 (111), McCance.
- 60.18 *Tortula acaulon* b var. *pilifera*, on slightly disturbed bare soil beside a boardwalk with *Pottia heimii*, Cley Marshes Nature Reserve, TG04 (27), Strauss; c var. *schreberiana*, bare soil patches in grass, Hazeley Wood, Milton Keynes, SP83 (24), Higgs.
- 61.1 *Microbryum starckeanum*, chalk downland, Porton Down, SU23 (8), Stern.
- 61.2 *Microbryum davallianum*, disturbed ground in old gravel workings, 15 m alt., Little Paxton pits, TL16 (31), Hill; bare soil in limestone grassland on bank of field quarry, Sutton Heath, TL09 (32), Wigginton, and calcareous clay, Lolham Bridges lakes, TF10 (32), Wigginton.
- 68.3 *Schistidium platyphyllum*, boulder in river, 75 m alt., River Tees at Winston Bridge, NZ11 (66), 1991, Wharton, det. Blockeel.
- 69.3 *Grimmia laevigata*, on volcanic crag, Chapel Ness, Earlsferry, NT49 (85), Hay.
- 69.10 *Grimmia longirostris*, south-facing sandstone boulder, 310 m alt., Valley of stones, Cwmyoy, SO32 (35), Sleath.
- 69.11 *Grimmia ovalis*, delete 14, no specimen or localised record traced, comm. Matcham; on basic gneiss rocks on loch margin, 120 m alt., Loch na Leothaid, N Assynt, NC12 (108), Rothero.
- 69.16 *Grimmia orbicularis*, on slates of old shed, 5 m alt., shore at Laudale, Loch Sunart, NM75 (97), 1996, H. Greven.
- 70.2 *Racomitrium aciculare*, in brick-lined gully at base of church wall, 80 m alt., Magdalen Laver churchyard, TL50 (19), Pyner.
- 70.11 *Racomitrium ericoides*, with *R. canescens*, stone quarry, Stonesfield (23 in ()), 1947, E.C. Wallace (NMW), det. Blockeel; on dunes, The Ayres, Isle of Man, NX40 (71), 1994, Newton; on hill, Redland, Mainland, Orkney, HY31 (111), 1996, McCance.
- 70.12 *Racomitrium elongatum*, on bank by track in area of old mine works, 175 m alt., Coppermines Valley, Coniston, SD29 (69), Blockeel 26/647.

- 70.13 *Racomitrium canescens*, on gravel bars, Tomdachoille Island, R Tummel, near Pitlochry, NN95 (88), H. Parsons.
- 75.6 *Seligeria recurvata*, delete 10, no localised record traced, comm. Snow.
- 75.8 *Seligeria calcarea*, on chalk lump, 250 m alt., Butser Hill, Queen Elizabeth Country Park, SU72 (11), 1982, Stern.
- 79.3 *Entosthodon obtusus*, on peaty soil in underhang on turfy bank, 270 m alt., Hollingworth Clough, High Peak, SK08 (57), Blockeel 26/250.
- 83.2 *Ephemerum sessile*, delete 10, the specimen (on peaty ground, New Barn Down, Gatcombe, leg. H.M. Livens, 1907 (BON)) is depauperate *Campylopus pyriformis*, det. Blockeel.
- 93.10 *Pohlia bulbifera*, on mud by pond, 70 m alt., Dougalston Golf Course, Milngavie, NS57 (86), 1996, Long 26211.
- 93.17 *Pohlia lescuriana*, on wet mud on bank at edge of reservoir, 180 m alt., Stocks Reservoir, Forest of Bowland, SD75 (64), 1984, Wigginton.
- 97.18 *Bryum intermedium*, wet, sandy, calcareous ground in disused gravel pit, 15 m alt., Little Paxton pits, TL16 (31), Hodgetts 3221.
- 97.20 *Bryum capillare* b var. *rufifolium*, on sea cliffs, 3 m alt., Sandaig Bay, near Glenelg, NG71 (97), Martin.
- 97.21 *Bryum elegans*, on dry, exposed rocks, 420 m alt., Creag Ealraich, W side, NH93 (95), 1996, Fryday, det. Rothero.
- 97.37 *Bryum dunense*, on sandy soil with *Bryum bicolor*, near Castle Ashby, SP85 (32), 1996, Higgs; disused railway track, chemical works, Runcorn, SJ58 (58), 1994, Newton & Johnson.
- 97.40 *Bryum violaceum*, fallow arable field, Little Paxton, TL26 (31), Hill.
- 97.42 *Bryum sauteri*, open soil by side of track, Holt Lowes, Holt, TG03 (27), 1991, Stevenson.
- 101.3 *Rhizomnium pseudopunctatum*, delete 10, the specimen (on roots of trees by stream, The Wilderness, leg. H.M. Livens, 1907 (BON)) is *R. punctatum*, det. Blockeel.
- 102.5 *Plagiomnium ellipticum*, among dead leaves, Ashstead Forest, TQ16 (17 in ()), 1932, J.H. Albrecht, det. T. Koponen (Gardiner, 1981); seepage area in woodland by beck, 50 m alt., Artle Beck Woods, SD56 (60), 1983, Wigginton.
- 112.3 *Philonotis arnellii*, Black Down, Isle of Wight (10 in ()), H.H. Knight, 1909 (BON), conf. Blockeel.
- 112.4 *Philonotis caespitosa*, on NW-facing shore, 2 m alt., near St Mary's Chapel, Loch of Strathbeg, NK05 (93), Birse.
- 116.2 *Zygodon rupestris*, on elder, 25 m alt., Swaby Valley, Louth, TF37 (54), Lammiman.
- 116.3 *Zygodon conoideus*, on elder, 14 m alt., at 'Osier Carr', 1.2 km W of Hillington, TF72 (28), Stevenson.
- 117.2 *Orthotrichum striatum*, trunk of ash trees, 145 m alt., The Wilderness, Wotton, TQ14 (17), Stern.
- 117.4 *Orthotrichum affine*, on sycamore with *Ulotia phyllantha*, 20 m alt., Binscarth Wood, Finstown Firth, Mainland, HY31 (111), H.W. & L.G. Matcham.
- 117.9 *Orthotrichum cupulatum* a var. *cupulatum*, on concrete structure, covered reservoir at Alderley Edge, SJ87 (58), Newton 110/11a.
- 117.13 *Orthotrichum tenellum*, on *Salix* at edge of flooded disused gravel pit, 15 m alt., Little Paxton pits, TL16 (31), Preston.

