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MARCH 1995

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Edited by A.R. Perry

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BRITISH BRYOLOGICAL SOCIETY

The British Bryological Society exists to promote the study of mosses and liverworts. The Society was constituted in its present form in 1923, replacing the Moss Exchange Club founded in 1896.

Two Field Meetings, each usually of a week's duration are held every year in districts of bryological interest. In addition two weekend meetings are held in the autumn, one for the Annual General Meeting, the presentation of papers and fieldwork, and the other for practical instruction in the examination and identification of bryophytes.

Members of the Society are entitled to receive the Society's *Journal* and its *Bulletin* free of charge, to borrow books, periodicals and reports from the Society's library, to consult or borrow specimens from the Society's herbarium, and to consult the Society's panel of referees for assistance in the identification of specimens.

The subscription, due in advance on 1 January each year, is £15.00 for Ordinary Members, £1.00 for Family Members (who do not receive the *Journal*) and £7.50 for Junior Members.

Applications for membership should be addressed to the Membership Secretary, from whom further particulars may be obtained.

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The cover illustration is of *Bryocrypta vulgaris* Hedw. from Plate XVIII of *Descriptio et adumbratio microscopica-analytica muscorum frondosorum I.* by J. Hedwig, 1787. The height of the original is approximately 191 mm



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BRITISH BRYOLOGICAL SOCIETY

INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1993

INCOME	£ 1993	£ 1992
Interest	3,029	4,411
Legacies and Donations	100	5
Subscriptions	8,124	8,185
Sales of Publications, etc.		
Journal of Bryology	15,983	16,683
Other Publications	217	448
Lenses and Forceps	314	163
Sweatshirts	360	36
Special Illustration in J.Bryol.	455	-
Reading Circle	30	-
Postage and Sundries	45	130
AGM and other Meetings	2,591	2,947
	<u>£31,248</u>	<u>£33,008</u>
LESS EXPENDITURE		
Printing and Distribution		
Journal of Bryology	18,583	24,923
Bulletin	1,881	1,894
Special Volumes	-	586
Purchases for Resale	685	465
Postage on Sales	178	-
Library Purchase	34	-
Sweatshirts	371	-
Wallace Memorial	-	404
AGM and other Meetings	2,708	3,323
Officers' Expenses	518	385
Insurance	425	87
Bank Charges and Sundries	459	418
	<u>£25,842</u>	<u>£32,485</u>
SURPLUS FOR YEAR	<u>£5,406</u>	<u>£523</u>

BRITISH BRYOLOGICAL SOCIETY

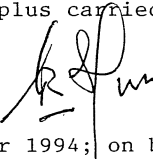
STATEMENT OF AFFAIRS AS AT 31 DECEMBER 1993

CURRENT ASSETS	£ 1993	£ 1992
National Westminster Bank		
(Current Account)	1,382	2,305
(Business Reserve A/C)	18,201	20,522
Girobank	678	363
National Savings Bank	39,348	36,998
	<u>59,609</u>	<u>60,188</u>
 LESS CURRENT LIABILITIES		
Publication cost of J.Bryol.(net)	2,746	8,875
Bank Charges	144	-
	<u>£56,719</u>	<u>£51,313</u>

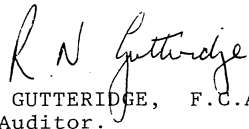
NET ASSETS

Represented by:

Surplus brought forward 1 Jan 93	51,313	50,790
Surplus for year	5,406	523
Surplus carried forward 31 Dec 93	<u>£56,719</u>	<u>£51,313</u>


E R HURR
Treasurer 1994; on behalf of Dr G C S Clarke.

I report that the Balance Sheet as at 31st December 1993 and attached Income and Expenditure Account are in accordance with the books and records of the Society.


R. N. GUTTERIDGE, F.C.A.
Hon. Auditor.

13 Dec 1994.

PAYMENT OF SUBSCRIPTIONS 1995

Subscriptions were due on the first day of January and confirm entitlement to two copies of the *Journal of Bryology* for the current year as well as the other services provided by the Society. If you have not already paid your subscription then an early remittance to the Honorary Membership Secretary* will help to prevent further postal costs. Current rates are as follows: Ordinary Member £15, Junior Member £7.50, Family Member £1.00.

Members are reminded that if payment is made by Giro a **supplement of £2.50 must be added** to cover transfer charges.

* A V Smith, 1 Carr Meadow Cottages, Glossop Road, Little Hayfield, Stockport, Cheshire, SK12 5NR, UK.

PROCEEDINGS OF THE BRITISH BRYOLOGICAL SOCIETY

SPRING FIELD MEETING, WEYMOUTH, 1994

The spring meeting was based at Weymouth, on the Dorset coast. We were comfortably lodged in the Hotel Norfolk, which is situated on the Esplanade, with splendid views of the sands and of ships approaching Portland Harbour. All excursions were in Dorset (v.-c. 9).

THURSDAY 24 MARCH

Bracketts Coppice (31/50)

The morning's excursion was to Bracketts Coppice near Corscombe, a DTNC (Dorset Trust for Nature Conservation) reserve, consisting of woodland on neutral clay with a calcareous stream running through it. The attractive ground flora with many primroses and bluebells was complemented by a good range of typical woodland bryophytes, including *Rhytidiadelphus triquetrus* (abundant and one patch c.fr.), *Neckera pumila* on ash and hazel and *Lejeunea cavifolia* on some logs. There was a small patch of *Hylocomium brevirostre* on a bank. On rocks in the stream and on banks beside it, grew *Dichodontium pellucidum*, *Hygrohypnum luridum*, *Mnium stellare* and *Rhynchostegiella curviseta*, all of which are uncommon or rare in Dorset.

Melbury Park (31/50)

We lunched beneath a Lucombe Oak in Evershot and in the afternoon went into Melbury Park, a deer park famed for its lichens. Its ancient oaks were liberally covered with *Frullania tamarisci*, and there were smaller quantities of *Leptodon smithii*, *Leucodon sciuroides*, *Orthotrichum lyellii* and *Zygodon baumgartneri* c.fr. Humphry Bowen refound *Pterogonium gracile* on oak (including *Quercus frainetto*) and *Acer* sp. Many participants went downstream from Lodge Farm, recording *Plagiothecium latebricola* on *Carex* stools and *Dichodontium pellucidum*, *Fissidens pusillus* and *Rhynchostegiella teesdalei* in the stream. Ron Porley, going uphill, discovered limestone rocks with *Cololejeunea rossettiana* (its second Dorset locality), *Trichostomum brachydontium* and plentiful *Pterogonium gracile* mixed with *Anomodon viticulosus* and *Porella platyphylla*. *Plagiochila porelloides*, a rare plant in Dorset, grew on a mossy bank nearby.

FRIDAY 25 MARCH

Stokeford Heath (30/88)

First stop was the ARC area office on Higher Hyde Heath. Here we were kitted out in fluorescent yellow vests and conducted to disused quarry workings on Stokeford Heath about 1.5 km away. Members were interested to see *Brachythecium mildeanum* growing copiously on disturbed basic ground by the road. Restored dry heathland had little bryological interest other than *Campylopus brevipilus*, but an area of unrestored pools and mounds produced *Pogonatum urnigerum*, *Pohlia annotina*, *Cladopodiella fluitans* (male), *Diplophyllum obtusifolium** and *Lophozia excisa**, as well as a splendid stand of *Lycopodiella inundata*.

Briants Puddle Heath and Oakers Wood (30/89)

For lunch we went to Culpepper's dish and spent the first part of the afternoon in a bog on Briants Puddle Heath north of Oakers Wood. Here we found *Calliergon stramineum*, *Sphagnum magellanicum*, *S. pulchrum*, *Cephalozia connivens*, *Kurzia pauciflora*, *Mylia anomala* and *Riccardia latifrons*. *Bryum pallescens** was conspicuous on zinc-contaminated concrete at the base of a pylon. Under birches at the edge of Oakers Wood, David Long uncovered *Cryptothallus mirabilis*. In the main part of Oakers Wood grew *Cryphaea heteromalla* (on hazel), *Dicranum majus*, *Orthotrichum striatum*, and *Cephalozia lunulifolia*. Walking back by a large wet bog on the east side of the wood, we saw many hectares of *Sphagnum pulchrum* but otherwise the bog was bryologically poor.

SATURDAY 26 MARCH

Wool Heath near Clouds Hill (30/89)

We stopped at a tank-viewing car-park between Bovington Camp and Clouds Hill, and went onto Army land where a fine new tank road had been constructed. I told the party that the road had obliterated a colony of *Lophocolea bispinosa*, recently discovered by Humphry Bowen. We did not see the *Lophocolea*, but found *Archidium alternifolium* c.fr., *Campylopus brevipilus*, *Pohlia annotina* and *Diplophyllum obtusifolium*. David Long discovered *Fossombronina incurva** and *Riccardia incurvata**, two of the best finds of the week, on damp gravelly ground.

Creech Heath (30/98)

We proceeded to Creech Heath, south of Wareham. In old china-clay workings we saw *Racomitrium lanuginosum* and *Scapania compacta*; Martha Newton found *Campylopus fragilis* and *Weissia rutilans*. Lunching near a *Pilularia* pool, we saw *Campyllum chrysophyllum*, which was temporarily submerged and caused some speculation in the field. Woodland and shaded sandy banks produced *Drepanocladus uncinatus* c.fr., *Orthotrichum pulchellum*, *Cephalozia connivens*, *Lejeunea cavifolia*, *L. ulicina*, *Lophozia ventricosa* var. *ventricosa** and, on steep shaded sand, a particularly fine carpet of *Tritomaria exsectiformis*. *Funaria obtusa* was found on wet heath, and *Brachythecium glareosum* and *Seligeria calcarea* on some chalky spoil used to make a road.

Knowle Hill and Stonehill Down (30/98)

In glorious weather we went to the chalk ridge of Knowle Hill and Stonehill Down. *Leptodon smithii* was seen on a field maple by the lane. *Orthotrichum tenellum* and *Cololejeunea minutissima* grew on elders on the down. Chalk grassland produced *Bryum canariense*, *B. radiculosum*, *Encalypta vulgaris*, *Neckera crispa*, *Pottia lanceolata*, *Scorpiurium circinatum*, *Seligeria paucifolia* and *Porella arboris-vitae*. Howard Matcham refound *Weissia tortilis*, not

seen in the county since 1960 when Francis Rose recorded it in the same place. Tim Blackstock found *W. longifolia* var. *angustifolia* and *W. controversa* growing intermixed and with some hybrid sporophytes.

SUNDAY 27 MARCH

Portland (30/67)

On the free day, two parties went to Portland. One group went to Church Ope Cove and found *Cephaloziella baumgartneri*, *Southbya nigrella*, *Bryum canariense* c.fr., *Eurhynchium meridionale* and *Gymnostomum viridulum*. Another party visited an old quarry at West Cliff and saw *Desmatodon convolutus*, *Eurhynchium meridionale*, *Gymnostomum viridulum* and *Southbya nigrella*.

Valley of Stones (30/58) and Hardy's Cottage (30/79)

They then turned their attention to the sarsen stones of the Valley of Stones near Littlebredy, finding *Grimmia trichophylla*, *Hedwigia ciliata*, *Pterogonium gracile* (its second Dorset station), *Frullania tamarisci* and *Porella obtusata*. Satisfied with their bryophytes, they visited Hardy's cottage at Higher Bockhampton; their literary ardour was excellently rewarded with *Leptodontium gemmascens** on decaying thatch.

Kingcombe Meadows (30/59)

A third party went to Kingcombe Meadows, a large and remarkably varied nature reserve of the DTNC, situated on the R. Hooke near Toller Porcorum and on adjacent hillsides. Moist open ground produced *Archidium alternifolium*, *Brachythecium mildeanum*, *Campylum stellatum* var. *protensum*, *Calliergon stramineum*, *Drepanocladus exannulatus*, *Pseudophemerum nitidum*, *Sphagnum recurvum* var. *tenu** and *Weissia microstoma* var. *brachycarpa*. Redholm Coppice, fiercely protected by barbed wire, was a good locality with *Hookeria lucens*, *Plagiothecium latebricola*, *Rhytidiadelphus loreus*, *Cephalozia connivens*, *Scapania undulata* and *Trichocolea tomentella*. A stone, probably Upper Greensand, by Mary's Well Lane had *Tortula marginata*. The reserve was also notable for its epiphytes, almost all of which we saw elsewhere on the meeting but were here especially varied, including *Anomodon viticulosus*, *Cryphaea heteromalla*, *Homalia trichomanoides*, *Leptodon smithii*, *Neckera pumila*, four species of *Orthotrichum*, *Zygodon conoideus*, *Cololejeunea minutissima*, *Lejeunea ulicina* and three species of *Metzgeria*.

MONDAY 29 MARCH

Ringstead Bay and White Nothe (30/78)

We went to Ringstead Bay, parking at Ringstead and descending the cliffs after a 2-km route-march to White Nothe. A furious wind battered us on the cliff-top, where *Cryphaea heteromalla*, *Tortula papillosa*, *Uloa phyllantha*, *Zygodon conoideus* and *Cololejeunea minutissima* grew on elder. With trepidation we descended the steep path; fortunately no bryologist was blown away. The undercliffs themselves looked most promising, but the promise was not fulfilled. The best finds were *Aloina aloides* var. *aloides*, *Bryum dunense*, *Neckera crispa*, *Pottia caespitosa*, *P. starkeana* var. *starkeana*, *Scorpiurium circinatum*, *Tortella tortuosa*, *Weissia longifolia* var. *angustifolia* and *W. microstoma*.

Tadnoll (30/78)

In the afternoon we went to Tadnoll, a DTNC reserve with wet heath, dry heath, wet meadow and swamp carr. *Climacium dendroides* in the wet meadow and *Bryum bornholmense* on a

fire site on dry heath were the only bryophytes that we did not see elsewhere on the meeting. However, it was good to see *Plagiothecium latebricola* on *Molinia* tussocks, and five species of *Orthotrichum*, *Cololejeunea minutissima*, *Metzgeria fruticulosa* and *M. furcata* on sallow in carr.

I telephoned Jim White of English Nature in Wareham. He told me that I was quite wrong about the Army having obliterated *Lophocolea bispinosa*; it was on the other side of the road.

TUESDAY 30 MARCH

Maiden Castle (30/68)

First stop was Maiden Castle, a large Iron Age earthwork on the chalk by Dorchester. Ted Wallace had found *Weissia sterilis* here in 1952, but we saw nothing so interesting and not a single species of liverwort. The best finds were *Fissidens adianthoides* c.fr., *Plagiomnium affine*, *Pottia recta* and *Seligeria paucifolia*.

Clouds Hill revisited (30/89) and Briantspuddle (30/89)

We went, again, to look for *Lophocolea bispinosa* at Clouds Hill. It was in good heart, forming a large patch on a damp track with *Polytrichum juniperinum*, *Peltigera* sp., *Epilobium* sp. and *Juncus effusus*. Rod Stern, visiting Clouds Hill separately from the rest of us, went on to Briantspuddle, where he found another colony of *Leptodontium gemmascens*.

Lulworth Cove (30/87)

Finally we went to West Lulworth. Just west of Lulworth Cove was the best ground for coastal species, including *Campylium polygamum*, *Pottia crinita*, *P. heimii*, *P. starkeana* var. *brachyodus*, *Scleropodium tourettii* and *Tortella flavovirens*. Cliff Townsend found *Pottia lanceolata* near the beach in the Cove, and there were good quantities of *Cololejeunea minutissima* on scrubby trees above it.

Dorset is a relatively well-worked county, and it was pleasant to make new vice-county records of six species and two varieties. Several members were sorry to miss *Lophocolea bispinosa*, but *Fossombronia incurva* and *Riccardia incurvata* were good substitutes. The meeting had an average attendance, with 32 bryologists in the field on the Saturday and four others joining excursions on other days.

We were helped by many people. It is a particular pleasure to record the guidance given by the local botanists Bryan Edwards, David Pearman and Robin Walls; by Richard Squires, keeper of the deer at Melbury Park; by Tim Linnington, Environmental Manager of ARC South Western; and, before the meeting, by Humphry Bowen (Winterborne Kingston), Lt-Col. A. Gordon-Hall (RAC Centre, Bovington Camp) and Jonathan Pitt (Unit Manager, ARC South Western). Finally I thank the land owners and land agents, who gave permission to visit their land.

Vice-county records resulting from the meeting

Diplophyllum obtusifolium
Fossombronia incurva
Lophozia excisa
Lophozia ventricosa var. *ventricosa*

Riccardia incurvata
Bryum pallescens
Leptodontium gemmascens
Sphagnum recurvum var. *tenue*

MARK HILL

SUMMER FIELD MEETING, 1994, FIRST WEEK, THE BURREN

About a dozen members assembled at Ballyvaughan, County Clare (v.-c. H9), on the evening of Wednesday 13 July. We welcomed Gerard Dirkse and Sophie Hochstenbach from Nijmegen in the Netherlands. It had been an almost cloudless day but, ominously, the sun accompanied by a mock-sun set into a bank of cloud over the Atlantic.

THURSDAY 14 JULY

Black Head (v.-c. H9, 12/11)

As on the previous BBS meeting in Clare and Galway 37 years before (see *Trans. BBS* 3, 493-498, 1958), the first excursion was to Black Head, the north-west corner of the Burren. Then they had been disappointed by the small number of bryophyte species found, so our expectations were not high. It was difficult not to be distracted from bryology by the wonderful array of flowering plants in bloom: *Geranium sanguineum*, *G. robertianum* ssp. *celticum*, *Dryas octopetala*, *Dactylorhiza fuchsii* ssp. *o'kellyi* and many other orchids. As we climbed the rocky hill, early finds were *Tortella nitida*, *Gymnostomum calcareum* and *Cololejeunea calcarea*. The latter species occurred on the limestone rocks where they overhung or were shaded by grass, and was sometimes epiphytic on *Marchesinia mackaii*. Ron Porley found *Tortella densa* in a crevice in the clints of the limestone pavement. Other finds included *Bryum pallens*, *Orthotrichum anomalum*, *Lejeunea lamacerina*, *L. patens*, *Metzgeria conjugata* and *Preissia quadrata*. The hills had been mist-covered, and drizzle soon turned to rain with a rising wind. A damp lunch in the lee of a boulder was enlivened by peregrine falcons objecting to our presence with loud cries. A climb to west-facing bluffs at about 300 m altitude on Dobhach Bhrainin in a vain search for *Orthothecium rufescens* was decidedly wetting. It was only later that we learned that the previous find of this moss had been not where we looked, but on the north side of the Head just above the green road. Altogether, 45 mosses and 15 liverworts were recorded.

Fanore (v.-c. H9, 12/10)

Again as in 1957, we then moved about 10 km south to the small area of sand-dunes at Fanore, where *Entodon concinnus* and *Pleurochaete squarrosa* were seen. Later in the week, David Long camped in the area with his family and found *Petalophyllum ralfsii** on damp thin soil on limestone at the edge of the dunes.

FRIDAY 15 JULY

Mullaghmore (v.-c. H9, 11/39)

We were met at Mullaghmore by Dr Enda Mooney, Assistant Park Superintendent of the Burren National Park. He spoke about the controversial plan to build a Visitor Centre in this remote and unspoilt region. He led us first to Lough Gealain, south of Mullaghmore, where there was much *Scorpidium scorpioides*. The rare species *Bryum neodamense* was soon found on fine calcareous marl at the edge of the water. The charophyte *Nitella tenuissima* was abundant in the shallows. We then moved to Watts' Lough, which is immediately south of the mountain and is so-called in honour of Prof. W.A. Watts of Trinity College, Dublin, who has done important palynological research here. Within minutes of our arrival, two rare bryophytes had been found: *Drepanocladus lycopodioides* and *Calliergon trifarium*. The latter had not been seen on the Burren since Michael Proctor's work there in the 1950s (see *Trans. BBS* 3, 571-574, 1959). *Drepanocladus cossonii* (*D. revolvens* var. *intermedius*) was also seen at Watts' Lough. That three rare mosses should be found so easily emphasises the

importance bryologically of the region south of Mullaghmore and of the folly of planning to build a Visitor Centre there.

In the afternoon we explored the hazel scrub at the western end of Watts' Lough. It was extremely rich in epiphytes, particularly Lejeuneaceae: *Drepanolejeunea hamatifolia*, *Harpalejeunea ovata*, *Lejeunea lamacerina* and *L. patens*. The *Drepanolejeunea* was often epiphytic on other bryophytes. *Ulota calvescens* was abundant on the hazel branches. It was astonishing to see *Neckera crispa* in abundance extending 1 m up the hazels and sometimes associated with *Tortella tortuosa* in this habitat! *Tortella densa* was found by Nick Hodgetts on a block of limestone on the open limestone pavement.

In total, 58 mosses and 17 liverworts were recorded in the region south of Mullaghmore during the day.

Poulawack (v.-c. H9, 11/29)

On the way back to Ballyvaughan, some of the party stopped at a wooded region near a sharp bend in the road at Poulawack near Caherconnell. Some 47 species of mosses and 10 of liverworts were recorded here, including *Breutelia chrysocoma* with capsules on a roadside bank, *Gymnostomum calcareum* in rock crevices, *Isoetecium striatulum* on a tree-base and *Ulota calvescens* and *Metzgeria temperata* as epiphytes.

SATURDAY 16 JULY

Garryland Wood (v.-c. H15, 12/40)

This wood near Coole in south-east Galway is a National Nature Reserve and had been visited by the BBS in 1957. We walked northwards along a ride, not finding anything unexpected until, much to our surprise, we came to a region of the wood that was evidently flooded deeply in winter. Besides the obvious signs of flooding indicated by *Leskea polycarpa* and *Cinclidotus fontinaloides*, there were giant specimens of *Climacium dendroides* on the floor of the wood and a zone of *Homalia trichomanoides* on the tree-trunks, with *Porella cordaeana* just above it, and then a zone of fruiting *Neckera complanata* above that. The water surface in the turlough responsible for the winter flooding was now outside the wood and at least 20 m lower than in winter. In the grassy area near the water there was *Plagiomnium rostratum* and *Physcomitrella patens*, the latter confined to the vicinity of rocks where, perhaps, desiccation is reduced. Finds in the wood included *Lejeunea cavifolia** on *Fraxinus*, *Platydictya confervoides** on a limestone rock and *Thuidium tamariscinum* supporting a species of *Physarum*, a myxomycete with blue-grey sporangia on tapering flesh-coloured stalks. This remarkable organism was found by Ron Porley. Altogether, 71 mosses and 20 liverworts were seen.

Coole Park (v.-c. H15, 12/40)

Coole is about 4 km north of Gort and was visited in the afternoon. The house, formerly the home of Lady Gregory, one of the founders of the Abbey Theatre, Dublin, fell into disrepair and had to be demolished, but the grounds remain and include the famous Autograph Tree inscribed on its trunk with initials of Bernard Shaw, W.B. Yeats and many other famous Irish men. Near this tree, *Bryum rubens** and *Tortula marginata* were found on mortar at the base of a wall, and *Pottia recta**, *P. starkeana* ssp. *conica**, *B. klinggraeffii* and *B. ruderales* in a flowerbed. *Orthotrichum striatum** was found growing on the Autograph Tree and on a nearby poplar. Beside the turlough just west of Coole few bryophytes were found

on the stones and mud, which had only recently been exposed above the water level. A small amount of *Riccia cavernosa* was detected.

