



BULLETIN  
OF THE  
BRITISH  
BRYOLOGICAL SOCIETY

NUMBER 61

FEBRUARY 1993

ISSN 0142-5169



*Edited by A.R. Perry*

PUBLISHED BY THE BRITISH BRYOLOGICAL SOCIETY  
CARDIFF

## 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 1925, 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, photographs and specimens 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.

### Council for the year 1992

**PRESIDENT:** PROF I. G. BUCKLEY, School of Biological Sciences, Queen Mary & Westfield College, University of London, Mile End Road, London E1 4NS

**EX-PRESIDENT:** DR M. O. BELL, Institute of Terrestrial Ecology, Monks Wood Experimental Station, Abbot's Ripton, Huntingdon, PE17 2LS

**VICE-PRESIDENT:** DR R. B. LONGTON, Department of Botany, Plant Science Laboratories, University of Reading, Whiteknights, Reading, RG6 2AS

**GENERAL SECRETARY:** DR M. B. NEWTON, Department of Botany, Liverpool Museum, William Brown Street, Liverpool, L3 5EN (envelopes to be marked PRIVATE)

**TREASURER:** DR G. C. S. CLARKE, Department of Public Services, Natural History Museum, Cromwell Road, London, SW7 5BD

### JOURNAL EDITOR AND RECORDING

**SECRETARY:** DR J. W. BATES,

Department of Biology, Imperial College at Silwood Park, Ascot, Berkshire, SL5 7PY

### BULLETIN EDITOR:

MR A. R. PERRY,

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

**BIBLIOGRAPHIST:** MR L. T. ILLIS, Department of Botany, Natural History Museum, Cromwell Road, London, SW7 5BD

### CORRESPONDENCE OFFICER:

MR R. C. STERN,

Bolton Bay, Main Road, Pledbourne,

Chichester, West Sussex, PO19 4AX

### EDITOR:

MR A. R. PERRY, Department of

Botany, National Museum of Wales, Cardiff,

CF1 3NP

### LITERATURE:

DR K. J. ADAMS, Department of

Ecology & Biochemistry, University of East

London, Romford Road, London, E15 4LZ

### MEMBERS SECRETARY:

MR M. G. HADGIST, Royal

Nature Conservation Committee, Montserrat

Flower, City Road, Peterborough, PE1 1PY

### MEMBERSHIP SECRETARY:

MR A. W. SMITH, 1

Cartmelway Cottages, Glesson Road, Little

Hartfield, via Stockport, Cheshire, SK16

7ER

### PUBLICATIONS OFFICER:

DR S. R. EDWARDS,

Manchester Museum, University of

Manchester, Manchester, M13 9PL

### READING CIRCLE SECRETARY:

DR M. A. S.

BURTON, Environmental Sciences

Division, University of Hertfordshire,

College Lane, Hatfield, Hertfordshire, AL10

9AB

### RECORDS:

MR P. L. BLOCHER, 1 Ashfieldong

Cresc, Dore, Sheffield, S17 1NN (Misses)

MR D. G. HOGG, Royal Botanic Garden

Inverleith Road, Edinburgh, EH3 5LR

(Glasgow)

### RECORDING SECRETARY:

DR J. W. BATES,

Department of Biology, Imperial College at

Silwood Park, Ascot, Berkshire, SL5 7PY

### ELECTED MEMBERS:

MR A. C. CRANDWELL,

MR C. CURTIS, MR R. J. FISK, Miss L. J.

HOE (co-opted), MR R. B. FORLEY, MR C. D.

PRESTON, MR G. B. ROTHERO

THE COVER ILLUSTRATION IS OF *Sphagnum squarrosum*,

one of the drawings by W. P. Schimper from his

*Parasitische und Symbiotische Beziehungen der*

*Funaria*, Stuttgart, 1858. The size of the original

is approximately 175 x 230 mm.



# BULLETIN OF THE BRITISH BRYOLOGICAL SOCIETY

NUMBER 61

FEBRUARY 1993

ISSN 0142-3169

*Editor:* A.R. Perry, National Museum of Wales, Cardiff, CF1 3NP, U.K.