- 117.17 *Orthotrichum pulchellum*, broken branch of elder in woodland, 100 m alt., near Abinger Mill, Wotton, W of Dorking, TQ14 (17), Stern; on elder in limestone valley, 180 m alt., below Thor's Cave, Manifold Valley, SK05 (39), Blockeel 26/044.
- 118.4 *Ulota bruchii*, on *Salix* sp., 80 m alt., near Baldwins Pond, Epping Forest, TQ49 (18), Pyner; on tree-bole on bank of limestone stream, 175 m alt., near Thor's Cave, Manifold Valley, SK05 (39), Blockeel 26/043.
- 119.1 *Hedwigia ciliata* a var. *ciliata*, on sloping rock below rockface, Earn Craig, Earncraig Hill, NW of Queensberry Hill, NS90 (72), 1993, Corner.
- 128.3 *Neckera pumila*, on *Corylus* twig with *Frullania* and *Metzgeria*, 190 m alt., Black Burn, Newcastleton, NY48 (80), Corner; on sycamore, 15 m alt., Binscarth Wood, Finstown Firth, Mainland, HY31 (111), H.W. & L.G. Matcham.
- 139.3 *Pseudoleskeella nervosa*, delete 88 and 108, vouchers examined are *Pseudoleskeella rupestris*, comm. Rothero.
- 144.1 *Heterocladium heteropterum* b var. *flaccidum*, on limestone rock near stream, 130 m alt., Wass Bank, E of Thirsk, SE57 (62), Blackburn.
- 147.1 *Palustriella commutata* b var. *falcata*, delete 24, no confirmed records traced, comm. O'Leary.
- 152.1 *Campylophyllum calcareum*, on chalky boulder clay, over stones and on tree roots, Burgate Wood, TM07 (25), Stevenson & Strauss.
- 153.1 *Amblystegium serpens* b var. *salinum*, delete 50, no reliable record traced, comm. Hill (cf. Hill (1988), p. 477).
- 153.3 *Amblystegium tenax*, delete 25, the specimens (Mendlesham, leg. A. Mayfield, 1913 (NWH)) all belong to *Cratoneuron filicinum*, comm. Fisk.
- 153.7 *Amblystegium confervoides*, on dry, shaded limestone rocks, 150 m alt., Dalton Crags, SD57 (60), 1978, Wigginton.
- 156.1 *Warnstorfia fluitans*, in bog, West Heath bog, Hampstead, TQ28 (21), Rieser.
- 158.1 *Hamatocaulis vernicosus*, at edge of basic spring, 265 m alt., W end of Branhholme Wester Loch, Hawick, NT41 (80), 1994, Corner.
- 161.1 *Hygrohypnum ochraceum*, delete 8, no specimen traced, and the record is probably an error for *Hypnum imponens*, comm. Stern.
- 161.3 *Hygrohypnum luridum* b var. *subsphaericarpon*, rocks in R Aran, Dolgellau, SH71 (48 in ), 1905, H.F. Parsons, (NMW), det. Hill (cf. Hill (1988), p. 479).
- 161.8 *Hygrohypnum duriusculum*, on rocks in waterfall in deep wooded ravine, 180 m alt., Allt na h-Airighe, Coille na Glas-leitire, Beinn Eighe NNR, NG96 (105), 1996, Rothero 96/049.
- 167.1 *Scorpiurium circinatum*, foot of limestone outcrop above right bank, Afon Meirchion, Henllan, SJ06 (50), 1995, Newton.
- 169.14 *Brachythecium populeum*, on stone grave edging, 2 m alt., St Peter's Churchyard, Stowbridge, NW of Downham Market, TF50 (28), Stevenson.
- 171.1 *Cirriphyllum pilferum*, in shaded overgrown garden plot, Foynes Island, R25 (H8), 1993, Wiltshire.
- 172.3 *Rhynchostegium murale*, on vertical, mortared, stone wall of ruins in tall scrub, ruins S of Georgia, SW43 (1), Holyoak 97-207.
- 173.3 *Eurhynchium striatulum*, base of limestone pinnacle in ash woodland, Dovedale Wood, SK15 (39), Blockeel 26/687.
- 174.4 *Rhynchostegiella teneriffae*, delete 10, the voucher (on moist stone wall by stream, Gatcombe Mill, H.M. Livens, 21.3.1907 (BON)) and subsequent records are *R. curviseta*.