SUNDAY 17 JULY

Valley of the Boleyneendorish River in the Slieve Aughty mountains (v.-c. H15, 12/50)

In the Slieve Aughty mountains near Pollboy we were again in south-east Galway, but on acid Devonian rocks instead of the Carboniferous limestone of the previous days. Hepatics were abundant: *Aphanolejeunea microscopica** on *Corylus*, *Colura calyptrifolia* on *Salix* and *Ulex* bark, *Calypogeia neesiana**, *Chiloscyphus polyanthos**, *Jungermannia hyalina**, *Kurzia sylvatica**, *Leiocolea badensis**, *L. bantriensis**, *Marchantia polymorpha* ssp. *polymorpha** with female gametophores, *Pellia neesiana**, *Riccardia multifida**, *Scapania gracilis**, *S. irrigua** and *S. undulata**. Mosses seen included *Campylopus fragilis**, *Dicranella palustris**, *D. rufescens**, *Fissidens bryoides**, *Fontinalis squamosa**, *Hygrohypnum ochraceum**, *Orthotrichum pulchellum**, *O. striatum*, *Plagiomnium elatum**, *Pogonatum aloides**, *Splachnum ampullaceum*, *Thuidium delicatulum* and *Ulota calvescens**. In a plantation of *Picea sitchensis* it was astonishing to see *Hypnum jutlandicum* extending 2 m from the ground up the trees and hanging down for 25 cm from the dead branches. Unexpectedly, a small area of highly calcareous fen was found by the river, surrounded by conifers, with *Eriophorum latifolium*, *Cratoneuron commutatum*, *Campylium stellatum*, etc. Totals of 92 moss and 39 liverwort taxa were recorded.

Punchbowl south of Gort (v.-c. H15, 12/40)

In the stream-bed here, where the river goes underground, Gerard Dirkse found *Porella pinnata*, which was also on the river bank along with *P. cordaeana* found by Rod Stern. *P. pinnata* had been recorded here during the BBS meeting in 1957.

Inisheer, Aran Islands (v.-c. H9, 02/90)

David Long and family joined the party and we took the boat from Doolin to Inisheer, the most easterly of the Aran Islands. These islands are an extension of the Burren, being composed entirely of Carboniferous limestone. Inisheer is a maze of narrow lanes flanked by drystone walls. The fields are so small they will support only one cow, and the wall is dismantled and rebuilt for entry! Owing to the precarious nature of the walls and the huge number of them, cross-country walking is impossible except along the lanes. Altogether, 57 mosses and 11 liverworts were recorded, the first list ever compiled for the island. David recorded *Barbula hornschurchiana*, *Cirriphyllum crassinervium*, *Scorpiurium circinatum*, *Lejeunea patens*, *Plagiochila porelloides* and *Reboulia hemisphaerica*. Rod Stern found *Encalypta streptocarpa*, *Eurhynchium speciosum*, *Cololejeunea rossettiana*, *Lejeunea lamacerina*, *Marchesinia mackaii* and *Scapania aspera*. Other finds included *Barbula reflexa* and *Ditrichum crispatisimum*. A lough on the eastern side of the island was disappointing bryologically as the water was brackish, apparently through seepage of sea water through the rocks.

Lough Inchiquin (v.-c. H9, 11/28)

Those who did not come to Inisheer went first to Lough Inchiquin near Corofin, where 18 mosses were recorded, including *Orthotrichum anomalum*, *O. cupulatum*, *Scleropodium cespitosum** and *Scorpiurium circinatum* on limestone boulders.

Lough George (v.-c. H9, 11/39)

The party then moved 6 km to the east to Lough George. At the gravelly lake margin, *Bryum neodamense* and *Drepanocladus lycopodioides* were found. Other species seen were *B. algovicum*, *Campylium elodes*, *Isothecium striatulum*, *Orthotrichum cupulatum* and, in the turf, *Thuidium delicatulum*. The total list for the locality came to 45 mosses and 4 hepatics.

Lough Cullaun near Rinroe House (v.-c. H9, 11/39)

A move was then made to a fen near Rinroe House, 1 km west of L. George. This was a mosaic of base-rich fen and acid mire. Plants seen amounted to 35 mosses and 11 liverworts, including *Amblystegium varium*, *Bryum neodamense* and *Calliergon trifarium*, all found by Nick Hodgetts. Other species seen included *Campylium elodes*, *Drepanocladus cossonii*, *Leiocolea badensis* and *Riccardia latifrons*.

Lough Briskeen (v.-c. H15, 12/40)

From Rinroe House the party moved to L. Briskeen, 4 km south-west of Gort. Finds included *Drepanocladus sendtneri*, *Trichostomum crispulum** and, on *Acer*, *Cryphaea heteromalla* and *Orthotrichum affine*. An adjoining fen, south of the road to Gort, produced *Leiocolea badensis* and *D. cossonii*, with *Gymnostomum recurvirostrum** on limestone and *Polytrichum formosum** and *Calypogeia fissa* on grassy tussocks. Altogether, 50 mosses and 11 liverworts were recorded at this locality.

TUESDAY 19 JULY

Carran (v.-c. H9, 11/29)

Carran is about 10 km south-east of Ballyvaughan. We parked the cars at the research station there and explored the nearby turlough and limestone pavement. Finds included *Fissidens viridulus** on the vertical bank of a stream, *Hypnum cupressiforme* var. *resupinatum* abundantly fertile on *Prunus spinosa*, *Ulota calvescens* with *U. crispa* on hazel stems and *Jungermannia atrovirens* with male shoots growing in rock crevices at the upper edge of the turlough. Ron Porley found *Frullania teneriffae* on stunted *Prunus spinosa* well within the grykes of the limestone pavement.

Glen of Clab (v.-c. H9, 12/20)

This limestone valley is near Poulavallan about 3 km north of Carran. It proved to be very rich bryologically and we recorded 82 mosses and 40 hepatics. The moss finds included *Bryoerythrophyllum ferruginascens*, *Bryum klinggraeffii*, *B. ruderale*, *Cratoneuron commutatum* var. *falcatum*, *Funaria obtusa*, *Gymnostomum calcareum*, *Orthothecium intricatum**, *Seligeria acutifolia**, *S. donniana*, *Ulota calvescens* and *Zygodon viridissimus* var. *stirtonii*. The *G. calcareum* had antheridia; this is the first Irish record of a male plant. The region was particularly rich in Lejeuneaceae; the following were seen: *Aphanolejeunea microscopica**, *Cololejeunea calcarea*, *C. rosettiana*, *Colura calyptrifolia* on aspen, *Drepanolejeunea hamatifolia* on *Fraxinus*, *Harpalejeunea ovata*, *Lejeunea lamacerina*, *L. patens* and *Marchesinia mackaii*. Other liverworts recorded included *Cephaloziella hampeana*, *Fossombronina pusilla**, *Frullania microphylla*, *F. teneriffae* on hazel, *Jungermannia hyalina*, *Pedinophyllum interruptum* (found by Tom Blockeel and Nick Hodgetts), *Porella arboris-vitae* and *Plagiochila killarniensis*. *Pellia epiphylla* and *P. endiviifolia* were seen close together on an earth bank.

Cappaghmore (v.-c. H15, 12/30)

Some of the party explored limestone pavement 2 km south-east of Cappaghmore and found *Riccia beyrichiana** on soil at the edge of the limestone and *Ulota calvescens* on hazel. Others looked at a field sown with *Lolium perenne* 500 m south-west of Cappaghmore and found *Bryum bornholmense**, *B. microerythrocarpum** and *Plagiomnium affine**.

After the rain on the first day, the weather had been dry for the rest of the week. A feature of the bryophyte flora that particularly impressed us was the richness of the calcareous fens. Chris Preston pointed out the rarity of saxicolous plants, such as species of *Orthotrichum* and *Seligeria*, and the absence of thin soil around rocks where *Pottia* species might have been expected. The bryophytes recorded during the week amounted to 195 mosses and 77 liverworts.

We are all most grateful to Donal Synnott who made all the necessary arrangements. I thank Tom Blockeel, Nick Hodgetts, David Long, Jean Paton, Ron Porley, Chris Preston and Rod Stern for their help in preparing this report.

HAROLD WHITEHOUSE

SUMMER FIELD MEETING, 1994, SECOND WEEK, CLIFDEN

The second week of the summer meeting was based in Clifden in Connemara, West Galway. It had been arranged as a joint meeting with the Nordic Bryological Society, and we were pleased to welcome Arne Pedersen and Sven Drangard from Norway, and Thomas Himm from Germany. Gerard Dirkse and Sophie Hochstenbach transferred with us from the Burren but were due to depart in the middle of the week. The Irish contingent (Donal) was strengthened after three days by the arrival of Daniel Kelly and Robert Bowen. There were nine of us from across the Irish Sea. The numbers would have been greater, but sadly Nick Hodgetts and his party (Ron Porley and Rod Stern) had to leave unexpectedly when Nick's wife was taken ill on the transfer day.

All the excursions were in West Galway (v.-c. H16), except for the trip to Clare Island, which is in West Mayo (H27). A bit of extra-curricular bryologising in Clifden itself one evening produced *Barbula trifaria** on calcareous rubble in a small roadside shrubbery.

WEDNESDAY 20 JULY (transfer day)

Donal had recommended Kylemore Abbey as a suitable venue for the transfer day. The gullies on the south-facing hillside near the Abbey were known to be rich in oceanic bryophytes, although they are severely choked by extensive Rhododendron thickets. We hoped that many species might be refound. John Blackburn and myself were the first to arrive, and we spent a short time working a gully well to the east of the Abbey, on the north side of Kylemore Lough. This produced *Lepidozia cupressina*, *Hygrobrella laxifolia*, *Radula voluta* (in small quantity), *Jubula hutchinsiae*, *Frullania microphylla*, *Aphanolejeunea microscopica*, *Drepanolejeunea hamatifolia* and *Harpalejeunea ovata*. The most exciting find, however, was *Lejeunea hibernica* growing in pure patches on the under surface of an inclined rock wall by the stream. This is apparently the first report of *L. hibernica* at Kylemore since its original discovery here in 1933. Back at the foot of the gully, a short foray on the shores of Kylemore Lough duly produced *Haplomitrium hookeri*.

Most of the other cars had arrived by midday, and we proceeded to work the area near the western end of the Lough. One of our main objectives was *Telaranea nematodes*, and this was eventually found in at least two places under the Rhododendron, but not in very great quantity. *Lophocolea fragrans* was on living and fallen branches of Rhododendron, and *Fissidens celticus* on bare soil. A densely shaded gully had abundant *Jubula hutchinsiae*, with some *Marchesinia mackaii* and *Oxystegus hibernicus*. In another gully Nick Hodgetts found a bit more *Lejeunea hibernica* and some *L. holtii*. The various other records included *Anthoceros husnotii*, *Bazzania trilobata*, *Lepidozia cupressina*, *Plagiochila killarniensis*, *P. punctata*, *P. exigua*, *Frullania teneriffae*, *Diphyscium foliosum*, *Fissidens taxifolius* ssp. *pallidicaulis* and *Hygrohypnum luridum*.

Later in the week, on 25 July, David Long, Gordon Rothero and I returned to Kylemore to continue the investigation. *Lejeunea hibernica* was found in two further places in the eastern gully, and *Plagiochila exigua* and *Colura calyptrifolia* were also noted here. Most of our time, however, was spent in a gully to the west of the Abbey. A waterfall at the base was only lightly shaded and it had a fair quantity of *Radula voluta* and *Plagiochila exigua*, with *P. killarniensis*, *P. punctata*, *Radula aquilegia* and some more *Lejeunea hibernica*. The deeply shaded parts of the gully, under Rhododendron, were dominated by *Jubula hutchinsiae*.

Mature planted trees by the track from the Abbey had some good epiphytes, including *Zygodon conoideus* and *Homalia trichomanoides*. *Pleuridium acuminatum* was on a tree root, and *Phaeoceros laevis* ssp. *laevis* on the site of a bonfire, with *Bryum rubens*.

It was gratifying to find that much of interest remains at Kylemore. *Lejeunea hibernica* appears able to tolerate quite dense shading, but *L. flava*, which we failed to re-find, may now have been lost. Jean Paton saw this species near the western end of Kylemore Lough in 1968, but the track was more open than she remembered it, and it is possible that the clearing of shrubs may have caused a temporary loss of humidity.

THURSDAY 21 JULY: Benbreen, The Twelve Bens

Our first day on the Twelve Bens involved an approach via Glencoaghan to the south. We were able to drive a good distance up the valley, to a hamlet below the SW slopes of Derryclare. From there we could look across the boggy valley to the imposing summits of Benbreen and the adjacent hills. The weather was ideal for a day in the hills, being overcast but dry, with good visibility. Our route took us across the boggy valley to the corries to the north-east and south-east of Benbreen. *Racomitrium affine** and *Hypnum lindbergii* were noted near the hamlet, and *Pleurozia purpurea* soon turned up on the boggy ground. The party soon fragmented. One group was content to work the southern corrie. The second, more ambitious, group made for the northern corrie, with the intention of crossing into the southern corrie via the summit of Benbreen. Wet crags below and on the shoulder of the ridge running east of Benbreen produced *Adelanthus decipiens*, in thoroughly wet crevices, *Rhabdoweisia crenulata*, *Campylopus setifolius*, *C. schwarzii* and *Dicranodontium uncinatum*.

The problems of overgrazing were evident during our ascent: in one small area of block scree the heather was badly damaged but we were still able to find a little *Bazzania pearsonii* and *Adelanthus lindenbergianus* among the more plentiful *Herbertus aduncus*. We were scarcely prepared, however, for the devastation which awaited us in the northern corrie. Here, on the

stony north-facing slope, a few broken fragments of heather and the dead remains of large *Herbertus* tussocks bore sombre witness to the destruction of the dwarf shrub heath which once clothed these slopes. We could find only small and sorry pieces of *A. lindenbergianus*, with a little *Bazzania tricrenata* and *B. pearsonii*. *Herbertus aduncus* had fared slightly better. The *Adelanthus* must have been plentiful here only a few years ago. Several people observed that the overstocking with sheep has been precipitated and encouraged by EEC subsidies.

Most of the group which reached this corrie proceeded to complete the ascent of Benbreen, from where there were spectacular views of the Connemara bogs and the distant coast. The descent to the southern corrie was steep; the first group had of course been there for some time. The most interesting ground was on the north-facing slope, where there were some wet crags and two deeply incised gullies. Most of the species seen in the first corrie (except *A. lindenbergianus*) were also here. Additional species included plentiful *Metzgeria temperata* and a little *Leptoscyphus cuneifolius* on rock walls. *Riccardia latifrons*, *Anthelia julacea*, *Lepidozia cupressina*, *Kurzia sylvatica*, *Calypogeia azurea*, *Lophozia opacifolia**, *Lophocolea fragrans*, *Plagiochila killarniensis*, *P. spinulosa*, *P. punctata*, *Cephalozia leucantha*, *Odontoschisma denudatum*, *Drepanolejeunea hamatifolia*, *Aphanolejeunea microscopica*, *Sphagnum molle*, *Dicranum scottianum*, *Tetraplodon mnioides*, *Pohlia elongata*, *Calliergon sarmentosum* and *Plagiothecium denticulatum* var. *obtusifolium** (the complanate form) were recorded in various habitats. *Ditrichum heteromallum* and *Pohlia myldermansii* were on mineral soil. The best find of the day, however, was *Acrobolbus wilsonii**, found by Jean Paton on a relatively exposed rock face at ca. 460 m, apparently the highest location in which this species has ever been found in the British Isles. On the descent from the corrie, *Harpanthus scutatus* and *Anastrepta orcadensis* were found under heather.

FRIDAY 22 JULY: Roundstone

Roundstone is famous for its rare plants, not least the Irish heaths and the interesting aquatic flora of the lough margins. It is also noted for three recent bryophyte discoveries of very great interest: the only Irish station outside the Burren for *Calliergon trifarium*, the sole Irish record of *Leptobarbula berica* at Letterdife House, and an enigmatic record of *Myurium hochstetteri*, from a streamlet near Roundstone. We had all these in mind during our visit.

Our route took us from Roundstone over the eastern saddle of Errisbeg to the low hills near L. Bollard. We were fortunate to have the expert guidance of Mary O'Connor, who is involved in research work on the ecology of the Connemara bogs. The area is one of open heath and bog, with numerous low crags and boulders. The heath and bog produced *Kurzia pauciflora*, *K. sylvatica*, *Cephalozia catenulata*, *Cladopodiella fluitans*, *Pleurozia purpurea*, *Sphagnum imbricatum* ssp. *austinii*, *S. magellanicum*, *S. strictum*, *Campylopus brevipilus*, *C. atrovirens* var. *falcatus* (looking very different from the usual straight-leaved form), *Splachnum ampullaceum*, *Tetraplodon mnioides*, *Calliergon sarmentosum* and *Scorpidium scorpioides*. It was the rocks, however, which prompted the most diligent searching. There are outcrops of basic gabbro, and the area has two notable ferns, *Asplenium septentrionale* and *Adiantum capillus-veneris*, both of which Mary was able to locate for us. This was quite an achievement in the case of the *Adiantum*, as the few fronds grow deep in a recess at ground level. This explained the attitude of supplication that various members were seen to adopt at this spot. The bryophytes on the rocks included a good quantity of *Glyphomitrium daviesii*, and a substantial list of other species: *Gymnomitrium crenulatum*, *Plagiochila killarniensis*, *Scapania compacta*, *Porella obtusata*, *Frullania fragilifolia*, *F. teneriffae*,

Drepanolejeunea hamatifolia, *Harpalejeunea ovata*, *Colura calyptrifolia*, *Campylopus polytrichoides*, *Grimmia donniana**, *Racomitrium sudeticum*, *Hedwigia ciliata* and *Pterogonium gracile*.

From L. Bollard, where the flowering plants distracted many from the bryophytes, we made the short trek to L. Nalawney, recording *Sphagnum contortum en route*. L. Nalawney is a small lake at the northern foot of Errisbeg. A few of us made a circuit of the lough and were able to see *Calliigon trifarium* and *Sphagnum platyphyllum* on the northern side, in a wet lawn of *Eleocharis* and *Rhynchospora fusca*. Most of the group, however, were content to search the small stream running into the lough from Errisbeg. This was a rare habitat, as the stream ran beneath bushes of *Erica erigena*. Many small Lejeuneaceae were seen here, including *L. hibernica*. There was also a little *Jubula hutchinsiae* in a recess in a small waterfall. Somewhat higher on Errisbeg, *Radula lindenbergiana** was found growing with *Harpalejeunea* in a fissure in a large boulder.

Late in the afternoon we were invited to take tea at Letterdife House, where Mary was staying. This gave Harold Whitehouse the opportunity to look for *Leptobarbula*. On arrival, I was immediately responsible for raising premature hopes with a patch of what proved to be immature *Barbula rigidula*. Later, Harold made a further search but this too was unsuccessful. He did however turn up *Tortula marginata**.

Meanwhile, David Long had left the main party at midday to walk along the coast to Gorteen Bay in search of *Myurium*. The ground was interesting and records included *Riccia beyrichiana*, *Plagiochila killarniensis*, *Scapania compacta*, *Porella obtusata*, *Frullania fragilifolia*, *F. teneriffae*, *Campylopus brevipilus*, *C. polytrichoides*, *Gymnostomum recurvirostrum*, *Schistidium maritimum*, *Ulota hutchinsiae* and *Hedwigia ciliata*. The *Myurium* was not to be found, however, and it remains an enigmatic member of the Irish flora.

SATURDAY 23 JULY: Muckanaght

Our second assault on the Twelve Bens was from the north, via Glencorbet to Muckanaght. Once again we were favoured with good weather. Donal arranged transport for us up the rough track along the valley of the Kylemore River, and this saved us some time but not much by way of altitude. The wait for the party to assemble, by a hamlet off the main road, allowed time for some bryologising on a patch of disturbed gravelly ground. This proved to be rich, with *Haplomitrium hookeri*, *Atrichum tenellum**, *Pohlia bulbifera* and *P. myldermansii*.

The main walk began by a farmhouse near the Kylemore River, and progress was slow initially as the ground was attractive. *Haplomitrium hookeri* was found again, and other records included *Blasia pusilla*, *Leiocolea alpestris*, *L. bantriensis*, *Jungermannia exsertifolia* ssp. *cordifolia*, *Pohlia drummondii* and *Rhynchostegium lusitanicum** (the latter in the Kylemore River).

It was at this point that there occurred an event which must be unique in the annals of the BBS. Several members became involved in the rescue of a cow which had become lodged in a trench. The beast was eventually freed, but it had suffered a prolapse and was in poor condition. Later in the day, however, we learned that it had made a good recovery, after veterinary attention.

This excitement delayed the arrival of many members on the higher ground, but there was still time to work the wet crags on the northern and eastern slopes of Muckanaght. There is quite a lot of basic ground here, particularly on the crag on the northern side, where there is also some calcareous scree. The crags on the north-east slopes are very wet in part, and also mildly basic. A long list of interesting species was compiled in these areas. Of the large oceanic-montane hepatics *Herbertus aduncus*, *Pleurozia purpurea* and *Bazzania tricrenata* were predictable, but we also saw some good patches of *Bazzania pearsonii* and scattered stems of *Scapania ornithopodioides*. Equally, some lowland species ascend to considerable altitudes in this hyperoceanic part of the British Isles. *Marchesinia mackaii*, for example, was seen on the main crags at ca. 500m. The numerous other species seen on this interesting mountain included *Preissia quadrata*, *Blepharostoma trichophyllum*, *Jungermannia subelliptica*, *Lophozia opacifolia*, *Leiocolea alpestris*, *Anastrepta orcadensis*, *Sphenolobopsis pearsonii*, *Eremonotus myriocarpus*, *Gymnomitrium obtusum*, *Marsupella sprucei*, *Plagiochila spinulosa*, *P. punctata*, *Hygrobiella laxifolia*, *Scapania aspera*, *Radula aquilegia*, *Frullania teneriffae*, *Drepanolejeunea hamatifolia*, *Colura calyptrifolia*, *Cololejeunea calcarea*, *Aphanolejeunea microscopica*, *Seligeria recurvata*, *Dicranodontium uncinatum*, *Campylopus setifolius*, *C. schwarzii*, *Anoetangium aestivum*, *Gymnostomum recurvirostrum*, *Leptodontium recurvifolium*, *Racomitrium ellipticum*, *Isothecium myosuroides* var. *brachythecioides*, *Orthothecium intricatum*, *Isopterygium pulchellum* and *Ctenidium molluscum* var. *condensatum*.