## CONTENTS

Subscriptions .....	2
Proceedings of the British Bryological Society	
Spring Field Meeting, North Shropshire, 1992 .....	2
Summer Field Meeting, 1992, first week, Lochinver .....	5
.....second week, The Uists and Benbecula .....	9
AGM and Symposium Meeting, Chelwood Gate, East Sussex, 1992 .....	12
Bryophyte Workshop, University of East London, 1992 .....	18
Reports of Local Meetings .....	19
Future Meetings of the Society .....	20
Local Meetings Programme, 1993 .....	21
Other Bryological Meetings, 1993 .....	22
Recording Matters 5 .....	25
Council Newsletter Number 9 .....	27
BBS Moss Postcards, Last Reminder .....	28
Moss Gardens .....	28
Eastern England Bryophyte Mapping Project Update .....	28
B.B.S. Library Sales and Service 1993 .....	29
Mosses in English Literature, Supplement One .....	30
Copy Deadline .....	31
Mosses in the Media .....	32
BBS Tropical Bryology Group – Progress in 1992 .....	33
Appeal for Typists .....	34
Oxford University Herbaria (OXF and FHO) .....	34
The distribution of <i>Leucobryum</i> sporophytes in the British Isles. By T.H. Blackstock .....	35
<i>Scapania uliginosa</i> (Sw.ex Lindenb.) Dum. erroneously recorded in Ireland. By D.G. Long .....	43
Coarse <i>Scopelophila</i> growing. By Michael V. Fletcher .....	44
<i>Ditrichum flexicaule</i> and <i>D. crispatisimum</i> in Great Britain and Ireland. By A.J.E. Smith .....	45
C.F. White, Botanical Artist .....	55
Bookshelf .....	55
Additions and amendments to the membership list .....	55

## SUBSCRIPTIONS

Members are reminded that subscriptions were increased in January 1991 to £15.00 for full members, £7.50 for junior members and £1.00 for family members. Subscriptions are due on 1st January each year. Some standing order mandates have still not been altered and some subscriptions for 1992 have not yet been received. Members are requested to send any outstanding amounts to the Membership Secretary as soon as possible. Subscriptions may now be paid by credit card. The following cards are acceptable: Barclaycard, Visa, Access, Mastercard, Eurocard. A form of payment is included with this *Bulletin*. Further forms are available from the Membership Secretary:

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

---

## PROCEEDINGS OF THE BRITISH BRYOLOGICAL SOCIETY

### SPRING FIELD MEETING, NORTH SHROPSHIRE, 1992

We were comfortably accommodated at Ellesmere College on the outskirts of Ellesmere where we had the 6th form girls' residential block to ourselves. This provided just enough bedrooms to give members a single room if they wanted one and had a good lounge with kitchen and bar leading off which contributed to the social success of the meeting. We enjoyed excellent food in the college dining hall with wine being provided on the final night and generous lunch packs. Forty members attended as residents and a further eight joined us in the field plus one or two representatives from local organisations. We were pleased to welcome Dr Massimo Mastrachi from Italy and Donal Synnott who

somehow managed to motor over from Dublin.

The excursions were divided between North Shropshire (v.-c. 40) and Montgomeryshire (v.-c. 47). The area around Ellesmere is an extension of the Cheshire Plain, an area of glacial drift, now mostly farmland with few trees but interspersed with bogs and meres both being relics of the Ice Age. Rainfall is low and pollution is or was high so the trees are bare of epiphytes. By contrast the hills and varied geology of Wales coupled with high rainfall provide a much richer habitat for bryophytes although on occasions a less comfortable one for bryologists. In the account which follows, first county records are marked with an asterisk \* and the figures at the end of each main habitat are the total numbers of mosses and liverworts recorded.

**THURSDAY 9 APRIL.** The day of the general election depleted our numbers and only eight of us set off on a warm sunny day. *En route* to the main site we made a brief stop on the canal near Ellesmere (v.-c. 40) and found *Barbula trifaria*, *Bryum ruderale* and *Orthotrichum cupulatum*. 20 & 2.

**Llanymynech Quarry (v.-c. 47).** We were joined by non-residents who doubled our number. This huge disused limestone quarry has high and quite dramatic cliffs facing in all directions of the compass and with grassed-over spoil-heaps, patches of scrubby woodland and a few damp areas. It has in recent years suffered erosion from rock climbing so the cliff face vegetation is sparse except for some refuge areas where danger notices exist and these could not be explored. *Aloina aloides* var. *aloides* was common. Nine *Barbula*s were found which included *B. trifaria* and both varieties of *B. convoluta*. There were also *Encalypta vulgaris*, *Fissidens incurvus* and *F. viridulus*, *Campylium chrysophyllum*, *Rhynchostegiella tenella*, *Phascum cuspidatum* and *Zygodon viridissimus* var. *stirtonii*. There were not many liverworts but a fair amount of *Porella*

*platyphylla* in a shaded area. 61 & 5.

**Gaer Fawr Woods (v.-c. 47).** A few more members joined us for the afternoon meeting. The woods are a Woodlands Trust Reserve on a hill rising to 220 metres and comprise mixed deciduous trees and open areas on a sandstone base. There are some less acid areas which yielded *Brachythecium populeum* and *Ctenidium molluscum*. Five species of *Orthotrichum* were found including *O. stramineum* and *O. pulchellum*, and there were also *Zygodon conoideus*, *Bryum flaccidum*, *Ulotia phyllantha* and two varieties of *U. crispa*. Liverworts were well represented and included *Frullania dilatata*, *Jungermannia gracillima* and *Metzgeria fruticulosa*. 52 & 14.