- 177.1 *Myurella julacea* a var. *julacea*, on ledges on band of calcareous rocks, 450 m alt., NE-facing crags on Creagan Meall Horn, NC34 (108), Rothero 97/001.
- 180.5 *Plagiothecium curvifolium*, on ground around tree base in mixed deciduous woodland, woodland at Alderley Edge, SJ87 (58), Newton 159/5.
- 180.6 *Plagiothecium laetum*, on bole of ash at edge of flooded area with *Lejeunea cavifolia*, Sherrardspark Wood, Welwyn, TL21 (20), 1996, Rieser.
- 188.1 *Platygyrium repens*, on horizontal bough of ash by brook, Dulas Brook, Ewyas Harold, SO33 (36), Sleath.
- 190.4 *Hypnum lacunosum* b var. *tectorum*, on heath near coast, St Martins, Scilly Isles, SV91 (1), 1958, U.K. Duncan (E); calcareous rocks, Brean Down, ST25 (6), 1960, A.J.E. Smith; on gravel paths, Rushey, Wooton Fitzpaire, SY39 (9), 1965, M.O. Hill; Pagham beach, SZ89 (13 in ()), 1928, E.C. Wallace; chalk grassland, Wallingford, SU69 (23), 1956, A.J.E. Smith; sandy soil by old buildings, Orfordness, TL44 (25) 1984, R.J. Fisk; grey sand dunes, Scolt Head Island, TF84 (28 in ()), 1935, E.R. Irvine (E); Clun, SO38 (40 in ()), 1913, J.B. Duncan; rocks, Radnor, SO26 (43 in ()), 1945, E.W. Jones (BBSUK); basic rock by path, Roundton Hill, Church Stoke, SO29 (47) 1994, A.J.E. Smith; Harlech, SH53 (48 in ()), 1904, F.J. Chittenden (UCNW); roadside bank, Bardsey Island, SH12 (49), 1956, S. Smithson (UCNW); Llantisilio, Llangollen, SJ14 (50 in ()), 1900, herb. T. Barker (MANCH); sand dunes, Tywyn Aberffraw, SH36 (52), 1994, A.J.E. Smith; near Whitehall, Buxton, SK07 (57 in ()), 1902, herb. T. Barker (MANCH); sides of sand hills, Wallasey, SJ29 (58 in ()), 1881, J.H. Lewis (E); Southport, SD13 (59 in ()), 1886, herb. T. Barker (MANCH); St Annes, SD33 (60 in ()), 1903, H. Beesley (DUBL); limestone pavement, Malham Tarn Field Centre, SD86 (64), 1960, A.J.E. Smith; Moffat, NT00 (72 in ()), 1901, J.B. Duncan (E); granite boulder, Loch Skerrew, NX66 (73), 1966, H. Milne-Redhead; near Hawick, NT51 (80 in ()), ca 1865, herb. Greville (E); between Aberlady and Kilspindie links, NT47 (82 in ()), 1908, J. McAndrew (E); old quarry, Dalmahoy Hill, NT16 (83 in ()), 1911, J. McAndrew (E); Kilconquhar, NO40 (85 in ()), 1883, P. Ewing (E); on stone in grassland, NW slope of Stonend, Fintry Hills, NS69 (86), 1963, A.C. Crundwell (BBSUK); calcareous bank, Tomphubill quarry, near Schiehallion, NN75 (88), 1961, U.K. Duncan (E); stone in quarry, Sitzirli Den, Monikie, NO53 (90), 1950, U.K. Duncan (E); near Turriff, NJ74 (93 in ()), ca 1917, D. Lillie (GLAS); sea shore below Loch Morar, NM79 (97), 1966, A. Grierson (E); limestone rocks near Corlach, Craignish, NR79 (98), 1964, AMcG. Stirling (BBSUK); N-facing rocky slope, W side of Greenside Reservoir, Kilpatrick Hills, NS47 (99), 1956, A.C. Crundwell (BBSUK); Leckmelin, NH19 (105 in ()), 1918, D. Lillie (GLAS); on wall top, near Avoch, Black Isle, NH75 (106 in ()), 1942, U.K. Duncan (E); Lairg, NC50 (107 in ()), 1918, D. Lillie (GLAS); near Whitegar, Bower, ND26 (109 in ()), 1917, D. Lillie (GLAS); Unst, HP50 (112 in ()), 1907, D. Lillie (GLAS); wall top, Mallow, W59 (H5), 1951, E.F. Warburg & E.C. Wallace (BBSUK); limestone rocks, Blackhead, M11 (H9 in ()), 1863, J. Nowell (DUB); Kiltalea, Blackstairs Mountains, S84 (H12), 1966, J. Appleyard & J.G. Duckett (BBSUK); turf in machair, Mannin Strand, Ballyconnolly, L64 (H16), 1994, A.J.E. Smith; Arand Hill, (H28 in ()), 1904, D. McArdle (DUBL); growing through *Camptothecium lutescens*, Carrick-on-Shannon, M99 (H29 in ()), 1948, no collector (DUBL); rock by waterfall, Two Mile River, N of Carlingford Mt, J11 (H31), 1966, D. Synnott (DUBL); roofs, Lemaderg, (H38 in ()), 1906, J.H. Davies (DUBL); Newtownards Glen, J47 (H38 in ()), 1890, S.A. Stewart (DUBL).
- 190.6 *Hypnum andoi*, on sallow in carr, Wicken Fen, near Barnes Mere, TL57 (29), Hill.