SUNDAY 24 JULY: Clare Island

Clare Island was the subject of an intensive study in 1909-1911 by the Royal Irish Academy, and it is currently being re-surveyed. Donal was therefore keen for us to make a contribution to the bryology. The island is in Co. Mayo (H27), and it involves a long drive from Clifden, as well as a sea crossing. Some members were apprehensive about the journey. However the roads were quiet early on a Sunday morning, and Donal had arranged a boat for us at 10 o'clock. We were able to fit in a good five hours bryology and the day was a great success.

Donal organised us into several groups. Jean Paton, John Blackburn, Thomas Homm and I worked the eastern end of the island. We took the green lane from the old village school to a knoll on the eastern end of Knockaveen. After rounding this knoll we followed the steep north slope of the main hillside westwards to an interesting base-rich crag, eventually returning via a cut-over bog to the green lane. Diligent recording produced an impressive list of 160 taxa. The green lane had *Riccia subbifurca*, *Blasia pusilla*, *Fossombronina pusilla*, *Scapania scandica*, *Archidium alternifolium*, *Pleuroidium acuminatum*, *Pohlia drummondii* and *Hypnum lindbergii*. A rock outcrop on the knoll had *Dicranum scottianum*, and *Barbilophozia attenuata* was on a hummock by a stony flush. The steep north-facing slope had stepped turfy ledges formed of intricate patches of *Hymenophyllum wilsonii*, *Lepidozia cupressina*, *Mylia taylorii*, *Scapania gracilis* and many other bryophytes. Notable among these were *Barbilophozia floerkei* and *Cephalozia leucantha*.

The base-rich crag looked attractive from a distance and lived up to expectations. Notable here was *Radula carringtonii* in a relatively exposed habitat on north-facing rocks. Other species included *Leiocolea turbinata*, *Tritomaria quinquedentata*, *Plagiochila killarriensis*, *Radula aquilegia*, *R. lindenbergiana*, *Drepanolejeunea hamatifolia*, *Marchesinia mackaii*, *Cololejeunea calcarea**, *Colura calyptrifolia*, *Eucladium verticillatum*, *Gymnostomum calcareum*, *Plagiobryum zierii* and *Anomodon viticulosus*. Below the crag Jean demonstrated

Marsupella funckii on a stony track, and there were *Riccardia latifrons*, *Kurzia pauciflora*, *Mylia anomala* and *Odontoschisma denudatum* on the boggy ground.

Donal himself, David Long and Gordon Rothero worked the great cliffs of Knockamore on the north coast. Gordon turned up one of the best finds of the day, *Geocalyx graveolens* in a peaty hollow. He also recorded *Leptoscyphus cuneifolius*, *Scapania scandica*, *Radula carringtonii*, *R. aquilegia*, *Drepanolejeunea hamatifolia*, *Harpalejeunea ovata*, *Cololejeunea calcarea*, *Frullania teneriffae* and *Weissia perssonii*. David worked some ground lower down and added *Preissia quadrata*, *Herbertus aduncus*, *Bazzania tricrenata*, *Anastrepta orcadensis*, *Colura calyptrifolia*, *Diphyscium foliosum* and *Isoetecium myosuroides* var. *brachythecioides*. On the cliffs below Knockamore he recorded *Fossombronina angulosa* (in a gully), *Blepharostoma trichophyllum*, *Leiocolea turbinata* and *L. alpestris*.

After we boarded the boat for the crossing to the mainland, shower clouds descended over Clare Island. During the blustery crossing, with gannets above our heads, we were able to reflect on our good fortune on another favourable and productive day in such an excellent place.

MONDAY 25 JULY: Ballynahinch and Mannin Peninsula

This proved to be a wet morning, the worst of the week, but the weather improved after midday. Ballynahinch Castle is located on the shore of its eponymous lough, and it is surrounded by estate woodland. There was reputed to be some old oak woodland, too. However, the woodland was not especially rich. Fruiting *Diphyscium foliosum* drew much admiration, and other species included *Preissia quadrata*, *Jungermannia obovata*, *Plagiochila killarniensis*, *Drepanolejeunea hamatifolia*, *Marchesinia mackaii*, *Orthotrichum anomalum*, *Homalia trichomanoides*, *Anomodon viticulosus*, and by the lough *Fontinalis antipyretica* var. *gigantea** and *Radula voluta*. Ephemerals included *Fossombronina pusilla* and *Riccia glauca*.

Gordon Rothero, David Long and I formed a splinter group and went in search of ravines. We spent a very wet morning by the Bunowen River below Tullyconor Bridge on the south side of Killary Harbour. The oak woodland had looked promising from a distance, but proved rather disappointing in the event. *Bazzania trilobata*, *Jungermannia paroica*, *Plagiochila spinulosa*, *P. punctata*, *Adelanthus decipiens*, *Drepanolejeunea hamatifolia*, *Harpalejeunea ovata*, *Aphanolejeunea microscopica*, *Leucobryum juniperoideum*, *Hygrohypnum luridum*, *H. eugyrium* and *Hypnum callichroum* were among the species recorded. At midday, we abandoned this place and moved on to the slightly drier ground at Kylemore Abbey, as reported above.

The official venue for the afternoon was on the Mannin Peninsula, near Ballyconneely. The coastal habitats included dunes with some rock outcrops, overgrown slacks, and short slope on turf near the sea. These places produced *Distichium inclinatum*, *Tortula ruraliformis*, *Barbula reflexa*, *Tortella nitida*, *Plagiomnium ellipticum*, *Orthotrichum anomalum*, *Brachythecium albicans*, *Entodon concinnus* and *Moerckia hibernica*, the latter found by Phil Stanley in short turf close to the sea. *Petalophyllum ralfsii* was also recorded, but it was not detected until after the meeting, among material of *Moerckia* collected by Jean Paton. Harold Whitehouse turned up *Ditrichum cylindricum*, *Dicranella staphylina* and other ruderals.

TUESDAY 26 JULY: Derryclare Wood and Lough Fee

Derryclare Wood is probably the finest surviving fragment of deciduous woodland in Connemara. Fortunately it is now protected as a Reserve, and it is free of Rhododendron. Situated on gently sloping ground by Derryclare Lough, it is surrounded by forestry plantation and is therefore protected from grazing. The underlying rock is quite strongly basic.

We entered the wood at the northern end, over some furrowed forestry land. *Polytrichum longisetum** was on the exposed peat. Most members worked the inner parts of the wood, moving southwards towards a stream at the far end. David Long soon turned up *Cryptothallus mirabilis* under *Sphagnum*, and this was subsequently found in at least two further places in the wood. In digging for the *Cryptothallus*, David also turned up another surprise, the 'truffle' *Hydnotrya confusa* Spooner, new to Ireland!

Species recorded on trees and rocks included *Plagiochila spinulosa*, *P. killarniensis*, *P. punctata*, *Cephalozia catenulata*, *Porella arboris-vitae*, *Frullania teneriffae*, *Harpalejeunea ovata*, *Drepanolejeunea hamatifolia*, *Marchesinia mackaii*, *Colura calyptrifolia*, *Mnium stellare**, *Ulota drummondii**, *Pterogonium gracile*, *Homalia trichomanoides*, *Eurhynchium pumilum* and *Orthothecium intricatum*. *Lophocolea fragrans* and *Jubula hutchinsiae* were found by the stream, and *Trichocolea tomentella* in a small flush nearby. Some of the best ground was in the lower parts of the wood, at the loughside, but most of the party did not arrive there until the end of the morning. Gordon Rothero, who had made straight for the lough margins, found *Leiocolea bantriensis*, *Scapania aspera*, *Porella obtusata*, *Radula voluta*, *Lejeunea holtii*, *Fissidens taxifolius* ssp. *pallidicaulis*, *Zygodon baumgartneri** and *Campylium chrysophyllum*. There were some magnificent stands of *Climacium dendroides*.

This was the last day of the meeting, and some of us had to leave at midday for the journey home. The reduced party moved on in the afternoon to L. Fee and L. Muck. Gravelly ground by L. Fee produced *Haplomitrium hookeri* and *Pohlia drummondii*. Stream gullies and the adjacent slopes above the lough had *Preissia quadrata*, *Jungermannia paroica*, *Plagiochila killarniensis*, *P. punctata*, *P. exigua*, *Harpalejeunea ovata*, *Marchesinia mackaii*, *Colura calyptrifolia*, *Fissidens taxifolius* ssp. *pallidicaulis*, *Anoetangium aestivum*, *Oxystegus hibernicus* and *Calliargon sarmentosum*. Several people reached the higher ground on Barrlugwaum and Benchoona, and recorded *Bazzania tricrenata*, *Lepidozia pearsonii**, *Herbertus aduncus*, *Anthelia julacea*, *Campylopus setifolius*, *Leptodontium recurvifolium*, *Glyphomitrium daviesii*, *Isothecium myosuroides* var. *brachytheciooides* and *Ctenidium molluscum* var. *condensatum*. Other records included *Blasia pusilla*, *Gymnomitrium crenulatum*, *Lepidozia cupressina*, *Jungermannia subelliptica*, *Tritomaria quinquedentata*, *Adelanthus decipiens*, *Hygrobriella laxifolia*, *Pleurozia purpurea*, *Jubula hutchinsiae*, *Harpalejeunea ovata*, *Drepanolejeunea hamatifolia*, *Diphyscium foliosum* and *Seligeria recurvata*. Jean Paton found both *Fossombronia husnotii* and *F. foveolata* by L. Muck.

So ended another memorable Irish Meeting. At least 350 bryophytes were recorded during the second week, and we all left, I am sure, with abiding memories. BBS members are not always easy to organise, and our great thanks are due to Donal for all his efforts and for conducting us through the week with his usual good humour.

TOM BLOCKEEL

AGM AND SYMPOSIUM MEETING, PRESTON MONTFORD, 1994

The rural setting of the Field Studies Council's headquarters at Preston Montford, near Shrewsbury, provided very pleasant surroundings for the AGM and paper-reading meeting. Members were particularly impressed by the gargantuan carp in the pond. The meeting this year was a special occasion, because it was partly a celebration of the 80th birthday of one of the Society's most senior members, Dr Eric Watson. The central event of the weekend was a dinner in Eric's honour on Saturday night, complete with birthday cake. As well as giving a superb talk earlier in the day, Eric entertained the assembled bryological throng with an after-dinner speech that brought tears of appreciative laughter to the eyes. The characteristic efficiency with which Dr. Martha Newton organised the meeting, made it a great success. My thanks to all the speakers at the meeting for an excellent collection of talks. The following summaries have been provided by the authors.

NICK HODGETTS

◆ **Prof. F. Sack** (Ohio State University): 'The bigger they are, the harder they fall: gravity and mosses.'

Gravity affects mosses in many ways:

Evolution and Plant Mass: Mosses lack the evolutionary specialisations that enable larger land plants to withstand the significant compaction produced by their mass.

Development: There are some reports of gravity influencing development such as where side branches emerge in protonemata. More examples would undoubtedly be found if they were sought out.

Gravitropism: Gametophores and sporophytes are usually gravitropic and this is probably adaptive e.g. for spore dispersal. Protonemata, which germinate from the spore, are gravitropic as well, but not well studied. We studied gravitropism in protonemata of *Ceratodon* which grow up in the dark. Both gravitropic sensing and differential growth (curvature) occur in or close to the tip of the apical cell, and tip growth is tightly coupled to tip orientation. In horizontal protonemata, there is extensive sedimentation of amyloplasts in a specific zone located behind the apical dome. This sedimentation could function in gravitropic sensing since it precedes upward curvature. This hypothesis is also supported by data from centrifugation experiments.

In upward curving cells, microtubules become enriched in the lower flank of the Golgi zone behind the apical dome. We hypothesise that amyloplast sedimentation induces an enrichment in microtubules that results in upward growth. The ultrastructure of horizontal and vertical cells was compared quantitatively. It was found that each organelle is located in its characteristic distribution and that Golgi stacks are abundant where microtubules become enriched. But no effect of horizontal placement on organelle distribution could be detected. Also, unlike microtubules, microfilaments did not appear to change distribution. Thus, the mechanisms of sensing and differential growth are still uncertain.

Evolution and cytoskeleton: Some amyloplast sedimentation also occurs in vertical cells, but sedimentation is not complete except when protonemata are treated with microtubule

inhibitors. This suggests that the cytoskeleton evolved, in part to prevent the stratification of organelles with respect to their densities.

◆ **Dr A.J.E. Smith** (University of Wales, Bangor): 'The *Hypnum cupressiforme* aggregate in the British Isles.'

The members of the *Hypnum cupressiforme* aggregate have been variously treated by different authors, from those who regard them as only forms or varieties of *H. cupressiforme* to others regarding them as distinct species. This variable treatment is due in part at least to lack of familiarity or misunderstanding brought about by inadequate or misleading descriptions and illustrations.

Examination of more than 500 mainly British and Irish specimens and analysis of seven characters revealed clearly that there are eight to a greater or lesser extent well-defined taxa. There is no one character that can be used to separate all the taxa, indeed what are good characters for determining one taxon may be of little or no use for determining others.

On the basis of a combination of gametophyte and sporophyte characters seven of the taxa are sufficiently distinct to be treated as species and one, less clear cut, as a variety. These are *H. andoi* A.J.E. Smith (*H. mammillatum* (Brid.) Loeske, *nom. inval.*), *H. cupressiforme* Hedw. *s.s.*, *H. jutlandicum* Holmen & Warncke, *H. imponens* Hedw., *H. lacunosum* (Brid.) Hoffm. var. *lacunosum*, *H. lacunosum* var. *tectorum* (Brid.) Frahm, *H. resupinatum* Wils. and *H. uncinulatum* Jur.

From about 1850 onwards in the British Isles and elsewhere, *H. lacunosum* var. *lacunosum* and var. *tectorum* have been confused to such an extent that recent authors (e.g. Smith, 1978; Düll, 1985) have treated them as synonymous; only Watson (1981) has recognised them as distinct.

Ando (1992) recognises *H. cupressiforme* var. *filiforme* Brid. but says it does not occur in the British Isles, which is curious since Warburg (1963) records it from 105 British and Irish vice-counties. The variety is very slender with parallel branches and straight leaves, at variance with the descriptions in Dixon & Jameson (1924) and Nyholm (1954-1969), which after examination of material led me (Smith, 1978) to reduce var. *filiforme* to synonymy with the plant then known as *H. mammillatum* Brid. Examination of some 110 specimens labelled var. *filiforme* revealed that they were a random assortment of slender forms of *H. andoi*, *H. cupressiforme* *s.s.* and *H. resupinatum*. Like Ando (1992), I have seen no British material of var. *filiforme*.

Following the examination of further characters it is intended in due course to publish a liberally illustrated paper on the *H. cupressiforme* aggregate in the British Isles. In the meantime, a provisional key to the taxa is given below.

Provisional key to the taxa of the *Hypnum cupressiforme* aggregate

1. Capsule ± erect and straight *H. resupinatum*
Capsule inclined and curved or lacking 2
2. Capsule with a mamillate lid *H. andoi*
Lid rostellate or lacking 3

3. Stems pinnately branched, alar cells usually enlarged or inflated 4
 Branching irregular, alar cells \pm uniform in size or enlarged only towards basal angles 5
4. Plants pale green when fresh, stems green, common plant of heath, peaty soils, bogs
 *H. jutlandicum*
 Plants golden to brownish, stems reddish-brown, rare plant of wet heaths and bogs
 *H. imponens*
5. Plants very slender, leaves straight, not recorded from British Isles
 *H. cupressiforme* var. *filiforme*
 Plant size various, if slender then leaves homomallous or weakly to strongly falcate ... 6
6. Plants robust, stems \pm julaceous when moist with strongly concave imbricate leaves ... 7
 Plants very slender to medium-sized, leaves weakly concave, not imbricate 8
7. Plants golden-green to bronze, leaves falcate, sometimes strongly so, mostly 2-3 mm long
 *H. lacunosum* var. *lacunosum*
 Plants dull olive to brownish-green, leaves straight to weakly falcate, usually less than 2
 mm long *H. lacunosum* var. *tectorum*
8. Leaves homomallous, \pm straight, margin usually entire *H. resupinatum*
 Leaves weakly to strongly falcato-secund, margin entire or denticulate 9
9. Alar cells usually excavate, often brownish, 5-8 at margin, increasing in size towards
 basal angle, N. Kerry *H. uncinulatum*
 Alar cells not or weakly excavate, not brownish, 7-15 at margin except in very slender
 plants, common 10
10. Leaves weakly falcato-secund, hardly or not complanate, alar cells usually \pm similar in
 size, mid-leaf cells mostly 52-88 μm long *H. cupressiforme* var. *cupressiforme*
 Leaves falcato-secund, strongly so and complanate at least in small forms, alar cells
 often increasing in size and sometimes inflated towards basal angle, mid-leaf cells
 mostly 24-60 μm long *H. andoi*

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♦ **Prof. J.G. Duckett** (Queen Mary & Westfield College, London) and **Mr H.W. Matcham** (Chichester): 'Gemmiferous protonemata; an overlooked dimension in the reproductive biology of mosses.'

Whereas descriptions of diaspores, produced by leafy gametophores and underground rhizoids, are based largely on wild materials and are a standard feature in moss floras, those of protonemal gemmae (defined as propagules produced on above ground chloronemal filaments and possessing specific liberation mechanisms (Duckett & Ligrone, 1992) derive almost exclusively from cultured specimens and are rarely mentioned in these texts. Detailed scrutiny of the literature indicates that in only twenty species, from the 119 recorded as producing gemmiferous protonemata (the latter figure almost certainly inflated due to confusion with protonemal brood cells produced by redifferentiation of chloronemal cells in ageing cultures (Goode *et al.*, 1993b)), have produced gemmiferous protonemata in culture and from these 44 have been discovered to be gemmiferous in nature. We estimate that 20-30% of all mosses probably possess gemmiferous protonemata.

In a minority of species (e.g. *Diphyscium foliosum*, *Dicranella heteromalla*, *Dicranoweisia cirrata*, *Dicranum montanum*, *D. tauricum*, *Tortula muralis*, *Orthodontium lineare*, *Schistostega pennata*, *Rhizomnium punctatum*, *Zygodon* spp., *Orthotrichum* spp., *Isopterygium elegans*) gemmiferous protonemata may be found at all times of the year, often forming extensive patches in niches where gametophores are depauperate (Duckett & Ligrone, 1994; Duckett & Matcham, in press). However, in the majority (e.g. *Ceratodon purpureus*, *Dicranella staphylina*, *Encalypta streptocarpa*, *Funaria hygrometrica*, *Bryum* spp., *Mnium hornum*) they appear to be highly transient and associated only with initial stages in colonisation, often preceding the full development of gametophores. Gemmiferous protonemata may be found in a variety of habitats from trees and rotten logs to bare soils and rock surfaces. Taxonomically they are widely distributed in the different orders of mosses but are notably rare in the Hypnobryales and have yet to be seen in the Fissidentales, Grimmiiales and Polytrichales. Liberation mechanisms involve either severance along the middle lamella of the basal cell (*Dicranum montanum*, *D. tauricum*, *Saelania glaucescens*, *Mnium hornum*, *Rhizomnium punctatum*, *Cryphaea*, *Leptodon*, *Homalia*, *Myrinia* and all 18 members of the Pottiales studied to date) or the formation of specialised tmema (abscission) cells by an intercalary division associated with polarity reversal in the filament in question. The tmema cells themselves exhibit a range of severance mechanisms. In *Bryum* breakage occurs along an equatorial line of weakness in the original wall (Goode *et al.*, 1993a), in *Funaria*, *Ceratodon* and *Dicranella* filament disruption is affected by the expansion of a new internal wall (Duckett & Matcham, in press) but in the Hookeriales swelling of the cell below the tmema cell leads to the rupture of the latter.

To date we have but scratched the surface of an area of bryology largely overlooked by taxonomists, ecologists and reproductive biologists alike. Some 25 years ago the late Eustace Jones remarked to one of us, 'when you start bryology you collect common species, then you stop but eventually you start again'. Gemmiferous protonemata are a compelling reason for all of us to begin again.

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♦ **Mr G. Stark** (Joint Nature Conservation Committee, Peterborough): 'The Lower Plant Biodiversity Register.'

At the end of last year I began work on the Lower Plant Biodiversity Register project. The project extends JNCC's interest in lower plant conservation. My initial brief was to collate data on lower plants in order to develop a system for the identification and ranking of sites important for their lower plant interest. Our ideas have evolved over the past year, and considerable thought has gone into what kind of information we would like to collect, how to store this information and how we can use this information to the benefit of lower plant conservation.

Bryophytes and stoneworts have been a testing ground for the project. To date I have made entries for some 2500 populations of Red Data List bryophytes based on records in the BBS Atlas database at the Biological Records Centre. Many of these populations have not been seen for some time. Entries in the Register are not the same as records held in the Atlas database; a Register entry, such as '*Cratoneuron decipiens* on Ben Lawers' or '*Cheilothela chloropus* at Berry Head', will relate to a number of Atlas records. We also hope to make Register entries more comprehensive, with details of habitats and threats and notes on occasions where a species has not been refound. Over the forthcoming months I will be adding to these entries from forms returned by BBS recorders, comments made on the original records cards and various surveys and special projects carried out by the county conservation agencies.

An obvious way in which the Register can be used is to disseminate information about populations of rare lower plant species. The work of the country conservation agencies (English Nature, Scottish Natural Heritage and The Countryside Council for Wales) includes casework relating to potential threats to nature conservation sites, planning applications or changes on SSSIs for example. Site managers and conservation officers often do not have specialist bryophyte expertise, with notable exceptions! We intend to make the information held on the Lower Plant Biodiversity Register available to these staff, either through regional reports or possibly computer copies of the Register itself. We see the Register as sitting at an interface between the statutory conservation agencies and the specialist knowledge of societies like the BBS. By making information about Red Data List bryophyte populations more easily available we hope to encourage their consideration by non specialists.

In addition to disseminating information the Register will be used to get an overview of lower plant conservation. An example of this is the occurrence of Red Data List bryophytes on National Nature Reserves (NNRs). About a half of the 220 Red Data List bryophytes had at least one occurrence on a National Nature Reserve. Occurrence on a NNR is incidental, since populations of lower plants were not a consideration in the designation of NNRs. Note that this is not a complete picture of protection since species may occur on other protected sites (SSSI or local nature reserves) or have species protection under the Wildlife and Countryside Act. A few NNRs have populations of many species (Ben Lawers NNR 42, Cairngorms NNR 21 and Caenlochan NNR – all extensive Scottish upland sites) but the majority have one or two species. We compared representation of species on NNRs with their habitat and life strategy.

The picture is much as we had expected although interestingly it contrasts with that for invertebrate species for which there is a higher representation of Red Data List species on protected sites in SE England. In the case of rare invertebrates in regions like East Anglia the few areas of good habitat are mostly protected, have been intensively studied and have a higher number of rare species than reserves in the uplands. This is less the case for Red Data List bryophytes, since rare bryophytes in regions like East Anglia tend to be species of marginal habitats such as exposed mud or arable fields, sites unlikely to have statutory protection as NNRs.