**FRIDAY 10 APRIL. New Bridge over River Vyrnwy (v.-c. 47).** On another fine Spring day and with numbers up to thirty, the morning venue offered river and canal banks with locks and an aqueduct. It lay across two 10 km squares so the party divided with the main group keeping to the river bank and canal near the aqueduct. The river was disappointing owing to absence of trees and scouring of banks from flooding. Records included *Bryum radiculosum*, *Fissidens osmundoides*, *Myrinia pulvinata*, *Tortula subulata* var. *subinermis*, seven *Orthotrichums* including *O. sprucei*, *Plagiothecium latebricola*, *Pottia intermedia*\*, *Scleropodium cespitans* and *Tortula latifolia*. 66 & 6.

The other group went to Carreghafa Locks and quickly found ten species of *Barbula* including *B. trifaria*, *B. fallax* and *B. tophacea*. There was also a good growth of *Gyroweisia tenuis* on the vertical walls of the lock, and *Dichodontium pellucidum*, *Amblystegium tenax* and *Lophozia excisa*. 36 & 3.

**Whixall Moss (v.-c. 40).** This area of lowland bog has recently been acquired by English Nature and we were met by the

warden, Joan Danials, who gave us an interesting introduction to its history and the objectives now that it has been rescued from peat-cutting. In spite of enrichment from adjoining farmland, *Sphagnum magellanicum* was found together with nine other *Sphagni*. *Dicranella cerviculata* was present on the peat cuttings and *Dicranum undulatum*, known from many years ago, was still present in a number of places. In a wet copse, fruiting *Calliergon cordifolium* was found. *Aulacomnium palustre* was fruiting abundantly. Among the liverworts were *Calypogeia neesiana*\*, *Cephaloziella rubella*, *C. divaricata*, *Gymnocolea inflata*, *Kurzia pauciflora* and *Odontoschisma denudatum*. A bonus for many was a good quantity of *Andromeda polifolia*, flowering here and there. *Bryum gemmiferum* was found along the nearby canal. 31 & 10.

**SATURDAY 11 APRIL. Ironbridge Gorge (v.-c. 40).** The morning was spent in Bentall Edge Wood which is a steep north-facing ancient wood rising from the banks of the Severn. There are clay and silt at the base and pure Wenlock Limestone at the top with a number of old quarries. A disused railway runs along the bottom from Ironbridge to the Power Station, and near the base of a wall along this *Leptobarbula berica*\* in fine condition occurred as well as *Gyroweisia tenuis*. This diverse range of habitats produced a large number of species, the rarest of which was *Pottia caespitosa*\* which had not been recorded north of Hereford before. Other species included *Barbula nicholsonii*, *Bryum flaccidum*, *Campylium calcareum*, *Dicranella staphylina*, *Entodon concinnus*, *Fissidens exilis*, *F. incurvus*, *Hemmediella stanfordensis*, *Mnium stellare*, *Oxystegus sinuosus*, *Eurhynchium schleicheri*, *Plagiothecium laetum*, and *Scleropodium cespitans* with liverworts *Jungermannia atrovirens*, *Leiocolea badensis*, *L. turbinata*, and *Riccia sorocarpa*. *Rhynchostegium riparioides* was found unusually on a wet bank of sticky clay. 86 & 17.

After lunch, members broke up into smaller groups. One went downstream to Coalport – an area of glacial drift and industrial waste. Records included *Barbula nicholsonii*, *B. trifaria*, *Brachythecium salebrosum*, *Bryum radiculosum*, *Eucladium verticillatum*, *Eurhynchium schleicheri*, *Hennediella stanfordensis*, *Rhynchostegiella tenella* and *Tortula latifolia*. 34 & 2.

Another group went to a small reclaimed mining area at Stoney Hill where a few years ago an artificial pond was formed with landscaping around with the object of forming a nature reserve. It was hoped that some interesting pioneering species might have colonised the bare ground but this has not happened. At a higher level adjoining the site there is a large back-filled rubbish tip and leachate is giving some plants an unhealthy look and pond life is dying. Of interest were *Fissidens viridulus*, *Weissia microstoma*, *Hylocomium brevirostre* and *Fossombronina pusilla* and just off the site on the edge of a roundabout, *Funaria fascicularis*. 32 & 6.

A few miles up river where the Tern joins the Severn, a search was made for previously recorded *Platygyrium repens* but the old trees on which it was growing had been felled. *Myrinia pulvinata* was found nearby and this is present along the river at Attingham and Buttington.