- 190.9 *Hypnum imponens*, species-rich wet heath, Twigmore Warren, Coversand Heaths, Scunthorpe, SE90 (54), Sanderson.
- 191.1 *Ptilium crista-castrensis*, one patch on mossy base of a spindly rowan at edge of sitka spruce plantation on S side of track, 380 m alt., Hafren Forest, 0.4 km E of Blaen Hafren Falls, SN88 (47), O'Leary & Bates (Bates 3810).
- 194.4 *Rhytidiadelphus loreus*, delete 10, no localised record traced, comm. Snow.

#### Contributors of moss records, 1997

R.E. Andrus, A.B.G. Averis, J.W. Bates, J.M.S. Bevan, E.M. Birse, J.M. Blackburn, J. Blane, T.L. Blockeel, R.W.M. Corner, W.R. Dolling, I.A. Evans, R.J. Fisk, K.I. Flatberg, A.L. Fryday, D. Gray, W. Hay, F.A. Higgs, M.O. Hill, N.G. Hodgetts, D.T. Holyoak, N. Jarvis, W.L. Johnson, P. Kirby, F.R. Lammiman, D.G. Long, P. Martin, H.W. & L.G. Matcham, R. McCance, M.E. Newton, S.V. O'Leary, I. Pedley, C.D. Preston, T. Pyner, C. Rieser, G.P. Rothero, N.A. Sanderson, J.D. Sleath, A.J.E. Smith, R.C. Stern, C.R. Stevenson, D.R. Strauss, T.S. Wharton, H.L.K. Whitehouse, M.J. Wigginton, E. Wiltshire.