Protection of sites may suit some species but it is not appropriate for all – those species with the life strategy of shuttle species being a case in point. Further, site based protection does nothing to enhance the environment in which most of us live most of the time. Discussion of wider countryside conservation is currently dominated by birds, where site based protection is often limited because of the large amount of land which would be required for it to be effective. A similar argument could be put for bryophyte species which move around a lot. These species do not require for extensive tracts of land to be designated as reserves, but would benefit from sympathetic land management practices in a working landscape. In the future we hope to use the Register to make recommendations which will benefit bryophytes growing outside of protected and managed reserves.

◆ **Dr E.V. Watson** (Cleeve): 'Sixty years in bryology.'

Under the title 'Sixty years in Bryology', Dr Watson recalled his first tentative steps, taken in student days at Edinburgh in the nineteen thirties, when he received significant help and encouragement from Mr William Young, who had been a founder member of the Moss Exchange Club back in 1896 and was busy reorganising bryological material in the Herbarium of the Royal Botanic Garden, Edinburgh.

Reference was made to the exploratory visits paid by some members of Edinburgh University Biological Society to Barra in June 1935 and in summer 1936 when it fell to Dr Watson to investigate, among other things, the mosses. Help in identification was received from long-standing BBS member, J.B. Duncan of Berwick-on-Tweed. Much valuable experience was gained and these studies culminated in a paper 'The mosses of Barra, Outer Hebrides' in *Transactions of the Botanical Society of Edinburgh* **32**, 1939.

To a certain extent, a 'fresh start' was made in the spring of 1946 when the opportunity was seized not only to join the BBS but to attend the Meeting of the Society held at Appleby at that time. As a direct outcome of taking these two steps, Dr Watson found himself, by the

autumn of that year, on the staff of the Botany Department at the University of Reading and Bibliographer of the British Bryological Society; the first to last for 33 years, the second for 25!

Soon after arrival at Reading a big new opportunity arose when Professor Tom Harris made the suggestion that a simple book on bryophytes might be written, expressly aimed at beginners. The seed had been sown from which *British Mosses and Liverworts* was to grow. This 'growth' took some time and Dr. Watson expanded a little on some of the phases of that process. He emphasised the generous help he received throughout from Professor Paul Richards. He enlarged on some of the misgivings he had about the book and his delight and relief when it was well received on its appearance in April 1955. One innovation was a key which took one direct to species. Another was a field key, to the most prominent and easily recognisable species, in a folder at the back. Key making was much 'in fashion' at the time at Reading, Dr F.B. Hora being deeply involved in making his 'Field Key to Common British Mushrooms and Toadstools'.

There followed what might be called the 'middle years', i.e. roughly the period from the mid-nineteen fifties to the mid-nineteen seventies, but a digression was made to recall certain incidents, customs and outstanding personalities of 40 years ago. Up to about 1956 the daily excursions on Spring Field meetings were by coach. This afforded one the opportunity to make interesting new friendships, while a tea-time break at a hotel or restaurant enabled people to talk over some of the finds of the day. Two people who played key parts, not only on field trips but in the affairs of the society as a whole, were E.C. Wallace, who had been our tireless secretary from 1946 onwards, and E.F. Warburg, who had, it seemed, an encyclopaedic knowledge and a keenness of eye that nobody else could match.

Two characteristic features of those days (40 or so years ago) were (1) that vice-counties were the sole geographic units in terms of which distribution was studied and (2) an annual event known as the 'Exchange and Distribution' whereby material (much of it from abroad) was assembled by the secretary and in due course distributed to interested members. It was invaluable for anybody attempting to build up a reference herbarium.

Reference was then made to the work that had been involved in holding office as Bibliographer and thus preparing, year after year, the contribution entitled 'Recent bryological literature'; and it was pointed out how this work enabled Dr. Watson to consider acceptance when, in 1960, an invitation came from Professor Munro Fox to write a book in Hutchinsons University Library. The outcome was *Structure and Life of Bryophytes*, which was published in 1964. A somewhat different plan was adopted from that found in any bryophyte text that had gone before. There were difficulties, not least the strict limits to the length of the book and a format which precluded anything like satisfactory illustrations. The author's period as Bibliographer (1946-71) just allowed him to stay reasonably in touch with the advancing stream of literature until a second edition had been prepared, with its greatly extended list of references.

Playing a quiet 'background role' as one of the Society's panel of 'referees' was something that had been going on now for 40 years. It was interesting and at times challenging work being referee for *Pohlia*, *Bryum* and *Philonotis* (and seven other less difficult genera). The 'referee's nightmare', of a great avalanche of material being suddenly unleashed upon one, had not so far occurred. Considerable problems could be posed occasionally, for example

when two species chose to grow intimately entwined with one another; or again when one was asked to give a verdict on a minute specimen which had been firmly attached to a piece of card with the best Victorian glue by a bryologist over 100 years ago. An occasional moment of light relief would come when the plant sent in as *Bryum* sp. turned out to be *Funaria hygrometrica*!

It had to be admitted by the author of this contribution that the last fifteen to twenty years had been a time when he had played a greatly diminished part. For the BBS as a whole, however, this had been a time of burgeoning activity on many different fronts.

Accordingly, for the final part of this review of his 'Sixty years in Bryology' Dr Watson turned briefly to some of the directions in which both the subject as a whole and BBS activities had been fast expanding. Reference was made to the more complex and demanding role of the Bibliographer today and the increased volume of contemporary bryological literature. He emphasised the many sources to be tapped now by the young enthusiast in contrast to the situation 60 years ago.

Finally, he saw fit to compliment fellow members on some of the outstanding achievements of recent times. Most notable, surely, was the culmination of the 'mapping scheme' - embarked upon 34 years ago - in the publication of the three handsome volumes of the Atlas of the Bryophytes of Britain and Ireland'. Another encouraging development had been a closer collaboration with bryologists and bryology overseas.

♦ **Mr D.G. Long** (Royal Botanic Garden, Edinburgh): 'Bryological exploration of Nepal.'

Nepal is a Himalayan kingdom of 54,000 square miles dominated by the Himalayan chain of mountains with several of the world's highest peaks. In altitude it ranges from 60 m up to 8848 m and supports a wide range of habitats from subtropical forest to alpine desert. The climate is monsoonal with heavy summer rains. Rainfall is highest in the east, declining westwards with quite arid interior areas in the west. The high rainfall leads to a high treeline (4000 m or more) in the east.

Nepal remained virtually unexplored bryologically before 1950. The earliest collectors, Buchanan, Gardner and Wallich (early 19th century) were restricted in their movements to parts of central Nepal and made only limited collections. These specimens came to Britain and were worked on by W.J. Hooker and W.H. Harvey. J.D. Hooker was the first botanist to explore the wetter but richer eastern Nepal in 1848. His collections were researched by Mitten. The century following this saw virtually no bryological activity in Nepal, but since 1950 most parts of the country have been at least partly explored.

The author led a botanical expedition to East Nepal in September/October 1991, to the Barun Khola valley, Makalu area, Hatiya and Milke Danda ridge (the region east of the Everest range). The last of these areas had been explored by Japanese bryologists in the 1970s, and found to be very rich with rarities such as *Takakia*. The expedition was funded jointly by the Royal Botanic Garden, Edinburgh and private sponsors, and the team included a Nepalese liaison botanist from Kathmandu.

Transport was by a Twin Otter plane to the airstrip at Tumlingtat in the Arun Valley, thereafter we walked with a team of Sherpa guides and porters. Collecting was primarily of vascular plants but substantial bryological collections were possible. Drying of specimens

was effected by kerosene heaters in a drying frame, and dry specimens were sealed in polythene bags and carried by porters.

Many threats to the rich bryoflora of East Nepal were in evidence: overpopulation is the greatest threat as it forces poorer villagers into the steep inner valleys where primary forest is degraded by felling, burning and grazing. This land is of very low agricultural potential. The resulting secondary scrub is of low bryological interest in comparison to the primary rain forest. Trekking and tourism are recent threat; they lead to a 'honeypot' effect along footpaths where villagers settle and open teashops and rest-houses with consequent stresses to the vegetation.

In the Arun Valley north to Num only pockets of primary forest survived. Nevertheless many interesting bryophytes were seen in disturbed and cultivated areas and pockets of forest. Two *Asterella* species were frequent: *A. mussuriensis* and *A. khasyana*. *Bryowijkia ambigua* was a distinctive epiphyte. On shady paths *Conocephalum japonicum* was collected. At Num the Arun river gorge was crossed, followed by a gradual ascent through temperate forest zones with a steadily improving bryoflora. *Abies densa/Rhododendron* forest clothed the slopes below the Shipton La pass with robust ground mosses such as *Actinothuidium hookeri*, *Rhodobryum giganteum*, *Breutelia setschwanica* and *Paraleucobryum enerve*. Rotten logs were richly clothed in liverworts such as *Lophozia setosa* and *Delavayella serrata*.

The Shipton La pass (4130 m) was a rich alpine habitat with wet cliffs with extensive *Takakia ceratophylla* and block scree with *Anastrophyllum joergensenii* c. spor. and many other Hepaticae. The descent on the north side was back into dense *Rhododendron* forest in the Barun Khola valley. The valley turned out to have extensive outcrops of calcareous schist rocks and exceptionally rich bryophyte assemblages: some of these supported some of the rare European Alpine calcicoles such as *Cirriphyllum cirrosum*, *Blindia caespiticia*, *Encalypta alpina*, *Campyllum halleri* and *Meesia uliginosa*. Two thalloid liverworts new to science were found here: *Asterella grollei* and *Aneura crateriformis*. Just as interesting was the first *Sphaerocarpos* for E. Asia: *S. stipitatus*, known from Chile, South Africa and Portugal.

Continuing up the Barun Khola, the rain shadow effect soon dramatically changed the vegetation to dry xerophytic scrub and scree. The bryophytes were much less rich, but still of interest: e.g. the abundance of *Rhytidium rugosum*. Other rarities were *Andreaea frigida* and the cleistocarpous member of Splachnaceae, *Voitia nivalis*. On Makalu itself we climbed to 18,000 feet where a few bryophytes were still present.

The return journey took us to the remote village of Hatiya on the Tibetan border where magnificent surviving forest of hemlock (*Tsuga dumosa*) were of great interest. Here was found *Scaphophyllum speciosum*, *Geocalyx graveolens* and *Acrobolbus ciliatus*, the first new to Nepal and a significant extension from its other localities in Bhutan and Taiwan. Next we ascended the Milke Danda ridge, an important yak-herding route with severe degradation of the *Rhododendron* forest in places. Notwithstanding, some good finds were made including *Campylostelium saxicola* new to the Himalaya and both *Tetrodontium brownianum* and *T. repandum*.

The journey back to Kathmandu involved a very long bus journey, during which one of the parcels of bryophytes mysteriously disappeared. In spite of this, over 2000 collections were

made including several taxa new to science and others new to Nepal. There is no doubt of the richness of East Nepal's bryoflora. Perhaps most interesting is the discovery that some of our own 'Northern Atlantic' liverworts are much more extensive in the Himalaya than in Europe, e.g. *Anastrophyllum donianum* and *A. joergensenii*, *Bazzania pearsonii* and *Pleurozia purpurea*.

♦ **Mr B.J. O'Shea** (London): 'Malawi bryophytes and the checklist of sub-Saharan African mosses.'

The collections from the BBS Tropical Bryology Group 1991 expedition to Mount Mulanje, Malawi, are now being processed at an increasing rate, and approximately 21% (1600 mosses and 800 hepatics) are now identified or with experts for identification. 37 experts were assisting members of the expedition team in identification. The 4500 collections were expected to yield about 11250 taxa, at 2.5 taxa per collection. Of the 212 different taxa so far identified, 57% were new to the known flora of Malawi. It was estimated that two to three years more would be needed to complete the work.

Work on the Malawi flora had identified the need for a checklist of sub-Saharan African bryophytes to supplement and integrate the rather poor existing documentation of the bryophyte flora. The hepatic checklist was being pursued by Martin Wigginton, but although work on the moss list was not yet complete, it was now possible to derive some preliminary conclusions on the overall number of taxa on the continent, and the likely effect on this of taxonomic revisions. By looking at revised groups (*Campylopus*, *Leptodontium*, *Neckeropsis*, *Porothamnium*/*Porotrichum*, *Rigodium*, *Sphagnum*, *Thuidium s.l.*) and unrevised groups (*Isopterygium*, *Leucoloma*, *Macromitrium*, *Pilotrichella*, *Racopilum*, *Sematophyllum*, *Schlotheimia*, *Taxithelium*, *Vesicularia*, *Zygodon*) as well as those in process of revision (*Calymperes*, *Fissidens*), it was shown that many groups with large numbers of apparent endemics may not have endemics at all, and were the result of poor taxonomy of the past, when large numbers of unnecessary taxa were described. Useful metrics for genera with large numbers of species seemed to be the number of countries in which taxa occurred (ca. 2 for unrevised vs. 8 for revised genera), and the number of taxa occurring in only one country (ca. 50% for unrevised and 25% for revised genera). The dangers of making such generalisations without careful study of the genus in question was emphasised: *Archidium* was given as an example of a revised genus that displayed the 'unrevised' characteristic of thinly distributed species, but which in that case were genuinely endemic species. Nevertheless, it was important to remove the 'noise' of unnecessary taxa before it was possible to make specific statements on diversity and endemism in African mosses, and thus allow appropriate conservation procedures to be defined. Our poor knowledge of the African flora was emphasised by further information from the African moss flora database – 32 of the 50 countries and islands included in the list had fewer than 100 taxa recorded, and 11 had fewer than 10 – which underlined the need for many more expeditions such as the one to Malawi to improve our knowledge, and the urgent need for training of local bryologists.

FIELD EXCURSION TO ROUNDTON HILL, TODLETH HILL AND THE RIVER ONNY, 25 SEPTEMBER 1994

The morning was spent in the vicinity of the Montgomery Wildlife Trust Reserve of Roundton Hill, just on the Welsh side of the border, a small rocky and grassy hill with

wooded fringes on a substrate of dolerite. *Tortula canescens* has been recorded there in the past. The party split into two, one group examining Roundton Hill itself, with another going to the neighbouring Todleth Hill, which is less well-known than Roundton and more wooded.

A not-unexpected assemblage of predominantly calcifuge species was recorded on Roundton Hill, including *Andreaea rothii*, *Cynodontium bruntonii*, *Hedwigia stellata* (recently distinguished from *H. ciliata*, which was not found here) and *Pterogonium gracile* on rocky crags, with *Lophozia bicrenata* and *Scapania compacta* in rock crevices. *Tortula canescens* was searched for but unfortunately not found. Some members attempted to distinguish between the varieties of *Hypnum lacunosum*, explained the previous day, in the field. There were a few more calcareous outcrops with *Encalypta streptocarpa*, *Fissidens cristatus* and *Tortella tortuosa*, with *Climacium dendroides* in short turf nearby. Chris Walker found *Grimmia laevigata*, the first record from Roundton for some years. In the swirling mists and wind at the summit of the hill, it was almost possible to imagine oneself on a Scottish mountain!

The other party had an interesting morning on Todleth Hill, the extra shade and humidity of the site proving more rewarding than the relatively bare slopes of Roundton, and providing an interesting mixture of lowland and upland species. Notable finds included *Amphidium mougeotii*, *Cirriphyllum crassinervium*, more *Hedwigia stellata*, *Racomitrium affine*, *Barbilophozia barbata*, *Lejeunea cavifolia* and *Reboulia hemisphaerica*. The oceanic liverworts *Lejeunea lamacerina*, *Saccogyna viticulosa* and *Scapania gracilis* were all recorded, here at the eastern limits of their distribution in the Welsh borders.

After lunch, and a small amount of confusion *en route* caused by a Ron Shoubridge look-alike eating lunch in his car, the remaining members of the party returned to the English side of the border (Shropshire) to examine the characteristic riverine bryophyte communities in the flood zone on the banks of the River Onny, near Cheney Longville. In the gathering autumnal dampness, species such as *Leskea polycarpa* and *Orthotrichum rivulare* were seen on riverside trees, as well as very nice stands of *Scleropodium cespitosum*. *Pseudephemerum nitidum* and *Fossombronia wondraczekii* were recorded from muddy banks and several elder trees had reasonable epiphytic communities, with *Bryum flaccidum*, *Orthotrichum* spp., *Zygodon viridissimus*, *Frullania dilatata* and *Radula complanata*. Tom Blockeel and Jean Paton explored another stretch of the river, where they found *Tortula latifolia* and *Porella cordaeana*, and examination of adjacent stubble fields yielded *Ephemerum serratum* var. *minutissimum*, *Riccia glauca* and *R. sorocarpa*.

NICK HODGETTS

BRYOPHYTE WORKSHOP, UNIVERSITY OF BRISTOL, 1994

This year the workshop weekend, organised by Dennis Brown at the University of Bristol on the 19-20 November, could not be described as either a taxonomic or a field meeting. Instead, a dozen people enjoyed two days of discussions, demonstrations and hands-on experience of growing bryophytes.

Work started on Saturday morning with a visit to the University Botanic Gardens, by permission of Nick Wray. He made a brief appearance, only to discover most people forced by the rain into either hunting for cultivatable specimens in greenhouses or dilapidated cold frames, or recovering with a hot drink. A list of nearly 50 taxa was compiled. During a lull in the rain an inspection was made of some experimental herbicide-treatment plots, laid out on a *Rhytidiadelphus*-rich 'lawn' using thread ligature markers for apical growth measurements.

In the afternoon Dr Harold Whitehouse gave a talk on his test-tube agar culture techniques and clearly explained the value of using axenic cultures for taxonomic problems. This was followed by a demonstration of the techniques and an opportunity to discover personally that quite a bit of private practice may be required to become as skilled as Harold in sterile methods.

On Sunday morning Michael Fletcher gave a talk entitled 'Bryoculture, a systems analysis approach'. He introduced us to many new interpretations of familiar acronyms but also challenged us to become bryoculturists. Again, this was followed by the chance to set up cultures; many of them derived from the large number of varied specimen pots that Michael had brought to the meeting. At the end of the morning, Dennis Brown extolled the virtues of his 'sandwich-box and Velcro' culture method for testing the effects of pollutants on growth and investigating regeneration problems. People began to disperse from lunchtime - usually happily clutching method sheets, bottles of nutrient solutions or pots of newly planted material and replete with discussions of practical problems, challenging taxa and knowing how to succeed in a different branch of active bryology.

DENNIS BROWN

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.

SPRING FIELD MEETING 1995, Ambleside, Cumbria, 5-12 April.

Local Secretary: Peter Bullard. Work address: Cumbria Wildlife Trust, Kendal, Cumbria, LA22 0BU. Tel: 01539 432476. Home address: 36 Castle Garth, Kendal, Cumbria, LA9 7AT. Tel: 01539 732699.

Cumbria has not been visited by the Society for some time, and is indeed a surprisingly poorly known part of the country for bryophytes. This meeting will look at little-known sites as well as some of the classic localities, in an effort to remedy the situation. In particular, some of the bryophyte-rich oceanic woodlands are in need of further work. There should be plenty of scope for interesting and new finds, though excursions to higher ground will depend largely on the weather.

SUMMER FIELD MEETING 1995 (I), Tatra Mountains, Slovakia, 13-24 August.

Local Secretary: Dr. Rudolf Soltés, Research Station of the Tatra National Park, 05960 Tatr. Lomnica, Slovakia. Fax: 010 42 969967958.

Dr. Soltés has kindly agreed to host the BBS for ten days in August for this exciting central European meeting. The Tatras are the highest of the Carpathian mountains, reaching a maximum altitude of 2655 m. Most of the area is granitic, but there are also places where limestone and dolomite predominate, often forming spectacular scenery with deep gorges, precipitous cliffs, etc. Vegetation ranges from coniferous forest at lower altitudes to dwarf pine forest, alpine meadows and a true alpine zone higher up the mountains. The programme will concentrate on characteristic Carpathian bryophyte habitats, which will have species that are likely to be unfamiliar to British bryologists. For example, *Anastrophyllum michauxii*, *Bucegia romanica*, *Metaneckera menziesii*, *Ochryaea tatrensis*, *Paludella squarrosa*, etc.

There is little further detailed information available at present, but this meeting is definitely going to happen! Accommodation will be in the Hotel Academia, in the village of Stará Lesná, where a preliminary booking for 15 people has been made. Prices are in the region of £20 per night. The Research Station can provide microscope facilities. For further details of the meeting, either contact Dr. Soltés directly, or write to Nick Hodgetts, Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough, PE1 1JY (Tel. 01733 62626). There may be a possibility of obtaining reduced-rate flights to Slovakia if we can manage a group booking, so please let me know as soon as possible if you would be interested in taking advantage of this.

In any case, please let me (NH) know *in writing as soon as possible* if you are definitely coming on this trip.

SUMMER FIELD MEETING 1995 (II), Durham/Northumberland, 26 July- 2 August.

Local Secretaries: Stuart Hedley, English Nature, Archbold House, Archbold Terrace, Newcastle-upon-Tyne, NE2 1EG. Tel: 0191 281 6316.

This year, an alternative summer meeting is being arranged in Britain for those who either cannot or do not want to go to the Tatras. Of course, anyone who wishes to attend both meetings is more than welcome to do so. North-eastern England has been under-worked in recent years. Although there have been many good records from Upper Teesdale, there are few recent records, and the status of many interesting species in the area needs to be elucidated. Elsewhere, there are many potentially interesting places to visit in the north Pennines and Border country. Several sites have montane species at an unusually low altitude.

Potential places to visit include Widdybank (blanket mire, sugar limestone; records of *Aplodon wormskjoldii*, *Tortella densa*, etc.), Bizzle and Hen Hole (records of *Bryum stirtonii*, *Splachnum vasculosum*, *Tetralophozia setiformis*, etc.) and Holy Island (dune slacks with *Petalophyllum ralfsii*, etc.). The meeting may also include a search for the elusive *Seligeria carniolica*. Contact local secretary for further details.

ANNUAL GENERAL MEETING AND SYMPOSIUM MEETING 1995: University of East Anglia, Norwich, 8-10 September.

Local Secretary: Richard Fisk, 1 Paradise Row, Ringsfield, Beccles, Suffolk, NR34 8LQ.
Tel: 01502 714968.
Details in next *Bulletin*.

WORKSHOP MEETING 1995, Manchester Museum, 21-22 October (provisional dates).

Local Secretary: Dr. Sean Edwards, The Herbarium, Manchester Museum, The University, Manchester, M13 9PL. Tel: 0161 2752000.

The subject of this year's workshop, which Sean Edwards has kindly agreed to host and lead, is peristomes. The peristome of mosses is used extensively in the higher classification of mosses and in the separation of species in many genera (e.g. *Bryum*). However, peristome characters can sometimes be rather obscure to the uninitiated. The workshop will not be limited to the British bryoflora, but will endeavour to cover the full range of peristome structures to be found in the mosses, and will include instruction on the best ways to examine peristomes and interpretation of peristome characters.

SPRING MEETING 1996, Dolgellau, Gwynedd.

Local Secretaries: Tim Blackstock & Marcus Yeo, Countryside Council for Wales, Plas Penrhos, Penrhos Road, Bangor, Gwynedd, LL57 2LQ. Tel: 01248 370444. (Note change of local secretary.)