**SUNDAY 12 APRIL. Breidden Hill (v.-c. 47).** The weather forecast of strong winds and rain did not augur well for our trip to Breidden Hill but the rain held off. We approached it through some attractive mixed woodland and past a eutrophic pond. The hill is largely composed of dolerite, a basic rock thus allowing a good diversity of species to flourish, in contrast to the adjoining hills which are species-poor. The woods produced five *Orthotrichums* including *O. pulchellum* and *O. stramineum*, *Archidium alternifolium* on the ditch sides, *Plagiothecium laetum* and *Cryphaea heteromalla*, the pond *Sphagnum auriculatum* var. *imundatum* and *Calliergon*

*cordifolium*. Most of the day was spent on the hill and records included *Bartramia ithyphylla*, *Bryum flaccidum*, *Dicranum bonjeanii*, *Hedwigia ciliata*, both varieties of *Heterocladium heteropterum*, *Polytrichum alpinum*, *Philonotis arnellii*, *Pterogonium gracile*, *Rhabdoweisia fugax* and *Weissia microstoma*. Liverworts were plentiful, among them *Frullania fragilifolia*, *Lejeunea lamacerina*, *Lophozia excisa*, *L. incisa*, *Metzgeria fruticulosa*, *Radula complanata*, *Riccia glauca* and *R. subbifurca*. 99 & 29.

Again there was a dispersal in the afternoon. The river bank at Llandrino yielded *Cinclidotus fontinaloides* and at Alberbury in v.-c. 40, *Funaria muehlenbergii*.

**MONDAY 13 APRIL. The Berwyns at Tre-rhiwarth (v.-c. 47).** The weather was awful when we headed for the Berwyns, cold wind, heavy rain and low cloud, but by the time we had reached our rendezvous the cloud had lifted and the rain stopped. We were there with the kind permission of Mr Jones of Tre-rhiwarth Farm where among the sheep pasture and acid heath was a site *made* for bryophytes – a steep north slope with a mountain stream tumbling over a waterfall and into a deep ravine. The following is a selection from a high species count: *Bartramia ithyphylla*, *Brachydontium trichodes*, *Racomitrium aquaticum* c.fr., *Cynodontium bruntunii* c.fr. in quantity, *Coscinodon cribrosus*, *Diphyscium foliosum*, *Fissidens osmundoides*, *Grimmia donniana*, *Isopterygium pulchellum*, *Oxystegus tenuirostris*, *Plagiobryum zieri*, *Pohlia camptotrachela*, and *Ulota drummondii*. Among the liverworts were *Anastrepta orcadensis*, *Frullania fragilifolia*, *Jungermannia hyalina*, *J. paroica*, *Lejeunea lamacerina*, *Plagiochila spinulosa*, *Riccardia multifida* and *Tritomaria quinqueidentata*. 120 & 38.

In the afternoon we moved down to Llangynog village to a large disused slate quarry with signs of old lead mining. This is

an area which would repay a more detailed inspection. Records included *Brachythecium glareosum*, *Grimmia donniana*, *Philonotis caespitosa*, *Pohlia annotina*, *Tetraplodon mnioides*, *Tortella nitida* and *Barbilophozia barbata*. 38 & 7.

**TUESDAY 14 APRIL. Tyn-y-coed near Trefonen (v.-c. 40).** This excursion led us to a conifer wood on sandy soil with old quarries and rocky exposures and the approach was across an open valley with a nice clear stream. Before we entered the wood we had a brief look at part of Offa's Dyke where part of the 1100 years' old earthworks are still exposed but nothing of interest was found. The wood and stream produced *Barbula cylindrica*, *B. spadicea*, *Fissidens pusillus* var. *pusillus*, *Oxystegus sinuosus*, *Heterocladium heteropterum* var. *flaccidum*, *Orthotrichum stramineum*, *Zygodon viridissimus* vars. *viridissimus* and *stirtonii*. *Bryum flaccidum* was found on a rock – a much rarer habitat in Britain than on the continent. Liverworts included *Porella arboris-vitae*, *P. platyphylla* and *Tritomaria exsectiformis*. 48 & 14.

By lunch time heavy rain had set in and this sent most members scampering for home so only three were left to explore the last venue of the meeting which was Colemere Country Park. This was probably as well because it was most disappointing and only an hour was spent there. *Climacium dendroides* flourished in the meadow. 15 & 1.

Two good finds were made by members ranging further afield. *Octodiceras fontanum* at Grindly Wood, v.-c. 40 and *Hennediella stanfordensis* on the river Dee in v.-c. 50.

RON SHOUBRIDGE  
& CLIFF TOWNSEND

## SUMMER FIELD MEETING, 1992, FIRST WEEK, LOCHINVER

Those attending:– Tom Blockeel, Daphne Coates, Alan Crundwell, Ian and Pat Evans, Mike Fletcher, Nick Hodgetts, Peter Martin, Roy Perry, Mark Pool, Ron Porley, Gordon Rothero (Local Secretary), Phil Stanley, Rod Stern and Harold Whitehouse.