#### References

- Burley, JS. 1986.** *Aspects of the taxonomy and biology of Ceratodon Brid.* PhD thesis. University of Aberdeen.
- Flatberg, KI. 1992.** The European taxa in the *Sphagnum recurvum* complex. 1. *Sphagnum isoviitae* sp. nov. *Journal of Bryology* **17**: 1-13.
- Gardiner, JC. 1981.** A bryophyte flora of Surrey. *Journal of Bryology* **11**: 747-841.
- Hill, MO. 1988.** A bryophyte flora of North Wales. *Journal of Bryology* **15**: 377-491.

### RECENT DEATHS

It is with regret that the deaths are announced of:

Mr A. Eddy, a taxonomist and member since 1962, whose work was concentrated on *Sphagnum* and Malesian mosses, and who was meticulously helpful to visiting bryologists at the Natural History Museum, London.

Mr R.H. Hall, a member for over 50 years, having joined in 1945, and whose photographs of bryophytes form an invaluable part of Dr E.V. Watsons's book *British Mosses and Liverworts*.

Dr J. Lewinsky-Haapasaari, who joined the Society in 1970, and whose floristic and taxonomic work was wide-ranging but chiefly concerned with the Orthotrichaceae.



## CHANGES TO THE MEMBERSHIP LIST, JANUARY 1999

### HONORARY MEMBERS

The following were elected as Honorary Members of the Society at The Annual General Meeting on 18 September 1998:

- Anderson**, Dr Lewis E, Department of Botany, Duke University, Box 90338, Durham, NC 27708-0338, USA, (O), (1952)  
**Crum**, Dr H A, The Herbarium, University of Michigan, 2003 N University Bldg, Ann Arbor, MI 48104, USA, (O), (1949)  
**Rose**, Dr F, Rotherhurst, 36 St Mary's Road, Liss, Petersfield, Hants, GU33 7AH, UK, (O), (1945)

### CHANGES OF ADDRESS AND AMENDMENTS

- Adam**, Prof. Paul, School of Biological Science, University of New South Wales, Sydney, NSW 2052, Australia, (O), (1974)  
**Belyea**, Dr Lisa R, Institute of Ecology and Resource Management, University of Edinburgh, Darwin Building, Mayfield Road, Edinburgh, EH9 3JU, Scotland, UK, (O), (1993)  
**Berrie**, Mrs A, 16 Merton Avenue, Portchester, Fareham, Hants, PO16 9NE, UK, (O), (1998)  
**Birse**, Mrs E M, 6 Woodburn Gardens, Aberdeen, AB15 8JA, UK, (O), (1956)  
**Buryová**, Ms Blanka, Na Mlejniku 14, CZ-147 00 Praha 4 - Branik, Czech Republic, (O), (1996)  
**Clymo**, Professor R S, 49 High Street, Robertsbridge, East Sussex, TN32 5AL, UK, (O), (1956)  
**Cove**, Professor D J, Professor of Genetics, School of Biology, University of Leeds, Leeds, LS2 9JT, UK, (O), (1991)  
**Cox**, Dr Jonathan H S, Rosalea, Higher gardens, Corfe Castle, Wareham, Dorset, BH20 5ES, UK, (O), (1993)  
**Curtis**, Mr Chris, 2 Manor Road, Barton in Fabis, Nottinghamshire, NG11 0AA, UK, (O), (1982)  
**Finch**, Dr R A, 68 Holbrook Road, Cambridge, CB1 7ST, UK, (O), (1960)  
**Gregory**, Mr Anthony, 14a Hopwood Avenue, Horwich, Bolton, Lancashire, BL6 7HA, UK, (O), (1994)  
**Gwynn**, Ms Elinor, Cae Coch, Rhostryfan, Caernarfon, Gwynedd, UK, (O), (1997)  
**Harris**, Dr G P, 3 Sandath Gardens, Penrith, Cumbria, CA11 8BG, (O), (1998)  
**Horrill**, Dr A D, 39 Springfields, Colyford, Colyton, Devon, EX13 6RD, UK, (O), (1960)  
**Labeij**, Mr Willempe, c/o Elma, Park, Rossmackowen, Beara, Co. W Cork, Eire, (O), (1998)  
**Lawley**, Mr Mark, 12A Castleview Terrace, Ludlow, SY8 2NG, UK, (O), (1993)  
**Motley**, Mr G S, 74 St Helens Road, Abergavenny, Monmouthshire, NP7 5UU, UK, (O), (1994)  
**Pearson**, Dr John, Department of Biology, University College London, Gower Street, London, WC1E 6BT, UK, (O), (1985)  
**Perry**, Mr A R, 35 Cardiff Road, Dinas Powys, Vale of Glamorgan, CF64 4DH, UK, (O), (1957)  
**Perry**, Dr Hilary J, 35 Cardiff Road, Dinas Powys, Vale of Glamorgan, CF64 4DH, UK, (O), (1987)  
**Raimondo**, Professor Francesco M, Dipartimento di Scienze Botaniche, Università di Palermo, Via Archirafi 38, I 90123 Palermo, Italy, (O), (1986)