This meeting is taking place at the same venue as the first meeting of the Moss Exchange Club in 1896, as part of the Centenary year celebrations. Further details in next *Bulletin*.

BBS CENTENARY SYMPOSIUM 1996, University of Glasgow, 4-8 August.

Local Secretary: Dr J. H. Dickson, Department of Botany, The University, Glasgow, G12 8QQ. Tel: 0141 339 8855.

Entitled 'Innovations in bryophyte research', this important and forward-looking symposium will include contributions from those at the forefront of current bryophyte research, over a wide range of subject areas. Contributions are currently being invited.

SUMMER FIELD MEETING 1996

(I) Ballachulish, Argyll, 10-17 August.

Local Secretary: Gordon Rothero, Stronlonag, Glenmassan, by Dunoon, Argyll. Tel: 01369 6281.

The BBS summer field meeting will immediately follow the Glasgow symposium. The first week will consist of a week in the west of Scotland, based at Ballachulish, at the gateway to Glencoe. It is intended to concentrate on the rich Atlantic bryophyte communities of the area, with trips to some of the finest oceanic woodlands in Europe, as well as to montane and coastal sites. Further details in future *Bulletins*.

(II) Braemar, ..., 17-24 August.

Local Secretary: To be arranged (anyone care to volunteer?).

Further details in future *Bulletins*.

ANNUAL GENERAL MEETING AND SYMPOSIUM MEETING 1996: Ness Botanic Garden, Wirral.

Local Secretary: Dr Hugh McAllister, Ness Botanic Gardens, The University of Liverpool, Environmental & Horticultural Research Station, Ness, Neston, Wirral, Cheshire, L64 4AY. Tel: 0151 336 7769/8733.

The unique setting of Ness Gardens has kindly been offered for the AGM in our centenary year. Further details in next *Bulletin*.

LOCAL MEETINGS PROGRAMME, 1995

There has been a great expansion in Local Groups over the last few years, many of which are very active and produce useful and interesting records. It would be useful for the Meetings Secretary to have an overview of the activities of Local Groups, so that local activities can be related to regular Society meetings. The purpose of this is just to try to encourage the organisers of local meetings and groups to write a short report each year and to ensure that as many members as possible know what may be going on in their area. It would also be useful for identifying gaps, which perhaps could lead to the formation of new local groups. The Meetings Secretary would be very grateful to receive details of the programmes of Local Groups and copies of any reports of Local Group meetings, along with an indication of whether or not they have been sent to the *Bulletin* Editor.

BRITISH BRYOLOGICAL SOCIETY & NORTH WESTERN NATURALISTS' UNION (North West Group)

- Saturday 25 March: GREAT LONGSTONE. Professor Brian Fox. 11.00 a.m. Meet near church, SK200719.
- Saturday 22 April. LAMALOAD RESERVOIR. Professor Brian Fox. 10.45 a.m. Joint outing with New Mills Natural History Society. Meet in car-park, SJ976754.
- Saturday 20 May. GRIZEDALE (near Scorton). Mr Mike Gosling. 11.00 a.m. Parking by roadside, SD510479.
- Saturday 3 June. MONSAL DALE (S side of river). Dr Martha Newton. 11.00 a.m. Meet Monsal Head car-park, SK185715.
- Saturday 15 July. OVERDALE (DWT reserve). Mr Tony Smith. 11.00 a.m. Park as available, meet Hope village, SK171835.
- Saturday 12 August. VIA GELLIA. Mr Tony Smith. 11.00 a.m. Park as available, meet Cromford village, SK296569.
- Saturday 2 September. ABER FALLS. Mrs Wendy McCarthy. 10.45 a.m. Meet Llandudno Junction Station, SH794779.
- Saturday 7 October. CHEESDEN BROOK. Dr Martha Newton. 11.00 a.m. Meet Birtle, SD832133.
- Saturday 4 November. LITTLE BUDWORTH COMMON. Mr Len Johnson. 11.00 a.m. Car-park opposite Oulton Park, SJ591654.
- Saturday 2 December. DANES MOSS. Mr Len Johnson. 11.00 a.m. Roadside parking, SJ903701.

BRING FOOD & DRINK AS REQUIRED AND BE ADEQUATELY CLOTHED. PLEASE CHECK WITH LEADER OR SECTION SECRETARY BEFOREHAND.

A V Smith 01663 744499 (BBS)

E P McCann 0161 962 1226 (NWNW)

OTHER BRYOLOGICAL MEETINGS, 1995

- March 24-26, 1995: 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.
- March 31 - April 2, 1995: MANX MOSSES. Tutor: Dr Martha Newton. Details from the Director of Continuing Education, University of Liverpool, PO Box 147, Liverpool, L69 3BX (please enclose a stamped, addressed envelope).
- April 21-23, 1995: SPHAGNUM WEEKEND. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. A chance to learn how to recognize most of the British species in the field, and to study them alongside keys. Details from the Warden, Mr J. Ellis.
- April 21-24, 1995: BRYOPHYTES IN THE HIGHLANDS. See paragraph below.
- May 24-31, 1995: 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.
- July 21-28, 1995: 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, Mr K. Iball.
- August 4-11, 1995: WOODLAND 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.
- August 11-18, 1995: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Preston Montford Field Centre, Montford Bridge, Shrewsbury, SY4 1DX. Offering individual guidance at all levels. Details from the Warden, Ms S. Townsend.
- August 18-25, 1995: MOSSES: THEIR IDENTIFICATION & ECOLOGY. Tutor: Dr Jeff Bates, Slapton Ley Field Centre, Slapton, Kingsbridge, Devon, TQ7 2QP. A wide variety of interesting species will be encountered in a range of coastal, forest and upland habitats in a beautiful part of SW England. Suitable for beginners and more advanced students. Details from the warden, Keith Chell. Telephone 01584 580466.
- August 18-25, 1995: 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.

August 26 - September 2, 1995: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Kindrogan Field Centre, Enochdhu, Blairegowrie, Perthshire, PH10 7PG. Offering individual guidance at all levels. Details from the Warden, Ms A. Gimingham.

August 26 - September 2, 1995: BRYOPHYTES IN THE HIGHLANDS. See paragraph below.

Courses on Bryophytes, particularly suitable for beginners, will be held from April 21st to 24th and from August 26th to September 2nd, 1995. These will be based near Dunkeld, Perthshire and will be led by our member Brian Brookes who has run these courses for many years. Because of an increasing amount of work in other fields, the number of botanical courses which Brian will offer after 1995 will be considerably reduced. So if you are considering joining one of these groups, do so now before it is too late! Further information from Brian Brookes, Highland Field Studies, Borelick, Trochry, Perthshire, PH8 0BX (sae appreciated). Tel. & Fax: 01350 723222.

REPORTS OF LOCAL MEETINGS

South-East Group

Larkey Valley Wood, v.-c. 15. 12 March 1994.

A group of eight met on a breezy, mainly sunny, day to explore the wood and add to a species list made the previous year. Larkey Valley is a partly coppiced ancient woodland which was presented to the Canterbury City Council as a public open space in the 1930s. The wood lies along the bottom and west ridge of a roughly north-south valley in the chalk downs south of Canterbury. The soil of the higher parts is chalk and Head Brickearth, giving a 'full pH' range of habitats and species. Some areas yielded *Thamnobryum alopecurum*, *Cirriphyllum piliferum* and *Eurhynchium striatum*, whilst others produced *Ctenidium molluscum* 'woodland taxon' amongst *Dicranella heteromallum*.

The western edge of the wood is high above the Stour Valley and along part of it runs a byway. The narrow grassy bank between this and the wood is a stunted, windswept chalk grassland where *Ctenidium molluscum* var. *molluscum*, *Thuidium abietinum* ssp. *hystricosum*, *Homalothecium lutescens* and *Campyllum chrysophyllum* were maintaining a precarious existence.

The lower, northern part of the valley in the wood is lined with 'Dry Valley' deposit. Despite the term, it is probably quite damp most of the time, evidenced by the presence of *Cratoneuron filicinum* and, at the bottom, *Amblystegium riparium* c.fr. An area of steep banks, eroded to expose large tree root systems produced *Homalia trichomanoides* c.fr. and *Neckera complanata*, with *Cirriphyllum crassinervium* on the roots, *Barbula fallax* c.fr. and *Zygodon viridissimus* on bare soil.

The east slope of the valley has areas of chalk grassland where *Campyllum chrysophyllum*, *C. stellatum* var. *protensum*, *Pottia recta* and *Phascum curvicolle* were amongst the finds.

One higher part of the wood had been mature beechwood until cleared by the 1987 hurricane. As it had regenerated towards scrub, chalk grassland features such as *Hypnum cupressiforme* var. *lacunosum* have appeared. These are now mixed with carpets of *Ceratodon purpureus* and other species characteristic of the old acidic woodland floor and tree stumps.

Typically for woods in east Kent, epiphytes are scarce, some *Orthotrichum diaphanum*, *O. affine* and *Dicranoweisia cirrata* being found in well-sheltered places. One colony of *Anomodon viticulosus* was found on an old tree stump near the bottom of the valley.

Seventy seven bryophyte taxa were recorded and thanks are due to Mr Glen Sharman the warden, who joined us for the morning.

MALCOLM WATLING

Angley Wood, v.-c. 16. 2 October 1994. Leader Jeff Duckett.

In updating the bryophyte list from this site, the Group hoped as part of the Lower Plant Biodiversity exercise to re-find *Atrichum angustatum* and *Micromitrium tenerum*. Sadly, neither plant was found though *Atrichum tenellum* was evident in fair quantity along the entrance track. Time did not allow exploration of some sandy areas in which *A. angustatum* may yet survive.

There had been changes in water levels; an old pond had been drained after its dam was breached and this may account for the apparent loss of the *Micromitrium*. At the same time one boggy area appeared immature though it held six *Sphagnum* species including *S. magellanicum*, whilst *Lophozia incisa* was found nearby. The large 'aquatica' growth form of *Marchantia polymorpha* was here very apparent. A total of 80 bryophytes was recorded, including the Kent rarities *Funaria obtusa* and *Orthotrichum pulchellum*. Further exploration of this interesting area would be desirable. There is concern that the ownership of Angley Wood may change, with possible loss of access and perhaps of habitat.

ROY HURR

Loose Valley, Maidstone, v.-c. 15. 19 November 1994.

This deep narrow ragstone valley was a hive of industry prior to this century with water-mills for corn and paper, and many quarries for the ragstone. Sympathetic land-owner have preserved a landscape more typical of fifty years ago and there is a wide range of habitats and relicts of ancient woodland. Over 50 species were recorded, bringing the total so far for the valley to 61. Notable finds were *Mnium stellare* and *Orthotrichum lyellii* new for this 10 km square and not common in Kent, and *Fissidens crassipes*, a rare species for Kent but recorded previously for this 10 km square, found by Malcolm Watling. Malcolm also pointed out *Rhynchostegium murale* which most of us were not familiar with, and we were pleased to compare *Cirriphyllum crassinervium* with *C. piliferum*. Records will be presented to the local parish council who are seeking to oppose the filling in of one old quarry, the site of *Mnium stellare* and rich in bryophytes.

DAVID NEWMAN

Boxhill, v.-c. 17. 4 December 1994. Leader Jeff Duckett.

Members explored first the south-facing slopes of broken turf over chalk below Dukes Meadow. Here was *Entodon concinnus*, *Weissia longifolia* var. *angustifolia* and *W. sterilis*,

whilst Howard Matcham found *Ephemerum recurvifolium*. Surprisingly, no *Pottia* or *Phascum* species could be found. A number of other *Weissias* could not be determined and the site should be explored again when fruiting plants are present.

A second area was by the River Mole in Box woodland near the Stepping Stones. The trees here are subject to inundation and carried a rich bryoflora, particularly of *Scleropodium cespitans*, *Leskea polycarpa* and *Tortula latifolia*. It was of interest that the old Box trees carried *Zygodon conoideus*, whereas the Elder had *Z. viridissimus*. On the river bank Malcolm Watling found *Hennediella stanfordensis*. *Myrinia pulvinata* has previously been reported from Boxhill and doubtless still persists among the *Leskea* but could not be seen in spite of some search. Amongst the *Tortula latifolia*, Jeff Duckett also found gemmiferous protonema. These have not previously been reported for this species.

Grateful thanks are due to Ian Stone of the National Trust staff for the able and good-humoured way in which he piloted us to good bryophyte habitats.

ROY HURR

RECORDING MATTERS 9

Regional Recorders

A full list of BBS recorders for vice-counties in Britain and Ireland appeared in this column, *Bulletin* 64. The entry for Mr N.G. Hodgetts should have included the following vice-counties: **31,76,86-88,99**. Donal Synnott is no longer able to act as a recorder for Irish vice-counties.

Survey of Recording Activity in Vice-Counties

During 1994 a questionnaire was sent to all Regional Recorders to gather some basic information about the status of recording in Britain and Ireland. Recorders were asked the following questions: (1) Are you currently making field records in the region? (2) Are you working on a bryophyte flora of your region? (3) Name other active bryologists who contribute records. Completed questionnaires were kindly returned by 42 Recorders representing 83 vice-counties. A few Recorders failed to respond. As the data give a fairly detailed picture of the current level of bryological recording activity in Britain and Ireland it seemed worthwhile making available a summary of the responses.

It is evident from inspection of the Table (below) that the majority of Recorders are actively undertaking field recording, however the level of activity varies considerably between vice-counties. It is obvious that the recording is in many cases being stimulated by county flora projects; an unambiguous 'no' to the question (2) about floras was registered for only 13 vice-counties.

An approximate answer to another question – how many active field bryologists are there in Britain and Ireland? – is possible from these returns. It cannot, however, be calculated directly from the Table because the same individuals crop up as recorders and 'active bryologists' in several different vice-counties. The tally of names recorded in response to the third question is 46 which, when added to the 42 responding Regional Recorders, yields a total of 88 active field bryologists. This may be an underestimate because of the 'missing' vice-counties, the occurrence of bryologists in vice-counties without a recorder, and because several respondents gave hard-to-interpret answers like, 'the Cambridge Group'. A check can be made by examining another indicator of 'active bryologists', the lists of recorders of *New Vice-county Records and Amendments to the Census Catalogues* in recent

issues of the *Bulletin*. This includes a significant number of names missing from the questionnaire returns and suggests that there is a recognisable and significant ('twitcher/specialist') group of field bryologists who are concerned more with finding new or unusual taxa than with more mundane systematic recording. Many questionnaire respondents added qualifiers like, 'not very active now' or 'too busy to do much' to their list of active bryologists so the total quoted above probably gives an over-optimistic view. Balancing this overestimate against the underestimated 'twitcher/specialist' category it still appears unlikely that more than about 80-90 souls are gathering data on bryophyte distributions in the British Isles on a regular or reasonably frequent basis.

These results are encouraging. We would appear to have a good number of county bryophyte floras to look forward to in the future. The local flora projects are continuing to stimulate new bryological talent and the proliferating BBS local groups have considerable potential to encourage 'trainee' bryologists and make new records, even in areas where specific projects are not underway.

Vice-county	Current recording	Flora project	Active bryologists
1, 2	Yes	Perhaps in future	1
3, 4	Yes	Yes	1
6	?	No	0
7	Yes, infrequently	No	0
8	Yes	Yes, 10-km squares	2
9	Yes, infrequently	Yes	3
10	Yes	Yes, being published	2
11	Very little	No	3
12	Yes	Yes, 5-km	5
13,14	Yes	Published 1991	4
15	Yes	Yes, 2-km (with 16)	1
16	Yes	See 15	Not specified
18, 19	Yes	Yes, 5-km	4+
20	Yes	Yes	3
21	Yes	Yes	See under 18, 19
22	Yes	Just completed	5+
23	Yes, infrequently	Yes	0
24	Yes	No, making index	1
25, 26	Yes	Perhaps in future	2+
27,28	Yes	Yes	4+
30	Yes	Yes, 2-km	0
31	Yes	Yes	0
32	No	No	1
33,34	Yes	Yes, 5-km	1

35	Yes	No	1
36	Yes, limited	Part, 5-km	0
38	Yes	No	1
40	Yes	Yes	Not specified
41	Yes	Published 1994	See under 35
42	Yes	Red Data account	1
43	Yes	Published 1993	See under 42
44	Yes	No	See under 35
45	Yes	Yes	1
46	Yes	Yes, 2-km (part, 5-km)	2
47	Yes	Part, 5-km	2
48-52	Yes	No, but S. part of 48, 5-km	3
53,54	Yes	Yes	5
55	Yes	Yes (not Rutland)	Uncertain
57	Yes	Planned for future	0
58	Some	No, local recording	6
60	No	Yes, + part of 64	1
61-65	Infrequently	No	2
66	Yes	No, mainly updating	2
69, 70	Intermittently	No	2
72-74	Not yet	Perhaps in future	0
76	Infrequently	No	0
79, 80	Sporadically	Perhaps in future	0
81	Yes	Yes, preliminary flora already published	0
82-84	Yes	Yes	2
86-88, 99	Infrequently	Perhaps in future	0
100	Yes	No	1+
H8	Yes	No	0
H33, H36-H40	Yes	Yes	1

BRC Data

I hope that by the time this article appears Regional Recorders will have received the printouts/disks of BRC data requested for their vice-counties. The first major update of the BRC bryophyte database since production of *Atlas of the Bryophytes of Britain and Ireland* should take place in 1995.

Dr Jeff Bates, Department of Biology, Imperial College at Silwood Park, Ascot, Berkshire, SL5 7PY.

COUNCIL NEWSLETTER NUMBER 11

Members of Council continue to work hard on behalf of the Society to promote the interests of bryology at every opportunity. The approaching centenary in 1996 provides a stimulus for extra effort, with the result that Council is now in the midst of a very busy programme, which we hope will culminate in a wide range of benefits for the Society and for bryology.

Perhaps I may digress, however, before going into detail, to tell you of two losses the Society has suffered in the deaths of Prof. D.G. Catcheside, who joined the B.B.S. in 1923 and became an Honorary Member, and of Mrs B.E. Bescoby, who was an active and stimulating member in NW England. Both were highly respected.

I must also tell you of the election of Dr A.J.E. Smith to honorary membership. This was proposed by Council in recognition of his work for the Society and of his two standard floras, one on mosses and the other on liverworts. The recommendation was warmly endorsed at the A.G.M.

Centenary celebrations

Council believes that these should serve to promote bryology, encourage further study, and cater for as wide a range of interests as possible, while also advertizing the Society and its aims. There will be a major international symposium in Glasgow, where invited speakers will bring together some of the most innovative research for ultimate publication in a symposium volume. Other publications will include a coffee-table book; an African hepatic flora, based on the manuscript left by Dr E.W. Jones and brought to fruition by the generous efforts of members of the Tropical Bryology Group; and a new census catalogue. Field meetings in 1996 will also acknowledge the importance of the centenary, not only of the Society, but of the publication of that major stimulus to bryology, H.N. Dixon's *Student's handbook of British mosses*.

Recording

This has proved to be an extremely popular and worthwhile undertaking of the Society, and will gain further impetus, not only from the preparation of a new census catalogue, but also through the introduction of an altitude recording scheme, to be set up by Dr M.O. Hill. Accumulated distributional data are now a valuable asset of the Society. Council is therefore addressing the question as to how access to these can best be provided, for requests from outside sources are now received frequently.

Registration as a Charity

Although Council was unaware until recently that the Society had been registered as long ago as 1966, it has been conducting B.B.S. business, throughout, in accordance with recommendations of the Charity Commissioners. The status places obligations on trustees, but carries with it benefits for the Society.

Membership

We are pleased, not only to discover that membership figures continue to hold firm, but also to know that they show a considerable bias towards long-term membership.

Postcards

The high standard of photographs submitted by members has enabled Council to provide a superb set of 16 postcards. They are now selling very well and, we hope, will continue to do

so. Quite apart from their intrinsic interest, they act as excellent ambassadors for the Society and for bryology.

Royal Botanic Garden, Edinburgh

With a view to promoting bryology through education as well as conservation, Council has agreed to donate £1,000 to the R.B.G.E. for the purpose of establishing a cryptogamic reserve at Dawyck. It will be open to the public and will display a range of detailed guidance and information about bryophytes; and other groups of plants will be similarly represented.

In telling you about these important items of news, I am continuing Council's long-term practice of making its decisions and actions widely known. Council minutes continue to be available for inspection during the spring and autumn meetings, and copies of recent, signed minutes are available on request from the President of the day. With the approaching centenary and the opportunities it affords, the B.B.S. is planning to celebrate the past but, more importantly, is building on it to establish a successful future. I am sure that those of us on Council hope you will all be part of it through co-operation and participation.

M. E. NEWTON

REFEREES (February 1995)

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 from 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 David Long for hepatics (Herbarium, Royal Botanic Garden, Edinburgh, EH3 5LR) or Mr Tom Blockeel for mosses (9 Ashfurlong Close, Dore, Sheffield, S17 3NN).

The numbers below refer to genera in *Distribution of Bryophytes in the British Isles* by M.F.V. Corley & M.O. Hill (1981).

GENERAL REFEREE: H.W. Matcham, 21 Temple Bar, Strettington, nr. Chichester, W. Sussex, PO18 0LB

HEPATIC REFEREES:

- 1,2,11,12,38,53-55,58,64-67,69:** D.G. Long, Herbarium, Royal Botanic Garden, Edinburgh, EH3 5LR
- 3-10,18-24:** Dr M.E. Newton, Department of Botany, Liverpool Museum, William Brown Street Liverpool, L3 8TN (All mail to be marked 'Private'.)
- 13-17,36,37,39-44:** G.P. Rothero, Stronlonag, Glenmassan, By Dunoon, Argyll, PA23 8RA
- 25-35,45-47:** M.F.V. Corley, Pucketty Farm Cottage, Faringdon, Oxfordshire, SN7 8JP
- 48-52,78-86:** M.J. Wigginton, Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough, PE1 1JY
- 56,57,59-63,68,70-74:** T.L. Blackstock, Nature Conservancy Council, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ
- 75-77:** G. Bloom, 15 Tatham Road, Abingdon, Oxfordshire, OX14 1QB

MOSS REFEREES:

- 1:** Dr M.O. Hill, Monk's Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS; A. Eddy, Department of Botany, Natural History Museum, Cromwell Road, London, SW7 5BD
- 2-10,143:** Dr M.O. Hill (address above)
- 11-36:** M.F.V. Corley (address above)
- 37,38,62-66:** Dr A.J.E. Smith, School of Biological Sciences, Brambell Building, University College of North Wales, Bangor, Gwynedd, LL57 2UW
- 39,67-81,96-104:** N.G. Hodgetts, Joint Nature Conservation Committee, Monkstone House, Peterborough, PE1 1JY
- 40-61:** Dr D.F. Chamberlain, Dept of Botany, Royal Botanic Garden, Edinburgh, EH3 5LR
- 82-90,105:** Dr E.V. Watson, Little Court, Cleeve, Goring on Thames, Reading, Berkshire, RG8 0DG
- 91-95:** A. Orange, Department of Botany, National Museum of Wales, Cardiff, CF1 3NP
- 106-138:** M.J. Wigginton (address above)
- 139-142,144-175:** A.C. Smith, End House, 24 Shelfanger Road, Diss, Norfolk, IP22 3EH

B.B.S. LIBRARY SALES AND SERVICE 1995**FOR LOAN (U.K. Members only):**

Members wishing to borrow books or papers are advised to consider whether a Xerox copy of the appropriate pages would suffice instead of the original in those cases where copyright has expired. Charge 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 minimize possible loss or damage.