This was a good turn-out for a Summer Meeting and all apart from Nick Hodgetts (a Friday arrival) gathered in the lounge of the Culag Hotel on the evening of the 29th to discuss the coming week in a convivial atmosphere. The various excursions are described below but some interesting records were made 'out of hours'; in Lochinver Tom Blockeel recorded *Riccia sorocarpa*\* and *Bryum radiculosum*\* and Mark Pool found *Pohlia camptotrachela* at Little Assynt near the outflow of Loch Assynt. (\* = New Vice-county Record throughout)

### Thursday 30 July. Inchnadamph (29/25-20-&21-)

The large exposure of Durness Limestone is a well-known botanical locality and the frequency of *Dryas* in the grassland is remarkable. The weather was a little threatening at first but, though the wind was cool from the north-west, the sun favoured us most of the day. Bryologising began up the Traligill Burn where interesting species included *Seligeria donniana*, *Bryum mildeanum*, *Ulotia calvescens* and *Ephemerum serratum* var. *minutissimum*\*. We had to go rather farther up the burn to cross than I had intended, the monsoons having turned a virtually dry river bed into a sizeable stream. Once across, most of us struck out for the main crags across rocky limestone grassland which was of rather patchy interest. Some limestone blocks had *Schistidium apocarpum* var. *homodictyon* whilst the unmistakable wefts of *Orthothecium rufescens* enlivened a few wetter crevices.

Lunch was taken on a fine bluff with wide views over Loch Assynt and Quinag and then a scrambling descent made to the base of the Stronechrubie cliffs. In general these were rather dry, the good early summer having reduced the usual seepage lines, leaving some rather sorry-looking bryophytes. *Gymnostomum insigne* was quite frequent but had scant resemblance to the normal bright, robust plant. *Hygrohypnum luridum* was abundant in wet places under overhangs and, in drier spots, there were neat cushions of *Bryum elegans*. In more sheltered areas, usually under large overhangs and where there was some drainage, the flora was more luxuriant, frequently with carpets of *Brachythecium glareosum*. In one such spot there were also large, pendent cushions of *Tortula princeps*.

**Friday 31 July. Quinag from the north (29/17-32-)**

From the north Quinag appears as two soaring Torridonian Sandstone buttresses with a large coire in between. Our target was the western buttress, Sail Gorm, and a line of crags and block scree where the underlying gneiss extends high up the hill. A short and simple stroll led to an area of blocks and flushes where some of the oceanic-montane hepatics occurred – *Plagiochila carringtonii* in abundance with *Herbertus aduncus* ssp. *hutchinsiae*, *Pleurozia purpurea* and *Bazzania tricenata*. The flushes were quite basic, with a little *Calliergon trifarium*. The gneiss crags proved surprisingly base-rich and supported a fine tall-herb community as well as both *Asplenium viride* and *Polystichum lonchitis* in crevices. *Grimmia torquata* and *G. funalis* were common on the drier rocks, sometimes with *Schistidium strictum*. Wetter bedding planes provided sheltered sites for *Anoetangium warburgii*, *Plagiobryum zieri* and *Leiocolea bantriensis*. Ledge communities included *Herbertus stramineus*, *Ditrichum flexicaule*, *Distichium capillaceum*, *Tortula subulata* var. *graeffii* and *Hypnum hamulosum*. Tom Blockeel also recorded *Ctenidium molluscum* var.

*robustum*\* in this area.

The heathy scree below the crags was also interesting with good populations of *Mastigophora woodsii*, and a little of both *Scapania ornithopodioides* and *Bazzania pearsonii*. Prospecting further round to the east, Tom Blockeel recorded similar things but with the addition of *Scapania nimbosa*. Sheltered, steep faces near the base of the crags where there is intermittent irrigation, gave a few different species – *Cololejeunea calcaria*, *Harpalejeunea ovata*, *Colura calyptrifolia* and *Radula aquilegia* and rocks at the base where water drips were sometimes covered with the handsome, dark-green cushions of *Dicranodontium uncinatum*.

There are several lochans below the crags and rocks on the shore of these had both *Antitrichia curtipendula* and *Orthotrichum rupestre*. The weather closed in at the end of the day and as we straggled off the hill the rain swept in. A slight navigational error caused some consternation but as the search parties were being organised the missing party hove into view and all were damply reunited with their vehicles. Alan Crundwell had remained below, on the shore of Loch Airdbhair and recorded *Archidium alternifolium*, *Campyllum polygamum* and *Haplomitrium hookeri*.