- Rumsey**, Dr F J, Department of Botany, Natural History Museum, Cromwell Road, London. SW7 5BD, UK, (O), (1983)
- Stringer**, Dr Nigel, 53 Heol Meinciau, (Parc Gwendraeth Development), Kidwelly, Carmar. SA17 4LN, UK, (O), (1983)
- Turner**, Dr Ian M, Singapore Botanic Gardens, 1 Cluny Road, Singapore 259569, (O), (1984)
- Waters**, Dr S J P, 29 Chantry Lane, Roe Green, Hatfield, Hertfordshire, AL10 9HS, UK, (O), (1983)
- Wrench**, Mr Daniel, 12 Railway Terrace, Birkdale, Southport, PR8 1JL, UK, (O), (1994)

#### **NEW MEMBERS**

- Allbutt**, Mrs E, Ashleigh, 51 Watling St South, Church Stretton, Shropshire SY6 7BQ, UK, (O), (1998)
- Beckmann**, Dr Karen, PO Box 56, Kallista 3791, Victoria, Australia, (O), (1998)
- Blewitt**, Dr R W, Knott House, High Knott Road, Arnside, Carnforth, Lancashire, LA5 0AW, UK, (O), (1999)
- Blewitt**, Mrs P M, Knott House, High Knott Road, Arnside, Carnforth, Lancashire, LA5 0AW, UK, (F), (1999)
- Brumelis**, Dr G, Faculty of Biology, Kronvalda bulv. 4, Riga, LV 1842, Latvia, (O), (1999)
- Bytebier**, Mr B, National Museums of Kenya, East African Herbarium, PO Box 45166, Nairobi, Kenya, (O), (1998)
- Crabtree**, Dr D R, 9 Springville Avenue, Southbourne, Dorset, BH6 4EB, UK, (O), (1999)
- Demeulant**, Mme J, 8 Rue du Carroi Foin, 37510 Ballan Mire, France, (O), (1999)
- Durwael**, Mr L, Endepoelstraat 46, 3540 Herk de Stad, Belgium, (S), (1998)
- Green**, Mr R, Manor Cottage, Ratlinghope, Shrewsbury, SY5 0SR, UK, (O), (1999)
- Jensen**, Mr H E, Bøhmensgade 14, ST.TV, 2300 Copenhagen, Denmark, (S), (1998)
- Marshall**, Mr K, 23 Church Street, Southport, Merseyside, PR9 0QT, UK, (O), (1998)
- Raeymaekers**, Kroonlaan 272, 1050 Brussel, Belgium, (O), (1998)
- Richards**, Mrs M A, No 1 The Cottages, Tilberthwaite Ghyll, Coniston, Cumbria, LA21 8DG, UK, (O), (1999)
- Rimington**, Mrs E, High House Farm House, High Stoop, Tow Law, Bishop Auckland, Co. Durham, DL13 4HL, UK, (O), (1999)
- Schlenso**, Mr M, Sternstr. 17, 24103 Kiel, Germany, (O), (1998)
- Shabbara**, Dr H M, Botany Department, Faculty of Science, Ain Shams University, Abbassia, Cairo, Egypt, (O), (1998)
- Spark**, Miss J, Ground Left, 24 St Vincent Crescent, Glasgow, G3 8LQ, UK, (O), (1999)
- Turner**, Mr J, 25 Christchurch Drive, Woodbridge, Suffolk, IP12 4TJ, UK, (S), (1998)
- Vacínová**, Miss I, Cernošská 1328, Benesov, 25601, Czech Republic, (S), (1999)
- Wallace**, Mr I R, 33 Ripley Drive, Harrogate, N. Yorkshire, HG1 3JD, UK, (O), (1999)

#### **RESIGNATIONS**

- Haward**, Dr Nigel, The English College in Prague, Sokolovska 320, Praha 9-Vysocany, Prague, Czech Republic, (O), (1994)