(c) Microscope stage-micrometer slide for calibration of eyepiece graticules. 10µm divisions. Loan deposit £45.00.

FOR SALE:

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

Transactions of the British Bryological Society/Journal of Bryology:

Vol. 1	parts 1-5	(£2.40 each) £12.00 per volume
Vol. 2	part 1-4	(£3.00 each), part 5 out of print
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 1-4	(£3.00 each) £12.00 per volume
Vol. 6	parts 1-2	(£6.00 each) £12.00 per volume - ends series of <i>Transactions</i>
Vols. 7-9	parts 1-4	(£5.00 each) £20.00 per volume - renamed <i>Journal of Bryology</i>
Vol. 10	parts 1,3,4	(£8.00 each), part 2 out of print
Vol. 11	parts 1-4	(£10.00 each) £40.00 per volume
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 1-4	(£18.00 each) £72.00 per volume
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 1,2	(£42.25 each)

B.B.S. Special Volumes:

1. Longton, R.E. & A.R. Perry, 1985. Proceedings of Jubilee Meeting 1983, 89 pp. (£6.00)
2. Newton, M.E., 1989. A Practical Guide to Bryophyte Chromosomes, 19 pp. (£2.50)
3. O'Shea, B.J., 1989. A Guide to Collecting Bryophytes in the Tropics, 28 pp. (£3.50)
4. Edwards, S.R., 1992. Mosses in English Literature, 44 pp. (£2.50)

Census Catalogues:

Duncan, J.B., 1926. Census Catalogue of British Mosses, 2nd edition	(20p)
Sherrin, W.R., 1946. Census Catalogue of British Sphagna	(20p)
Warburg, E.F., 1963. Census Catalogue of British Mosses, 3rd edition	(20p)
Paton, J.A., 1966. Census Catalogue of British Hepatics, 4th edition	(20p)
Corley, M.F.V. & M.O. Hill, 1981. Distribution of Bryophytes in the British Isles: a census catalogue of their occurrence in vice-counties	
Price incl. p.& p.: members (£5.00), non-members (£6.00), trade (£4.00)	

Other items:

Evans, D.E. & A.R. Perry, 1987. Moss Wall Chart	Price incl. p.& p. (£2.80)
Grolle, R., 1983. Hepatics of Europe and the Azores: an annotated list of species with synonyms	Price incl. p.& p. (£2.50)
Newton, M.E. <i>et al.</i> (eds), 1988. Bryology: modern research and the ways forward	(£5.50)
Pearman, M.A., 1979. A short German-English bryological glossary	(£0.50)
Perry, A.R., 1992. Mosses and liverworts of woodland, 41 pp.	(£2.95)
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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). Address label legibly printed would be appreciated. All the above are available from the BBS Librarian:
Kenneth J. Adams, 63 Wroths Path, Baldwins Hill, Loughton, Essex, IG10 1SH, U.K.

BBS TROPICAL BRYOLOGY GROUP - PROGRESS IN 1994

Two newsletters have been published during the year to members of the group, and there were three new members (now 43 in total).

Malawi Expedition collections

Good progress has been made again on processing and identification of the collections from the 1991 expedition. At the last count (September 1994), a total of 2360 specimens had been sent for identification, and 1360 had been returned, representing 212 taxa, of which 118 were new to Malawi (48 mosses and 70 liverworts). Subsequently, more have been sent and returned, revealing more taxa new to Malawi, including *Grimmia mammosa* new to Africa (previously known only in the Himalayas and the type locality in China).

Considering that we have about 4500 collections in total, representing perhaps 6-7000 taxa, we still have a long way to go. A weekend workshop at Reading University in July was devoted to sorting through the collections of those expedition members who are not in a position to identify their own material, and these were taken away by whoever appeared most likely to be responsible for the groups concerned. Unfortunately, quite a large number were just labelled 'pleurocarp', so more detailed sorting still remains to be done, and will obviously take some time.

If there is anyone out there who would like to help, please get in touch: much assistance can be given even by those unfamiliar with tropical bryophytes.

Several taxonomic publications are now in progress (four being beyond the 'first draft' stage).

Eustace Jones' West African Hepatic Flora

The position of Eustace Jones' flora was discussed at the TBG AGM in September, and although quite extensive editing was needed (e.g. missing taxa, recent taxonomy, etc.) and a number of illustrations were missing, it was thought that this work could be accomplished in a year, for the book to be ready for publication in the Centenary year. Discussions with potential publishers are in hand, and it is expected that the BBS will be named as part publisher.

Lists of tropical bryophytes

Martin Wigginton's hepatic list of sub-Saharan Africa has now been reviewed and extended with the assistance of Tamás Pócs and his team, who are now extracting historic data. The list is now more or less complete, and Martin hopes it will be ready for publication fairly soon. Brian O'Shea's 'Checklist of the mosses of sub-Saharan Africa' is about to be sent to the editors of *Tropical Bryology*. There are almost 3000 valid moss names on the list, with extensive recent synonymy; the distribution by country is shown for each taxon, with literature references.

Future expeditions

Two different options are now being pursued, both building on and extending the scope of the first Malawi expedition. It was seen that the most important aspect of a collecting expedition was local support, partly for logistics, but principally to ensure that bryological expertise was built and encouraged locally. One option was a series of three trips to Uganda, subject of a Darwin Initiative bid in December, and the other option is a similar three trip proposal for Malawi, to complete field work for a Malawi flora. This will be submitted for

grant application in early 1995. It is thought that both proposals could be supported, but only if more BBS members become involved in this vital and fascinating work. Future activities will depend on the success of the grant applications.

Other news

Several TBG members will be attending the IAB Tropical Bryology conference in Mexico City in August 1995, and some will be giving papers.

Several members have also agreed to contribute to *Bryologia Africana*, a bryophyte flora of tropical Africa, which is about to be re-launched, with the hope of some early publications. It is over 10 years since Paul Richard's paper proposing this was published.

Brian O'Shea, 141 Fawnbrake Avenue, London SE24 0BG

MOSES IN ENGLISH LITERATURE

Supplement Three

This *Supplement* is the third part of an occasional column in the *Bulletin*, hoping to maintain an interest in the way bryophytes are perceived by the general public. Although I now have a large quarry of unused quotations, I should still like members to send in anything of particular interest. I also hope that these supplements in the *Bulletin* might prove more interactive, with members responding to any points. 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).

MOSS IN TITLES

For mosses to come out of the closet and on to the front cover, must indicate an especial elevation of the pulling power of these plants. In the case of two quotations below (Jacques: *Mossflower*, and Wightman: *Moss Green Days*), as well as in *Mosses from an Old Manse* (1846) by Nathaniel Hawthorne, the popularity of the books (which are not about moss) has not been hindered as a result. However, *The Fresh Green Moss* by Browne (which is about moss, below) is at the best obscure.

There are of course many other works with moss in the title; a search of books currently in print yields: *Voyage to the Bunny Planet: "Moss Pillows" ...*; *Man in the Moss*; *Bones gather no Moss*; *Gather no Moss*; *Planet Earth and Green Moss and the Greedy Gobblers*; not to mention the irresistible: *This Outcast Generation and Luminous Moss* (1967) by Taijun Takeda (Library of Japanese Literature), which I have on order.

MOSS IN HEAVEN

This is a category with seven occurrences, of which four have already been published though not previously recognised as an association of words or ideas:

Clare, John. *The Flitting*, lines 81-88;

Gardiner, William. *Twenty Lessons on British Mosses*;

Keats, John. *Ode to a Nightingale*, iv;

Wordsworth, William. *The River Duddon*, V (rather doubtful association).

Three further quotations are given below (Browne: *The Fresh Green Moss*; Bryant: *A Forest Hymn*; and Peters in Wightman: *Moss Green Days*). The association with heaven might be similar to that with dreams, but in fact there is only one overlap, in Peters.

Possibly into this category should be included also associations with God, goddesses or angels, including the following already published:

- Dorr, Julia. *With a Rose from Conway Castle*;
- Parnell, Thomas. *The Hermit* (rather doubtful association);
- Park, Mungo. *Travels in the Interior Districts of Africa* (1799), chapter XVIII;
- Tolkien, J.R.R. *The Silmarillion* (1977), (Valaquentia: Quenta Silmarillion).

QUOTATIONS

Jacques, Brian. *Mossflower* (1988). Hutchinson.

Mossflower

The title of the book refers to Mossflower Country, including Mossflower Wood and the River Moss. The book is in the genre of others such as *Fern Gully, the Last Rain Forest*, and *Duncton Wood*, concerning tales of anthropomorphised wild animals. *Mossflower* is particularly concerned about the exploits of mice, and the title provides a suitable image of ecologically correct diminutiveness. This entry also qualifies for that important category of works for children.

Browne, Miss M.A. (1812-44). *The Fresh Green Moss* (1829?). [DGL].

**How I love to look on the fresh green moss,
In the pleasant time of spring,
When the young light leaves in the quick breeze toss,
Like flowers on the wing
When it springeth up in the woodland walks,
And a natural carpet weaves,
To cover the mass of withered stalks
And last year's fallen leaves.**

**The lovely moss! on the lovely cot
It lies like an emerald crown,
And the summer-shower pierceth it not,
As it comes rushing down;
And I love its freshened brilliancy,
When the last rain hath pattered,
And the sparking drops on its surface lie,
Like stars from the pure sky scattered.**

**And I love, I love to see it much,
When on the ruin gray,
That crumbles with Time's heavy touch,
It spreads its mantle gay;
While the cold ivy only gives,
As it shivereth, thoughts of fear,
The closely clinging moss still lives
Like a friend for ever near.**

**But oh! I love the bright moss most,
When I see it thickly spread
On the sculptured stone, that fain would boast
Of its forgotten dead!
For I think if that lovely thing can efface
The fame that earth hath given,
Who is there that would ever chase
Glory, save that from Heaven?**

This hand-written poem was found by David Long, bound into the Royal Botanic Garden Edinburgh copy of C. Müller's *Synopsis Muscorum Frondosorum*. Underneath the hand-written copy are the words: 'copied at Walthamstow, Essex, May 20, 1854 for Mr Robert Stark, from "The Wintery Wreath for 1829", p. 298.' David Long says that this is probably: *The Winter's Wreath, a collection of original contributions in prose and verse*, (1829) London. This volume has not been traced, nor has the poem, but Mary Ann Browne is a well documented poet (Jackson, 1993), and sister of the better known and 19 years older Mrs Felicia Dorothea Hemans (née Browne), whose poem *The Palm-tree* (1818) is quoted in Edwards (1992), and who contributed to the 1828 volume of *The Winter's Wreath*. Mary Ann would have written *The Fresh Green Moss* when she was about 17 years old, or younger.

Bryant, William Cullen. *A Forest Hymn* (1825). (in: *The Bryologist*, vol. 74 (1971) p. 526).

**The groves were God's first temples
.... the gray old trunks that high in heaven
Mingled their mossy boughs**

Wightman, Ralph. *Moss Green Days* (1947). Westhouse, London.

Moss Green Days

The book is a selection of broadcast talks, and the title sums up a nostalgia for the old traditional image of the English countryside when all was well. But ironically the word moss does not occur within the book, except on the last page in a quoted poem by Catherine Peters: **If heaven were, as heaven seems, But a repository of dreams, My heaven were an April sun, A moss-green day, but half-begun, And multitudes of streams.** Library searches of poetry indexes, etc., have failed to unearth any further information about the poet or the poem.

Acknowledgment

I thank David G. Long, who contributed the poem by Miss Browne.

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Edward SR. 1992. *Mosses in English Literature: Special Volume No. 4.* Cardiff: British Bryological Society.

Jackson JR de J.1993. *Romantic Poetry by Women: A Bibliography, 1770-1835.* Oxford: Clarendon Press.

Other references refer to entries in the above.

Please send any quotations to: *Sean Edwards, The Manchester Museum, Manchester University, Oxford Road, Manchester M13 9PL.*

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Available from: Sean Edwards, Manchester Museum, Manchester University, Oxford Road, Manchester M13 9PL. U.K. Postage and packing 50p extra for one set, 60p for two, 70p for 3, and £1.00 for 4 sets (because of the bigger envelope). Also available at BBS meetings. Cheques payable to the British Bryological Society. Please telephone for more information:- work 0161-275-2671, home 0161-442-9346.

BBS POSTCARDS — CORRECTIONS

Two of the BBS postcards are probably incorrectly named. These are number 2, which is almost certainly *Sphagnum pulchrum* (not *S. quinquefarium*), and number 4, which is *Conocephalum conicum* (not *Preissia quadrata*). We apologise for these errors. It was felt unnecessary to provide over-stickers, but that a small note should be placed in the *Bulletin*.

BBS SWEATSHIRTS

BBS sweatshirts have sold well, with 73 already being sported by members. This leaves only 3 large Grey, 1 large Burgundy, 8 medium Ash, and 10 medium Burgundy.

They will be on sale at the 1995 Spring meeting at Ambleside, at the same price as before. Those unable to wait until then can buy them by post from me, but be warned that the sizes are a little optimistic, so small people take a 'Medium', medium people take a 'Large', and comfortable people have already bought all the 'Extra Large'.

The sweatshirts are 'Genuine 3-needle Tomkin fleece, 50% polyester 50% cotton, machine washable, tumble dry, with 5-needle Raglan stitch', long sleeves, and bear a green and gold(ish) 4" diameter BBS logo (as featured on the *Bulletin* cover) on the left breast. In other words, very attractive, lightweight, warm, suitable for under-jacket wear in the winter, and on their own in the summer. The sweatshirts are available in Ash (a slightly mottled grey),

Grey (a paler grey), or Burgundy. Cost £12, plus postage and packing (£2.50 first class boxed recorded delivery).

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POLYTRICHUM PILIFERUM AND P. JUNIPERINUM

S.R. EDWARDS

Herbarium, Manchester Museum, Manchester M13 9PL

There is still sometimes confusion between our two common *Polytrichum* species: *P. piliferum* and *P. juniperinum*. Although in their well-developed, typical states, they respond well to the keys in Smith (1978), Watson (1955, etc.), or Dixon (1924), the characters of the colourless/coloured hair-point (see NOTES below), plant size, and roughness on the back of the leaf, may often not be as clear on the plant as they are in the book.

In such cases, the lamellar characteristics described below will always settle the matter. The crudest of razor-blade sections will suffice, if taken from about mid-blade; side view of lamellae can be seen simply by scraping the razor-blade or scalpel along the upper surface of the leaf.

Polytrichum piliferum

Leaves with long white hair-point often over 1 mm long; leaf blade 2-3 mm long, smooth at back; leaf borders often overlapping in upper half of blade, or more.

Lamellae 30-35(-40); marginal cells cruciform in section with lateral walls (also sometimes of submarginal cells) thickened from 3.5-6.5 μm , marginal wall tapering into elongated papilla up to 12.5 μm high, or at least often longer than its 6.5 μm width; in side view, marginal papillae somewhat prorate and inclined distally, with sinuses larger than papillae. Papillae appearing quite smooth.

Male inflorescence intense red.

Seta 15-30 mm long, less intensely red than in *P. juniperinum*?

Polytrichum juniperinum

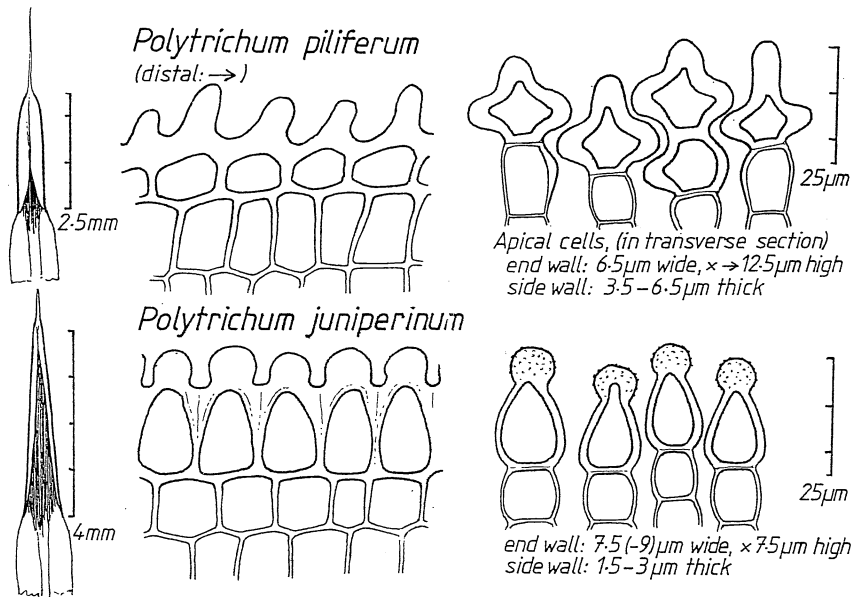
Leaves with short brown point less than 1 mm long; leaf blade 3-5 mm long, often with teeth above at back; leaf borders overlapping only at top of blade. *Perichaetial leaves* may have longer, white, hair points, and have more overlapping borders, approaching the vegetative leaves of *P. piliferum*, thus giving cause for misidentification.

Lamellae (30-)35-50(-70); marginal cells tear-shaped in section with lateral walls 1.5-3 μm thick, marginal wall necked into a solid spherical papilla about 7.5 μm high (from lumen, which may however sometimes penetrate papilla), and as broad, or broader; in side view, marginal papillae rounded, larger than sinuses. Papillae sometimes appearing minutely rough under high power or oil immersion, especially in section rather than in side view.

Male inflorescence yellow-olive to orange-red.

Seta 20-50 mm long, possibly brighter red than in *P. piliferum*.

NOTES: Drawings and descriptions were taken from a mixed gathering of the two species (Thursley Common, Surrey). The lamellae do not develop full marginal characteristics in the lower quarter of the blade; it is best to examine them from about mid-blade. The sinus and section characters are certainly not absolute, but full development serves to distinguish between the two species. Also, in *P. juniperinum*, the lumen of the marginal cells is typically taller than that of the submarginal cells, whereas in *P. piliferum* it may often be shorter; this is not a reliable character. Papilla roughness in *P. juniperinum* is often obscure or not detectable, but has never been seen under a light microscope in *P. piliferum*.



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RIPARIAN TAXA OF *SCHISTIDIUM* IN THE BRITISH ISLES

By ALAN ORANGE

Department of Botany, National Museum of Wales, Cardiff, CF1 3NP

There are few truly aquatic bryophytes in the British Isles, in the sense of species which prefer permanently submerged substrates. However, the water-level of rivers and streams usually shows a marked fluctuation, in a pattern which is related to rainfall within the catchment. The intermittently inundated zone between the lowest and highest water-levels of a river often supports a specialised bryophyte flora on firm substrata. Within the British flora, at least 30 species of bryophyte are found principally or exclusively in this habitat (or in similar conditions on lake shores). Although these species are submerged for a proportion of the year, they may face prolonged drought and exposure during the summer months. Species of this type were termed 'facultative aquatics' by Vitt & Glime (1984). Four taxa of *Schistidium* can be found as regular inhabitants of the riparian zone:

Schistidium rivulare (Brid.) Podp.

This species has been known in recent years as *S. alpicola* (e.g. in Smith, 1978), but this name has been rejected as a source of confusion by Bremer (1980). Two infraspecific taxa have commonly been distinguished by European authors. For instance, Smith (1978) listed a var. *alpicola* and a var. *rivulare*, distinguished by the height of the plant, the shape of the leaves, and the length of the perichaetial bracts. These taxa correspond to ssp. *latifolium* (Zett.) B. Bremer and ssp. *rivulare*, which were distinguished by Bremer. Bremer drew attention to other characters differentiating these taxa, notably in the seta and peristome, but stated that 'many intermediate specimens have been collected'.

The differences between the subspecies are striking, both in the field and in the laboratory, so all British and Irish material of *Schistidium rivulare* contained in NMW and BBSUK (approximately 180 specimens) was examined to investigate the constancy of the characters used to distinguish them. On the basis of this material it was concluded that the two subspecies represent good taxa: although both show some variation, no intermediate specimens could be found. The most important characters which distinguish the taxa are leaf shape and attitude, the width of the nerve, the degree of thickening of the cells of the seta and capsule, and the presence or absence of stomata; other characters are provided by the height and degree of branching of the shoots, the symmetry of the leaves, and the degree of perforation of the peristome teeth. The form of the calyptra was not found to be a very useful character, as both mitrate and cucullate types could be found on the same specimen. Leaves with plane margins were never seen, although Bremer stated that this was the characteristic state in ssp. *rivulare*. The perichaetial bracts clearly overtop the capsule in ssp. *rivulare*, and this contributes to the characteristic appearance of the plant, but more accurate characters are available for identification. Although ssp. *rivulare* is typically taller than ssp. *latifolium*, many short specimens of ssp. *rivulare* were seen; these cannot be regarded as intermediates, as they exhibit all the more important characters of the subspecies. The peristome teeth of ssp. *rivulare* commonly have fewer perforations than in ssp. *latifolium*, but some specimens with all the other characters of ssp. *rivulare* have teeth with numerous perforations. Further work on extra-British material of these taxa is in progress.

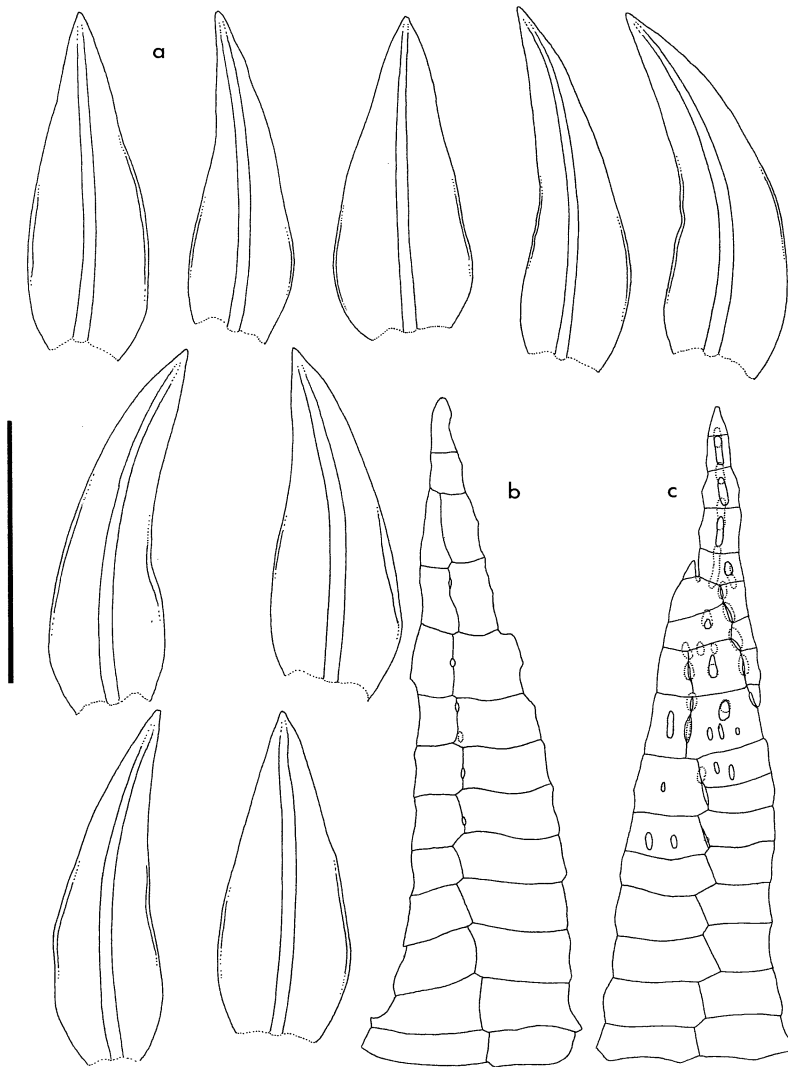


Fig. 1. *Schistidium rivulare* ssp. *rivulare*. a, vegetative leaves from various plants; b, c, inner face of peristome teeth from two different plants. Scales: a = 2 mm, b, c = 100 μ m.