**Saturday, 1 August. Achmelvich (29/05-24-) and Duart woodland, Nedd (29/13-32- & 33-)**

After the splendid isolation of Quinag, the atmosphere of the Achmelvich dunes and crags, with their proximity to a busy camp-site, seemed positively cosmopolitan and the easy ground lent itself to a good deal of sociable pottering. The dunes are fairly typical of west coast shell sand, with good populations of *Ditrichum flexicaule*, *Entodon concinnus* and *Homalothecium lutescens* and more occasionally, *Distichium inclinatum*, *Barbula reflexa* and *Thuidium philibertii*. The gneiss rocks at the back of the sand are quite base-rich with *Scapania aspera*,

*Grimmia torquata* and *Neckera crispa* with the more oceanic element represented by *Frullania teneriffae* and *Lejeunea lamacerina*. A *Grimmia* collected by Nick Hodgetts is still under review but is probably *Grimmia montana*\*. A fen area on the margin of a lochan amongst the rocks produced *Calliergon giganteum* and *Plagiomnium ellipticum*.

After lunch the cavalcade moved off on the narrow road to Nedd, eventually parking in the drive to Ian and Pat Evans' house. The sole elder bush in the village received much attention as the party gathered, study rewarded by *Metzgeria fruticulosa* – an uncommon plant up here and, in my experience, restricted to elder bark. The coastal birch-hazel woodland at Duart is very pleasant with a great mass of common bryophytes on the rocky floor. The oceanic element is strongly represented, as one would expect, with records of *Radula aquilegia*, *Lejeunea lamacerina*, *L. patens*, *Frullania microphylla*, *Plagiochila killarniensis*, *Drepanolejeunea hamatifolia*, *Harpalejeunea ovata*, *Metzgeria leptoneura* and *Hylocomium umbratum*. Some of the hazels had good cushions of *Ulotia drummondii*; *Kurzia sylvatica*\* occurs on peaty banks above the sea. At the end of the afternoon we adjourned to the Evans's house for copious tea, scones and cake. For most this was a very civilised end to the proceedings of the day but a handful of stalwarts went on to Craig an Spardain, near Unapool to re-find *Glyphomitrium daviesii*; Tom Blockeel also recorded *Lejeunea ulicina*\*.

#### **Sunday 2 August. Inverkirkaig (29/08-19-)**

This should have been the 'big hill day' on Conival but the forecast was dire, threatening to flush all bryologists off the mountains, so the venue was switched. This was probably the sunniest day of the week. Inverkirkaig woodland extends out in a strip along the coast from the ravine of the Kirkaig river.

The woodland is largely birch with some hazel and is very damp and humid and produced a prodigious list of some 193 taxa but without any real rarities. The woodland by the river has a series of low crags with rocky slopes in between, all with deep cushions of bryophytes including *Sphagnum quinquefarium*, *Lepidozia cupressina* and *Hylocomium umbratum*, the latter in lush domes over rocks and tree stumps.

The rocks in and by the river produced *Hygrohypnum ochraceum*, *H. eugyrium* and, where more base-rich, *H. luridum* as well as *Cinclidotus fontinaloides*, *Schistidium alpicola* var. *rivulare* and occasionally, *Radula aquilegia*. The steep faces of the crags had a range of the small Lejeuneaceae of which *Aphanolejeunea microscopica* was by far the most frequent but *Cololejeunea calcarea*, *Harpalejeunea ovata* and *Drepanolejeunea hamatifolia* all occur. *Colura calyptrifolia* seemed to be limited to the rocks in the more heathy western margin of the woodland along with *Harpanthus scutatus*. *Frullania microphylla* and *Lophocolea fragrans* favoured the coastal rocks in this area also.

#### **Monday 3 August. Conival (29/30-20-)**

This was the wettest day of the meeting but a depleted team decided that they were keen to go "if I was" which gave me little choice! The rain fell relentlessly and compass bearings were necessary to locate v.-c. 107 into which we were straying in search of large hepatics and snow-bed things. Once over the bealach into the upper reaches of Coire a'Mhadaidh (The Fox Coire – only the sensible foxes were giving it a wide berth today), bryologising began in the first set of block scree. Gradually a good list of the large oceanic-montane hepatics was built up – *Scapania ornithopodioides*, *S. nimbosea*, *Mastigophora woodsii*, *Anastrophyllum donianum*, *A. joergensenii*, *Bazzania tricrenata*, *B. pearsonii* and *Plagiochila carringtonii*. For some, this was a first acquaintance with this unique community and it was a pity that the

conditions on which it presumably depends prevented real enjoyment!

After a dank lunch the plan was to move higher up the coire to a line of crags where the snow lies late. On the way, we passed some interesting flushes with *Philonotis seriata*\*, *P. tomentella*\* and *Scapania uliginosa*\*. The upper scree slopes are quartzite and rather mobile and thus not very productive but the broken ground below the crags proved very interesting. Common snow-bed species like *Kiaeria starkei*, *K. falcata* and *Pohlia ludwigii* were frequent on the wet soil of ledges and crags. Mike Fletcher found *Moerckia blyttii* in a similar site and *Lophozia opacifolia*, *Diplophyllum taxifolium* and *Marsupella sphacelata* were also noted. One dripping crag had a large stand of *Andreaea nivalis*\*, the most northerly British site for this rare moss. The fern *Athyrium distentifolium* is a common constituent of block scree communities where snow lies late and often has interesting bryophyte associates growing on the litter and this proved to be the case here with *Brachythecium reflexum*\* in some abundance, again a new northerly outpost. Well satisfied with the limited but significant list, we headed back round the coire to the bealach and the long trudge back to the vehicles.

Those of the full party with a less perverse nature stuck to the lower ground, visiting the woodland at Achmelvich (29/075249) which proved rather poor and a mire on the margin of Loch na Claise (29/032207) which had *Campyllum polygamum* and *Splachnum ampullaceum*.

#### **Tuesday 4 August. Allt na Uamh (29/26-16- & 17-)**

A second visit to the Cambrian limestone, this time with a northerly aspect and the added interest of block scree and caves. The lower section of the burn was in spate so activity was confined to the north side where isolated limestone blocks attracted much attention.

Both *Leucodon sciurioides* and *Antitrichia curtispindula* occur here with *Barbula reflexa*, *Seligeria recurvata*, and *Bryum elegans*. At one point a large tributary to the main burn gushes forth from the base of a crag but a dense covering of bryophytes here proved to be largely *Rhynchostegium riparoides*. The steep slopes in this area had some surface drainage also and the flushes, dominated by *Cratoneuron commutatum* var. *falcatum*, had cushions of *Leiocolea bantriensis* and a little *Amblyodon dealbatus*. Shortly above, the main burn also disappeared leaving a dry river bed which we crossed to ascend the bouldery slope to the crags.

The limestone blocks below the first crags had scattered patches of *Pseudoleskeella catenulata* and also provided ideal perches for a protracted lunch. As we moved off again, Alan Crundwell immediately found *Schistidium trichodon*, "looking rather sat on"! The crags and ledges around the caves have an interesting flora. In the caves there are wefts of *Amblystegium compactum* and *Platydictya jungermannioides*, on steep faces close to the caves large mats of *Pseudoleskeella catenulata* and on boulders just below, *Pseudoleskeella sibirica*. In dripping, algae-covered corners, the distinctive shoots of *Seligeria trifaria* could be found if enough 'gunge' was examined. More open rocks had occasional cushions of *Tortella densa* and drier, sheltered crevices, *Encalypta alpina*.

In the evening, the bulk of the party repaired to the Burnside Bistro in downtown Lochinver for an excellent meal, an occasion enlivened by Mike Fletcher's portable 'moss garden' and the photographic exploits of the indefatigable Harold Whitehouse.

GORDON ROTHERO

\*\*\*\*

## SUMMER MEETING, 1992, SECOND WEEK, THE UISTS AND BENBECULA

On the evening of 5 August I waited for two hours in the bar of the Creagorry Hotel with a force 10 gale blowing outside. By 10 o'clock I was planning my return to Edinburgh for the following day, but at 10.15 four of the BBS arrived, variously sick, windswept and exhausted from the Uig ferry. The following morning there were eight of us, the wind had dropped and it was fine but cold. The weather continued to improve and we had a thoroughly interesting and enjoyable week.

We visited several 'machair' sites on the west coast of the Uists and Benbecula. Machair is the name for the sandy plain which runs more or less continuously north-south along the length of the islands, and east-west along the coast of North Uist and Berneray. Much of it is quite flat though, here and there, there are dune-systems with a more usual formation of dunes and slacks. The flat machair is, or has been extensively cultivated, but there are wetter, fenny areas where the machair joins the 'blackland' which are bryologically interesting. The dune slacks, where they are well developed, are very rich.

The mountains are Lewisian Gneiss, and are therefore hard and acidic. They are approached across blanket bog most of which is exceedingly dull, probably because it has been burned too frequently. Parts of the upper slopes are very heavily grazed and are similarly of little interest. But the steeper and less accessible parts have areas of tall heather and ledge communities that contain several of the more interesting Atlantic hepatics.

We also visited two of the smaller islands, Berneray and Pabbay.

### MACHAIR SITES

#### 1. Loch Hallan (735 225) 6 August

We spent several hours in the fen at the north end of Loch Hallan. Progress was slow because the water was deep and round much of the area there were tall reeds (*Phragmites* is dominant over an area of about 15 ha). There was also much discussion over the identity of *Calliergon* and *Drepanocladus* specimens. The following were recorded: *Calliergon cordifolium*, *C. giganteum*, *Drepanocladus aduncus*, *D. lycopodioides*, *D. sendtneri*, *Campylium elodes*, *Plagiomnium elatum*, *P. ellipticum* and *Philonotis calcarea*. There were large and spectacular patches of *Marchantia polymorpha* (the old and beautiful var. *aquatica*).

We returned to Askernish House by a drier route (we had by no means done a complete survey of the fen) and recorded *Leptobryum pyriforme* and *Brachythecium mildeanum* on the way. Harold Whitehouse collected specimens of several species of *Bryum* from fallow cultivated ground including *B. dunense*\*, *B. rubens* and *B. rudemale*\*.