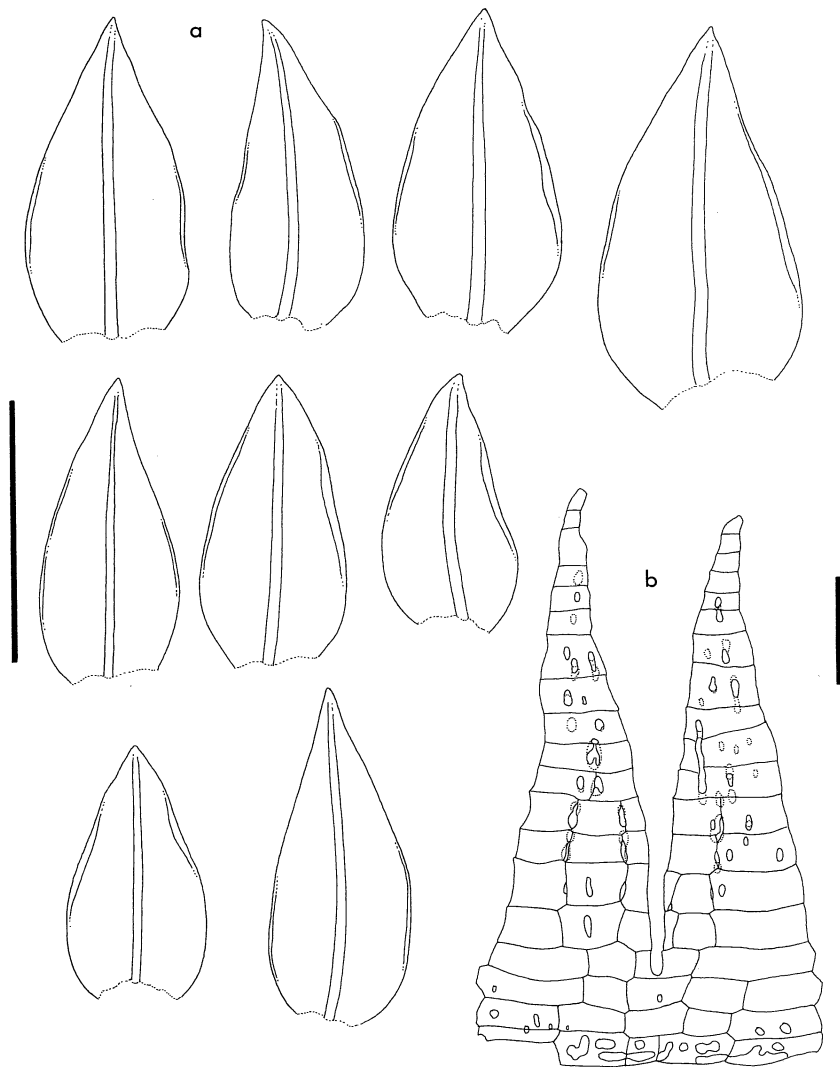


Fig. 2. *Schistidium rivulare* ssp. *latifolium*. a, vegetative leaves from various plants; b, inner face of a pair of peristome teeth. Scales: a = 2 mm, b = 100 μ m.

The following descriptions are based on British and Irish material:

Schistidium rivulare* ssp. *rivulare

Plants 20-75 mm or more high, typically with numerous branches. Leaves (Fig. 1a) slightly to distinctly secund, 1.8-3.0 (-3.2) × 0.7-1.4 mm, (1.5-) 2.0-3.2 (-3.4) times as long as wide, usually a proportion of leaves asymmetric, margin recurved on both sides of the leaf, but unequally so, rarely a few leaves recurved on one side only. Nerve near base of leaf 65-145 µm wide. Perichaetial leaves shortly exceeding to greatly exceeding capsule. Surface cells of seta incrassate (walls up to 4-4.5 µm wide in surface view), quadrate to narrowly rectangular (Fig. 3a); exothecial cells of capsule incrassate, base of capsule with 2-12 stomata; peristome teeth with few to many perforations in one or both cell layers (Fig. 1b, c).

This subspecies is widespread in northern and western Britain on rocks and tree roots beside rivers and lakes. On rivers with a relatively large seasonal amplitude of water-level, such as the Teifi and Wye in Wales, a vertical zonation of riparian species is evident, and here ssp. *rivulare* tends to occupy the middle parts of the flood-zone. Although there is much overlap between the vertical ranges of each species, and variation within and between sites, ssp. *rivulare* typically occupies a higher position than species including *Amblystegium fluviatile*, *Fissidens pusillus*, *Fontinalis* spp., *Porella pinnata*, *Rhynchostegium riparioides*, and the lichen *Dermatocarpon meiophyllizum*, but lower than species including *Brachythecium plumosum*, *Eurhynchium praelongum* var. *stokesii*, and *Scleropodium cespitosum*. Ssp. *rivulare* can often be found mixed with *Cinclidotus fontinaloides*, although this species often extends lower in the zonation than *S. rivulare*, and with *Cryphaea lamyana*, where this rare species occurs.

Schistidium rivulare ssp. *rivulare* is reasonably tolerant of a range of water-chemistry, but it avoids the more acidic waters. It is more tolerant of base-poor waters than *Cinclidotus fontinaloides*. It may be considered as a rheophyte, relatively tolerant of strong currents, and also of seasonal drought. At sites where this taxon occurs, it may be replaced by other species in those parts of the site that are more shaded or where currents are weaker. In these conditions, the levels of the flood-zone which are occupied elsewhere by ssp. *rivulare* may be dominated by species such as *Thamnobryum alopecurum* or *Isoetecium holtii*, in base-rich and base-poor sites respectively. These species are vigorous and form dense mats, but appear to be less tolerant of strong currents and/or drought than ssp. *rivulare*.

Schistidium rivulare* ssp. *latifolium

Plants 15-40 mm high, typically sparsely branched. Leaves (Fig. 2a) not or slightly secund, (1.3-) 1.5-2.7 × 0.65-1.5 mm, 1.5-2.7 (-2.8) times as long as wide, symmetric, or a proportion slightly asymmetric, margins recurved, often equally so on both sides. Nerve near base of leaf 48-90 (-105) µm wide. Perichaetial leaves scarcely exceeding to shortly exceeding capsule. Surface cells of seta not incrassate (walls to 2-2.5 µm wide in surface view), quadrate to shortly rectangular (Fig. 3b), exothecial cells of capsule not or scarcely incrassate, stomata absent. Peristome teeth with numerous perforations in one or both cell layers (Fig. 2b).

This subspecies has a much more restricted distribution in the British Isles than ssp. *rivulare*. It appears to be restricted to rivers which have relatively base-rich water, and is locally frequent in some limestone areas. It can form mixed stands with ssp. *rivulare*, where the

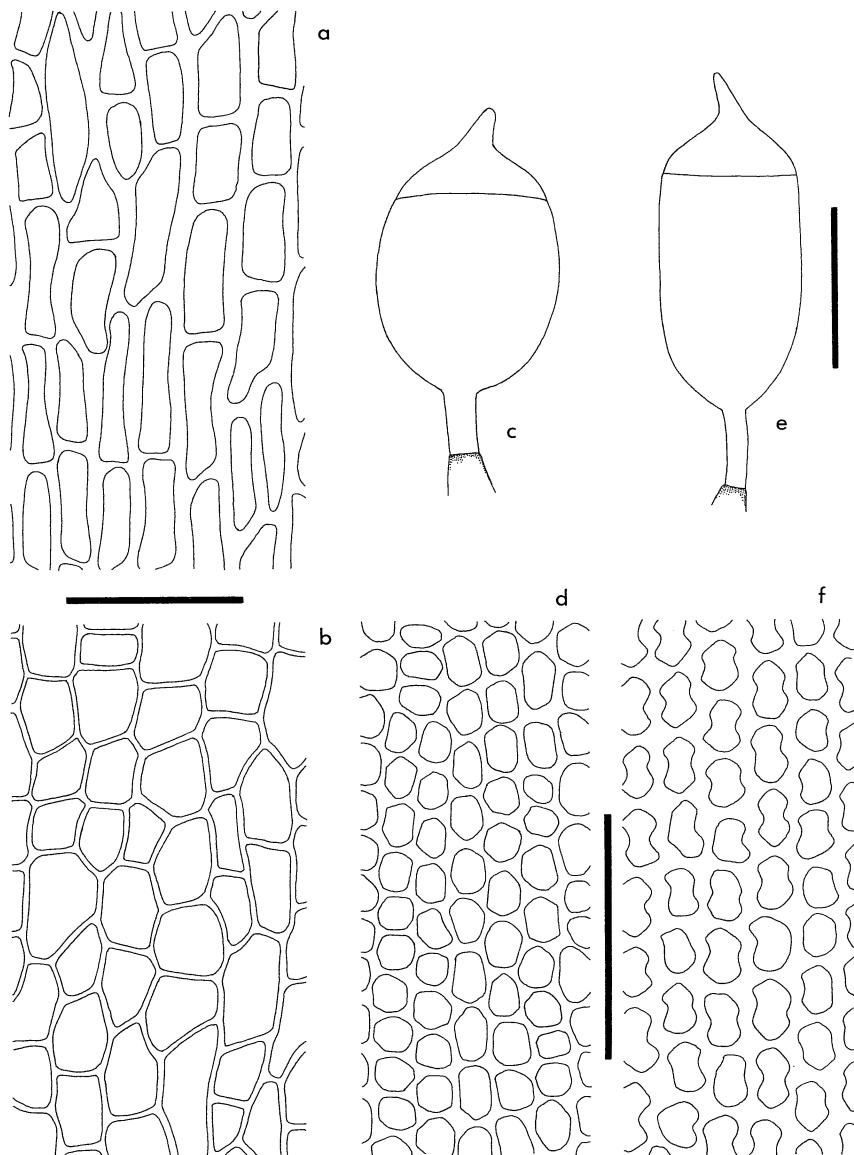


Fig. 3. a, c, d, *Schistidium rivulare* ssp. *rivulare*; b, *S. rivulare* ssp. *latifolium*; e, f, *S. apocarpum*. a, b, cells from surface of seta; c, e, mature capsules; d, f, cells in mid leaf. Scales: a, b, d, f = 50 μ m, c, e = 1 mm.

differences between them are evident. It is clear that ssp. *latifolium* is not merely a phenotypic modification of ssp. *rivulare* growing on calcareous rocks.

Judging by material in NMW and BBSUK, this subspecies has in general been accurately identified (as *S. alpicola* var. *alpicola*), but it is likely that it is still a little under-recorded. The distribution of confirmed records of ssp. *latifolium* is shown in Fig. 3. Specimens have been confirmed from vice-counties 36, 41, 42, 43, 45, 54, 56, 59, 60, 62-68, 70, 72, 81, 84, 89, 90, 104, 112, H1, H8, H19, H28, H33, H39, H40. The subspecies is also recorded from the following vice-counties, but specimens have not been confirmed from these: 48, 57, 69, 88, 92, 96. Voucher specimens from vice-counties 80, 91, 95 and 98 have been found to be incorrectly identified.

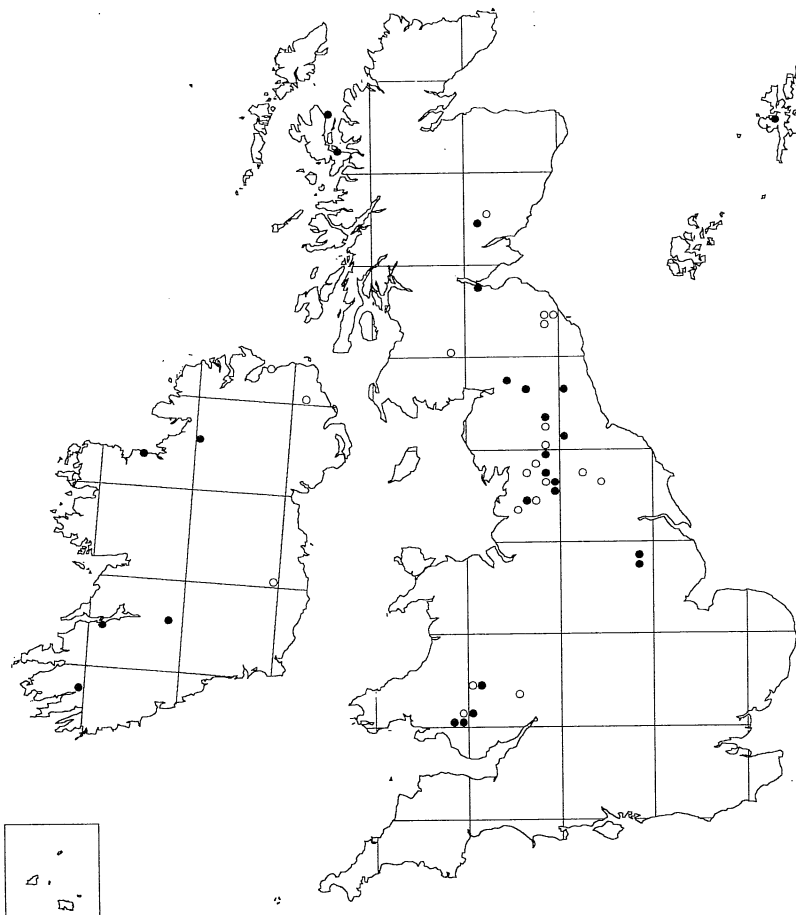


Fig. 4. Distribution of confirmed specimens of *Schistidium rivulare* ssp. *latifolium*. Open circles: pre-1960 records, closed circles: records 1960 or after.

Selected specimens examined, listed by vice-county:

Caplar, rock in River Wye [32/53] (**36**), 1923, C.H. Binstead *et al.* (NMW); River Neath, 22/8908 (**41**), 1994, A. Orange 10216 (BBSUK); River Hepste, Blaen Hepste [22/91] (**42**), 1927, D.A. Jones & P.G.M. Rhodes (NMW); Llandeilo Graban, River Wye, 32/103431 (**43**), 1995, A. Orange 10221 (BBSUK); no locality or data (**45**) (BBSUK); River Trent, Marton, 43/834814 (**54**), 1989, F.R. Lammiman (BBSUK); River Trent, Dunham-on-Trent, 43/87 (**56**), 1989, T.L. Blockeel (BBSUK); Chatburn [River Ribble, 34/74] (**59**), 1898, J.A. Wheldon (NMW); Ribble at Preston [34/53] (**60**), 1898, J.A. Wheldon (NMW); River Hodder just below Higher Hodder Bridge [34/6941] (**60**), 1972, T.L. Blockeel (BBSUK); Linton Lock [44/4960] (**62**), Stansfield (BBSUK); River Aire just west of Gargrave, 34/922538 (**63**), 1975, T.L. Blockeel (BBSUK); Wharfe, Grassington [34/96 or 44/06] (**64**), 1946, E.C. Wallace (NMW); Ingleton [34/67] (**64**), 1925, D.A. Jones & J.W. Priestley (BBSUK); River Tees, Startforth [45/01] (**65**), 1958, E.F. Warburg (BBSUK); Upper Teesdale (**66**), 1896, H.N. Dixon (NMW); River Tyne below Bywell Bridge [45/0562] (**67**), 1972, E.C. Wallace (NMW); River Tweed, Twizel [36/84] (**68**), 1923, J.B. Duncan (NMW); Upper King Water, 35/6069 (**70**), 1977, D.G. Long (BBSUK); Mennock Glen [26/80] (**72**), 1953, E.C. Wallace (NMW); Tweed, near Horndean [36/94] (**81**), 1926, J.B. Duncan (BBSUK); River Almond, Craigiehall, 36/1775 (**84**), 1977, D.G. Long (BBSUK); River Erich about 1 mile north of Blairgowrie [37/14] (**89**), 1970, W.D. Foster (BBSUK); Bridgend of Linrathen [37/25] (**90**), 1955, U. Duncan, (NMW, BBSUK); Allt a' Mhuilinn, Broadford, Skye, 18/62 (**104**), 1966, H.J.B. Birks (BBSUK); Weisdale, 11/397532 (**112**), 1974, M.O. Hill (BBSUK); Roughty River above Kenmore [V97] (**H1**), 1979, E.C. Wallace (NMW); Bilboa River, R835535 (**H8**), 1991, N. Lockhart & A. O'Sullivan (BBSUK); River Liffey below Ballymore Eustace [N90 (or 91)] (**H19**), 1957, A.L.K. King (BBSUK); Dromore West [G43] (**H28**), R.D. Fitzgerald & E.M. Lobley (BBSUK); Correl Glen [H05] (**H33**), 1960, R.D. Fitzgerald (NMW); near Broughshane [D10] (**H39**), 1887, H.W. Lett (BBSUK); Downhill [C73] (**H40**), 1939, J.S. Thomson (NMW).

Schistidium agassizii

This species was first recorded for the British Isles by Birks & Birks (1967), and only a handful of records have been published since then: only four 10-km square records were shown in Hill *et al.* (1992). In 1994 this species was found by the author to be frequent along a stream in Merioneth in North Wales; although this appeared to be a new record for Wales, subsequently 6 specimens of this species, including 2 from Wales, were detected in NMW and BBSUK, incorrectly identified as *S. rivulare*. This suggests that the species is still under-recorded. The earliest known British record is now that of E.S. Salmon, who collected it by Loch Maree (v.-c. 105) in August 1896. The distribution of this species by vice-county and 10-km squares is presently as follows (pre-1960 records indicated by *): v.-c.. 48 (23/52*, 23/62), 49 (23/75*), 65 (35/92), 66 (35/83), 69 (35/41*, 35/82), 70 (35/20* or 21*), 88 (27/64), 90 (37/37), 98 (27/02), 105 (c. 18/97*, but cannot accurately be localised), 107 (28/59).

Schistidium agassizii varies in habit from short cushions 15 mm high to loose, branched plants 50 mm high. It is distinctly brown, even in shade. The leaves are often strikingly elongated compared to *S. rivulare*; they are almost exclusively unistratose, with plane or lightly recurved margins. In both subspecies of *S. rivulare*, the leaf margins are bistratose and

recurved, and the lamina is partly bistratose above, the bistratose areas appearing under low power as slightly darker strips or patches. In *S. agassizii* the young leaves at the apex of the shoot are sometimes stiffly erect, thus giving the colony a characteristic spiky appearance. The capsule is tapered below, and is without stomata.

Schistidium agassizii is recorded from fast flowing streams and from lake shores, and also from seasonally flooded high-altitude hollows (Birks & Birks, 1967). The species occurs at altitudes as low as 10 m in Merioneth and West Ross. The recent record from North Wales was from the lower, more frequently inundated part of the riparian zone, associated with *Hyocomium armoricum*, *Marsupella emarginata*, *Racomitrium aciculare*, *Riccardia chamedryfolia*, *Scapania undulata*, and the lichens *Dermatocarpon luridum*, *D. meiophyllizum*, *Ephebe lanata*, *Hymenelia lacustris*, *Porina guentheri* var. *lucens* and *Rhizocarpon lavatum*. *Schistidium rivulare* ssp. *rivulare* also occurred at this site. In Teesdale, it was associated with species including *Cinclidotus fontinaloides*, which suggests that the Teesdale site is more calcareous than the North Wales site (Holmes, 1976).

Schistidium apocarpum

This widespread and variable species of calcareous substrata is apparently frequent beside rivers with relatively calcareous water. It occurs in the upper part of the riparian zone, often associated with typically riparian species such as *Brachythecium plumosum* and *Racomitrium aciculare*. Specimens collected in this habitat usually have the hyaline points of the leaves very short or absent, and easily overlooked in the field. *Schistidium apocarpum* can be distinguished from *S. rivulare* by the following characters: leaf cells usually distinctly sinuose (Fig. 3f), small hyaline points usually present on the leaves, more elongated capsules (Fig. 3e), and smaller spores. *S. apocarpum* often has a characteristic yellow-brown tinge, and the shoots often appear thinner and more 'string-like' than in *S. rivulare*.

The author would be pleased to determine any riparian material of *Schistidium*.

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A NOTE ON *PHASCUM CUSPIDATUM* SSP. *PAPILLOSUM* IN THE
BRITISH ISLES

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In a study of the genus *Phascum* in the Iberian Peninsula, Guerra *et al.* (1991) recognised a taxon, *P. cuspidatum* ssp. *papillosum*, which they distinguished as follows:

Upper leaf cells 21-31 x 10-21 μm , smooth or with 1-2(-3) low papillae; ventral nerve cells in the upper part of the leaf rectangular (2-)3-6:1, not or weakly inflated; spores ornamented with truncate or rounded processes ssp. *cuspidatum*

Upper leaf cells 11-20 x 9-15 μm , with 3-4(-5) conical or bi-trifurcate papillae; ventral nerve cells in the upper part of the leaf quadrate or shortly rectangular 1(-2):1, inflated (ampullose) and strongly papillose; spores spinose ssp. *papillosum*

Ssp. *papillosum* was originally described from Sweden by Lindberg, as a species. The name *P. lotharingicum* Coppey, which has been used in some recent works (e.g. Pierrot, 1982), is a synonym. Many specimens named var. *mitraeforme* Limpr. may also belong to ssp. *papillosum*, although nomenclaturally Guerra *et al.* treat this as a synonym of ssp. *cuspidatum*.

Guerra *et al.* indicate that ssp. *papillosum* is present in the British Isles, citing single specimens from Scotland and Ireland respectively. I have therefore attempted to establish its distribution in greater detail. An examination of the holdings of *P. cuspidatum* in BBSUK and NMW revealed that ssp. *papillosum* is apparently rare in the British Isles, and that it is not always easily separated from ssp. *cuspidatum*. The following points are relevant.

1. There is imperfect correlation between cell size and papillosity. The cell papillae of *P. cuspidatum*, as of many *Pottiaceae*, usually appear C- or O-shaped under the microscope. In reality, these papillae are hollow conical or domed structures which are C- or O-shaped only when viewed in optical section. Most specimens which I examined had large, lax cells which were smooth or had low rounded papillae. A few specimens had small cells with stronger, often furcate papillae (fig. 1). Such specimens frequently had strongly papillose cells across the ventral surface of the nerve in the upper part of the leaf. There was a tendency for these cells to be inflated and to form a \pm prominent pad over the surface of the nerve just below the leaf apex. However, the ventral cells were rarely so distinctly ampullose as illustrated by Guerra *et al.* Furthermore, I encountered forms which were intermediate in papillosity between the two extremes.

2. Spore ornamentation appears to be variable. The common form observed had low, rounded or truncate papillae, while a few specimens had taller, spine-like papillae. However, there was some variation in the relative coarseness of both types, and some spores, as observed with the light microscope, seemed to have truncate and spinose papillae intermixed.

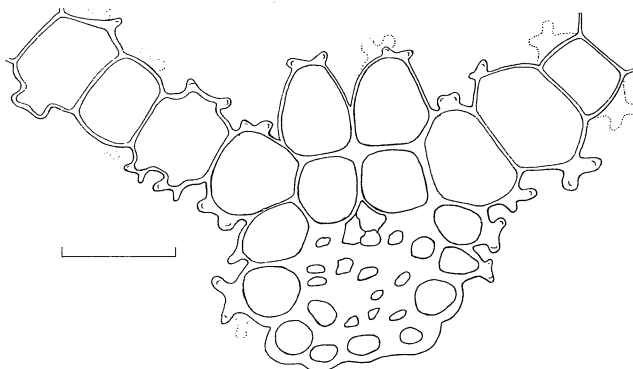


Figure 1. *Phascum cuspidatum* ssp. *papillosum*: section of leaf and adjacent lamina cells at about 1/5 from the leaf apex (scale bar = 20 μ m). Drawn from Blockeel 19/022, Osberton (v.-c. 56), March 1990.

Most of the specimens with spinose spores had tall furcate leaf papillae, and I consider these to belong to ssp. *papillosum*. However, the occurrence of intermediates and the ambiguity of some of the diagnostic characters cast some doubt on the value of recognising this taxon. A more rigorous investigation is desirable. In order to elicit further material, I intend to record the vice-county distribution of ssp. *papillosum* and will be pleased to examine putative vouchers. A list of accepted records follows.

Phascum cuspidatum Hedw. ssp. *papillosum* (Lindb.) Guerra & Ros: damp ground, near Pottal Pools, N. of Cannock (39), A.R. Perry, 21.3.1961 [Herb. Perry]; stubble field, Llandecwyn, Talsarnau (48 in ()), D.A. Jones, Dec.1917 [NMW]; stubble field, on sandy soil, Osberton, east of Worksop (56), T.L. Blockeel 19/022, March 1990 [Herb. Blockeel]; Belfast, Stewart (H39 in ()), *vide* Guerra *et al.* [H].

I have omitted the record from Angus (leg. Whitehead) cited by Guerra *et al.*, as the only specimen traced at MANCH is var. *piliferum*.

There may be a difference in ecology between ssp. *cuspidatum* and ssp. *papillosum*, as the latter appears to be characteristic of sandy ground. However, no conclusion can be drawn from the limited number of British specimens available at this stage.

I am grateful to Dr. S.R. Edwards (MANCH) for tracing the specimen from Angus, and to A.R. Perry for the loan of material from NMW and BBSUK.

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TORTULA AMPLEXA (LESQ.) STEERE, STILL ON THE BRITISH LIST

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Tortula amplexa was reported new to Great Britain in 1973 (Side & Whitehouse, 1974), but the circumstances of its discovery were rather unusual. It first turned up at a pottery class in Kent, growing inside polythene bags containing clay. It was brought to the attention of A.G. Side who then sought the opinion of A.C. Crundwell. The plant was identified as *Tortula amplexa*, a moss hitherto known only from North America and British Columbia, Canada. Some investigative work traced the source of the clay to a quarry at Moira, Leicestershire. On 29 December 1973 H.L.K. Whitehouse visited the site and found *T. amplexa* locally abundant on recently disturbed bare clay.

Between 1973 and 1982 *T. amplexa* was seen at Moira on at least five occasions: in 1973 and 1976 (H.L.K. Whitehouse), in 1979 (E.W. Jones), 1981 (C.C. Townsend) and in 1982 (C.D. Preston & H.L.K. Whitehouse). The last known observation was made in 1988 (C. LaFarge-England & H.L.K. Whitehouse). *T. amplexa* produces abundant rhizoidal tubers, and there was no reason to suspect that it was no longer present at Moira. The site was then visited by A.C. Crundwell & R.C. Stern in July 1993 who found substantial disturbance to the site and they failed to detect the moss. R.C. Stern & H.L.K. Whitehouse revisited the site on 17th March 1994, with R.A. Finch, N.G. Hodgetts & R.D. Porley, thinking that the plant would have had an opportunity to recolonise the disturbed clay. However, the site was still being subjected to major disturbance.

Where HLKW recalled seeing the plant in the past was now bare clay. The site had since changed ownership, and following extraction of the clay, is again to change hands and possibly become a land-fill site. Although access to the area is now restricted, and entry to the quarry was not possible, the northern periphery of the site could be reached along a public footpath which afforded a clear view of the whole area. All suitable-looking ground in the vicinity was searched but there was no sign of *T. amplexa*. However, upon arrival at the site, and during a lengthy and unsuccessful attempt to negotiate entry to the quarry, some wet clay with standing water immediately outside the site office was inspected. A piece of clay with a shoot of possible *T. amplexa* was collected by HLKW and given to R.A. Finch. At this stage little was thought of it and it was soon forgotten; it was expected that more material would be found. When this piece of clay was eventually examined a few days afterwards, a single rather depauperate shoot of *T. amplexa* was confirmed.

Until this single shoot came to light, it was feared that *T. amplexa* had been lost. Hopeful now that there was more *T. amplexa* nearby to where the solitary shoot was found, N.G. Hodgetts and R.D. Porley revisited Moira on 17th April 1994. There had been further changes in the four weeks since the last visit. The place where the single shoot had been found, outside the site office cabin, had now been obliterated and was covered with stone chippings. Suitable-looking ground was, however, found nearby and searched. The characteristic reddish brown shoots of *T. amplexa* were soon found, growing on bare clay in a damp, shallow depression (RDP) and on bare clay on one side of a vehicle rut (NGH). In

both spots, which were separated by about 3 metres, *T. amplexa* was associated with *Bryum bicolor*. Close by, but not mixed with *T. amplexa*, were *Ceratodon purpureus*, *Bryum argenteum*, *B. klinggraeffii*, *Dicranella schreberiana*, *Phascum cuspidatum* and *Funaria hygrometrica*. It is estimated that no more than about 4 small loose patches and a few isolated shoots of *T. amplexa* were present, most of it occurring in the vehicle rut. After this initial success further searches over a wider area failed to detect any more.

The long term future of *T. amplexa* at Moira is uncertain. It has obviously decreased in abundance significantly since 1973 following wide scale alteration of the habitat, although, as a pioneer species, some disturbance is clearly necessary for its establishment. At present, the moss grows outside the most severely disturbed areas, and vascular plants have already colonised the vehicle rut. Tubers of *T. amplexa* are likely to be present in the clay and therefore the plant may be more frequent than suggested by the small number of extant shoots.

There is no mechanism under current legislation to protect an introduced species on land that is otherwise of no conservation interest. As an introduction, *T. amplexa* is a curiosity that does not merit the commitment of a large amount of resources. However, Moira is of considerable interest as the only known site for this plant in Europe, and probably worthy of some conservation effort. The owners or prospective owners of the land could be approached to negotiate some form of informal agreement, but this is unlikely to be satisfactory. The local office of English Nature has been informed of the plant's presence. Translocation may be an option, and HLKW has the plant in cultivation. In this extensively quarried area there may be many potentially suitable localities nearby; indeed Moira may not be the first, or only, site for *T. amplexa* in Great Britain.

Acknowledgement

We thank H.L.K. Whitehouse for commenting on a draft version and ensuring accuracy in the historical details.

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Addendum

The owners of the site at Moira, following our contact, expressed an interest and asked if someone could show them where *Tortula amplexa* occurs and what might be done to protect it. On 25 November 1994 R.A. Finch, N.G. Hodgetts, R.D. Porley and H.L.K. Whitehouse revisited the site with Janice Kirby of Landmark North-West, who has responsibility for advising on restoration of land within the north-west Leicestershire coalfields. Although the site had again undergone some changes since the last visit, good material of *T. amplexa* was soon found, occurring in relatively large (1 - 2 cm) cushions, in about the same area as on the last visit. The importance of the moss and its ecological requirements were explained to the owners.

After this initial success, the party searched elsewhere and RAF and RDP found a small cushion and a few isolated shoots in a ditch on the north western boundary of the site, growing on a fine clay substrate. In the afternoon J. Kirby arranged access to visit two other open-cast mine sites, Donnington Island and Albion. At the first site RDP and RAF both

found a cushion of *T. amplexa* on the side of a ditch draining mine spoil, and at the second site RDP found two cushions on flat bare ground restored some 18 months ago. RAF also found a small cushion on the side of a polluted ditch. These additional records, although occurring in the same 10 km square as the original Moira locality, suggest that *T. amplexa* may be widespread in the coalfields of the area, and its occurrence in these other places demands a reassessment of its precise habitat requirements.

It is encouraging that the survival of this plant in Britain does not rest solely on a single locality, although discussions with the owners of Moira will still proceed to see how it could be protected here. It is possible that local schools, with help from J. Kirby, may become involved in the conservation of the moss. Such an unusual plant, and how it arrived in Britain and how it spreads, could provide stimulating educational material, and in the process generally raise the profile of mosses and liverworts.

It is hoped that a more systematic search of the coalfield area can be carried out in the future to give a clearer picture of the distribution of *T. amplexa* in Britain.

RDP 8 January, 1995

***POLYTRICHUM LONGISETUM* AS AN INTRODUCED HORTICULTURAL WEED IN WEST CORNWALL**

Visits to Trevenson Moor Garden Centre (NW of Pool, West Cornwall, SW662421) on 18 and 19 June 1994 resulted in finds of *Polytrichum longisetum* growing as a weed. It occurred beneath herbaceous plants or young shrubs on the peaty soil of numerous plant pots left in the open air. All of the *P. longisetum* gametophytes were rather short, with few exceeding 20 mm in height, and thus suggestive of *P. juniperinum* at first glance. Mature capsules were present on some patches. *Campylopus introflexus* often grew with it and *Funaria hygrometrica* and *Leptobryum pyriforme* occurred on a few of the plant pots.

P. longisetum is very rare in south-west England, and unrecorded in v.-c. 1 for more than a century (Paton JA. 1969. *Transactions of the British Bryological Society* 5: 711). My original suspicion was that it arrived at the Garden Centre with peat or peat-based compost used there, much like the *P. formosum* reported from a greenhouse (Smith AJE. 1994. *Bulletin of the British Bryological Society* 63: 60). However, this was contradicted by information from the proprietor of the Garden Centre, who assured me that the potted plants with which *P. longisetum* occurred were all part of a large consignment imported some months earlier from the Netherlands.

Records of *P. longisetum* as a horticultural weed may therefore perhaps be expected in other parts of Britain and Europe which receive Dutch horticultural imports.

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SOME INTERESTING BRYOPHYTES FROM GUERNSEY (CHANNEL ISLANDS)

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Although there are numerous black dots on the maps of the new British Bryophyte Atlases (Hill *et al.*, 1991, 1992, 1994) in Guernsey, there is not much literature on that island. The two most recent papers are those of Paton (1969), which is a complete flora of the liverworts, and of Boudier (1989) which reports some interesting recent records, among which is *Gymnostomum viridulum*. During three recent travels to the island (in 1991, 1992 and 1993) I had the opportunity to collect some bryophytes. In this short contribution I want to comment on some interesting finds, and especially on a remarkable *Rhynchostegiella*.

1. *RHYNCHOSTEGIELLA* SP. FROM PETIT BÔT BAY

In a cavern at Petit Bôt Bay (on the south coast), located right at the beach, I gathered some tiny mats of a *Rhynchostegiella* (Werner 5780, 5.ix.1993, herb. *Werner, Blockeel*) which resembled *R. teesdalei* and *R. jacquinii*. It was growing in the remotest part of the cavern, which is partially flooded at very high tide. The underlying rock is granite which is locally very rich in orange-red felspar. Thus the ecology is very special, not only because of the darkness of the site, but also because the micro-site is very rich in bases, the Channel Islands having normally a very acidic environment. Accompanying species were *Eucladium verticillatum* (see below) and a sterile *Fissidens* (*F. cf. viridulus*). Considering the shape of the cells and the quasi-excurrent nerve, I tentatively named this moss *Rhynchostegiella jacquinii*, which was confirmed by R. Düll. This species would be new to the British Isles.

According to Düll (1985, 1986) *Rhynchostegiella jacquinii* is known from several continental European countries, mostly in southern Europe, but also in central Europe. In recent years it was also discovered in some western European countries, for example France and Luxembourg (Werner, 1989, 1990). In many western European countries, on the other hand – and for instance in Britain – a closely related species, *Rhynchostegiella teesdalei*, is widely distributed in moist, shaded, base-rich sites. The two species have, according to Düll (1985) a (sub) mediterranean- (sub) oceanic range (*R. jacquinii* seems, however, to be definitely more continental).

The two species are closely related, as it appears from the key in Düll (1986). They can, however, be easily separated, at least in most cases: *R. jacquinii* has an excurrent, relatively strong nerve (not excurrent in *R. teesdalei*) and somewhat longer upper leaf cells (1: 8, with *R. teesdalei* only 1: (3-)-5-7). Leaf margins are often denticulate down to mid-leaf, but this character is not reliable. I could observe rather easily all the characteristic features. The material collected is, however, very weak, which might be due to the environmental stress of the site. T. Blockeel, to whom I submitted it later on, was more sceptical: he thinks the material shows features intermediate between the two *Rhynchostegiellas*: he suspects that eventually *R. jacquinii* and *R. teesdalei* will be shown not to be a separate species.

I must admit that the collections I made of *R. jacquini* in France and Luxembourg (Werner, 1989, 1990) were much more characteristic, the excurrent costa being very strong. Even Düll (pers. comm.) is not sure that the taxonomic status of this complex is correctly treated. Cell measurements and leaf shape might prove to intergrade, as T. Blockeel (pers. comm.) suspects. Thus further investigations are required. It thus seems too early to report a new moss from the British Isles. If my collection proved to be only *R. teesdalei*, as T. Blockeel (in litt.) believes, this would at least be a new species to the Channel Islands!

2. OTHER RECORDS

Lejeunea patens. On a shaded bank near Roquaine Bay / Pleinmont. This seems to be much rarer in Guernsey than *Lejeunea lamacerina*.

Metzgeria temperata. On a twig of *Salix* sp. near Petit Bôt Bay. This suboceanic epiphyte is new to Guernsey, where it was to be expected.

Bartramia stricta. This rare southern moss still grows on sunny rock ledges on the south coast between Moulin Huet and Petit Bôt.

Eucladium verticillatum. In the cavern at Petit Bôt Bay, together with *Rhynchostegiella* sp. The *Atlas* reports no recent find of this calcicole species in Guernsey.

Fissidens adianthoides. Pembroke Bay, l'Ancrese (sand dunes), in the northern part of Guernsey.

Fissidens dubius (*F. cristatus*). Near the coastal path between Marble and Fermain Bays.

Pleurochaete squarrosa. In the sand dunes of Pembroke Bay, l'Ancrese.

Pottia crinita. Coastal path in the SW, between St. Martin's Point and Torteval.

Acknowledgements

I am much indebted to Dr R. Düll (Duisburg, Germany) who examined the material of *Rhynchostegiella* and to T. Blockeel (Sheffield, England) for his comment on the same and on this paper.

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TOXICOLOUS *BRYA* INCOGNITA UPDATE

I now have 10 sites for unnamed *Bryums* in central Reading. One plant growing on a tree stump has strongly ciliate inner peristome teeth, like those of *B. caespiticium*, but with broader leaves. All others are associated with zinc or iron. I have found such plants in almost every suitable habitat examined so far (under electricity pylons and corrugated iron roofs) in Berkshire, Devon, Kent, Derbyshire and Montgomeryshire. Proposed names include *B. pseudotriquetrum*, *B. pallescens* and *B. intermedium*, but most so far have not matched well with any recognised species, and despite much work by Dr E.V. Watson, remain doubtful.

Vegetative characters are remarkably constant in culture, resembling those of presumed *B. pallescens* from lead-mine spoil, but there is much variation in the capsules, which are usually present. Cultures are on neutral mounted loam (without added zinc, as yet), kept dry in summer, from May to early September. Most are too recent to have fruited or produced full-sized new shoots, but some female inflorescences have been seen developing.

Material of such *Bryums* from new areas or from other unusual toxic sites would be welcome. I will refund postage. Live material might repay experimental or cytological investigation, and is available from most populations found so far.

Michael V. Fletcher, 70 South Street, Reading, Berkshire, RG1 4RA (Tel.: (01734) 571814)

NATIONAL PHONEDAY, 16 APRIL 1995

On Easter Sunday, 16 April 1995, all UK area dialling codes will change in order to ensure that the UK has sufficient telephone codes to satisfy the increasing demand. Fax numbers will also change.

From Phoneday the number **1** will have to be inserted after the initial **0** in the UK area codes. So, for example, the area code for Cardiff, which at present is 0222, will become 01222, and Edinburgh's 031 will become 0131. In addition, 5 cities with a particularly urgent need for more phone numbers will receive totally new codes and an additional digit in front of existing numbers. These are:

Leeds	(0532) xxxxxx becomes (0113) 2xx xxxx
Sheffield	(0742) xxxxxx becomes (0114) 2xx xxxx
Nottingham	(0602) xxxxxx becomes (0115) 9xx xxxx
Leicester	(0533) xxxxxx becomes (0116) 2xx xxxx
Bristol	(0272) xxxxxx becomes (0117) 9xx xxxx

UK's outgoing international access code will also change – from **010** to **00**, in order to bring us in line with other European countries.

From 1 August 1994 until Phoneday both old and new codes can be used.

Some numbers will not change: these are service codes. For example: Freephone services 0800, reduced rate services 0345, special rate and mobile services, emergency numbers 999, 112, and all operator services, e.g. 100, 150, 192.

A QUADRAT FOR RECORDING VERTICAL SURFACES

T.C.G. RICH and H.W. MATCHAM

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Recording bryophytes or lichen quadrats on vertical rock faces or trees presents some practical difficulties for bryologists or lichenologists working alone. The problem is how to hold a quadrat in place whilst at the same time using a hand lens and writing the data down.

Permanent quadrats can be marked with paint or by drilling holes in the rock (e.g. Paton, 1956), and in some cases quadrats could be marked by scoring lines through the lower plant communities themselves. These methods may be unacceptable in highly sensitive sites or where quadrats could be interfered with by the public, and are unnecessary for temporary quadrats simply needed to record the communities present.

We have developed a simple solution to the problem whilst recording the nationally important lower plant communities on sand rocks at Wakehurst and Chiddinglye Woods SSSI in Sussex. We hope our 'hanging quadrat' technique will be useful to other ecologists.

For the recording we used a square, wooden quadrat 25 cm × 25 cm, but the technique can also be used for other quadrats as appropriate. The quadrat was held in place on the rocks using string, leaving both hands free for recording. The string was threaded through small holes in the corners of the quadrat rather than being tied so that the quadrat can be moved along the string to the required position (Figure 1). Under gentle tension (e.g. from the

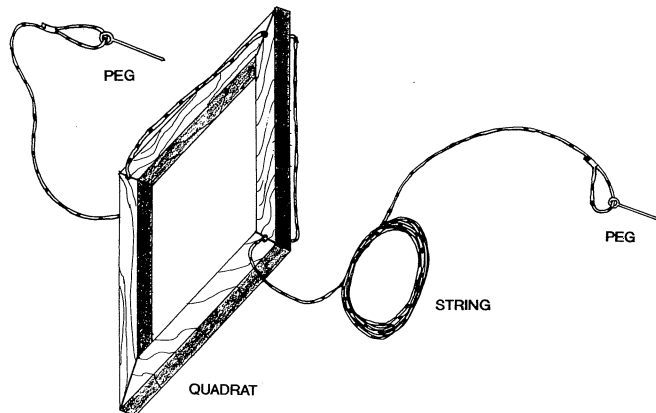


Fig. 1. Construction of the hanging quadrat.

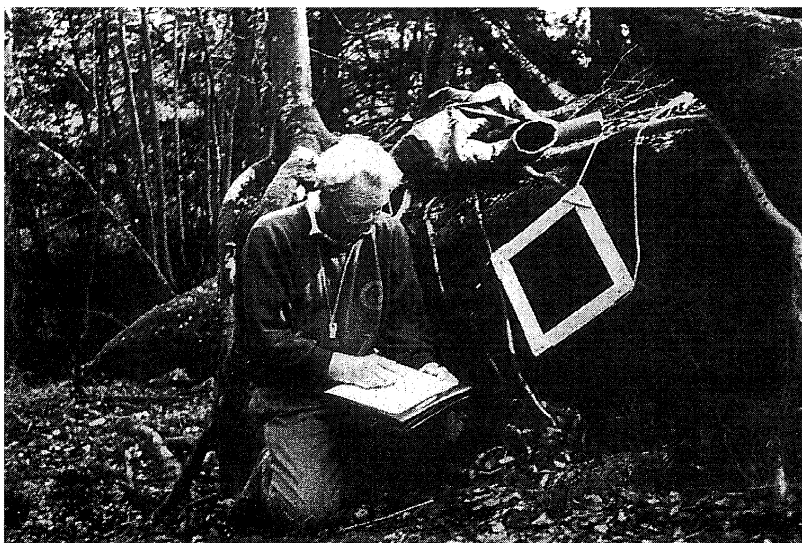


Fig. 2. The hanging quadrat in use.

weight of the quadrat itself), the friction is sufficient to stop the quadrat slipping. The string is either tied to convenient rocks or trees, or pegged into crevices or soil as available. Either one or both ends of the string may be anchored so that the quadrat can be held stationary in awkward corners, or even under overhangs (Figure 2).

This arrangement allows quadrats to be recorded quickly and simply. Other solutions such as recording in pairs, attaching quadrats to clipboards, using tape recorders and photographs, may work but have limitations.

Acknowledgements

This work was undertaken on behalf of, and funded by, the Trustees of the Royal Botanic Gardens, Kew and grant aided by English Nature's Species Recovery Programme. Charlie Eastwood made the quadrat, Peter Dunmow drew the figure and Jean Nicholls typed the manuscript.

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No stone has been left unturned by villagers for the visit today of the Prince of Wales to Cromarty, near Inverness. Even boulders on the seafront have been weeded of moss in the spruce-up. The Times, Diary, 30 September 1994. Cutting courtesy of Robin Stevenson.

**ADDITIONS AND AMENDMENTS TO THE MEMBERSHIP LIST: FEBRUARY
1995**

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