#### 2. Benbecula Aerodrome (790 570) 6 August

We drove across the runways of the airfield escorted by a rescue vehicle, we then bounced through several hundred yards of dunes and parked close to the site of the wheelhouse at An Tom. Most of this area of dunes is dry and bryologically dull (ragwort, marram grass and *Rhytidadelphus triquetrus*). But there is one exceptionally rich slack. This is marked as standing water on the 1:50,000 O.S. and, as you approach it, looks very unprepossessing. It is littered with rusting scrap, old tyres and various other military rubbish; indeed it is difficult to tell whether the slack itself is natural, or whether it has been excavated. The lowest part is *Carex nigra*/*Calliergon cuspidatum* and unremarkable, but the slightly higher ground on the SE and SW sides is covered by tufts, patches and sheets of *Distichium inclinatum*, *Catoscopium nigrum* and *Meesia uliginosa*. We also saw *Amblyodon dealbatus*, *Barbula*

*reflexa*, *Moerckia hibernica* and *Riccardia incurvata*\* here. *Amblyodon* and *Moerckia* were much less abundant than I noted in 1983 ('frequent'), but *Amblyodon* was difficult to spot because its leaves had turned black rather earlier in the season than usual. *Meesia* and *Catoscopium* were both more abundant than I remember them.

By the bank at the NE end of the slack, growing on old crumbling tarmac were beautiful sheets of *Encalypta rhytoides*. Martin Wigginton collected *Barbula trifaria*\* here, a considerable extension beyond its previously known limits in Wigtown and Banff.

### 3. Baleshare (790 600) 9 August

Baleshare is a small island connected to N. Uist by a ½-mile causeway. The southern half is a dune system, with high dunes to the western edge, and lower dunes and flatter slack-like areas in their lee. The northern part of the machair has been enclosed by fences, and new areas have been cultivated in recent years: Among some of the older turf, and outside the fences at the head of the saltmarsh of the NE shore of Traigh Eachkamish we found *Amblyodon dealbatus*, *Jungermannia atrovirens*, *J. exsertifolia* ssp. *cordifolia* and, in the saltmarsh, *Lejeunea patens* and *Frullania tamarisci*. Further south towards the far end of the enclosed ground we found *Moerckia hibernica*, *Meesia uliginosa* (both locally abundant), *Catoscopium nigrum* and *Distichium inclinatum*. Beyond the fences a path continues through miniature dunes which open out into a wide flat expanse of slack-like vegetation. On very slightly raised patches of sand either side of the path *Tortella inclinata* grows. At first it does not stand out well from the *Distichium capillaceum* with which it grows but when it is dry the straight leaves and the bright, matt, pale green colour are distinctive.

In the lowest-lying area, which is apparently flooded by the sea several times every winter, bryophytes are prominent in the vegetation.

*Calliergon cuspidatum* and *Drepanocladus revolvens* are, of course, common, but there are quite large areas dominated by *Campylium elodes* and *Cratoneuron filicinum*, growing in a close mixture and looking astonishingly alike. We also recorded *Campylium polygamum*.

### 4. Balranald and Hougharry (705 705) 9 August

A few of us spent a short time in the fen which extends to the south and west of Loch nam Feithean. Its appearance in August is spectacular because grazing animals are excluded and the plants, in particular *Pedicularis sylvatica* which is very abundant, are allowed to flower. *Drepanocladus sendtneri*, *D. uncinatus*, *Campylium elodes*, *Calliergon cordifolium*, *C. giganteum* and *Plagiomnium ellipticum* were recorded. Harold Whitehouse looked at an oatfield at Hougharry and collected *B. klinggraeffii*, *B. rubens* and *B. rudemale*.

## MOUNTAIN SITES

### 1. Beinn Mhor (809 311) and Allt Volagir (800 295) 8 August

The day of the main mountain excursion was gloriously fine. We climbed Beinn Mhor from Locheynort and the route turned out to be rather steeper than we had expected. We spent much of the morning however in and around the scrap of woodland on the Allt Volagir (800 294). This is the only native woodland in the Outer Hebrides. It consists of a handful of aspen, hazel, rowan and ash trees, clinging to the steep bank of the stream cutting. I am ashamed to admit that I had more or less dismissed its bryological interest on an earlier visit because of its pathetic size and its midge population. The Nick Hodgetts party was much more tenacious and found *Frullania fragilifolia*, *F. microphylla*, *F. teneriffae*, *Aphanolejeunea microscopica*, *Harpalejeunea ovata*, *Drepanolejeunea hamatifolia*, *Lejeunea lamacerina*, *Colura calyptrifolia*, *Glyphomitrium daviesii* and *Ulota calvescens*.

Harold Whitehouse and I found *Campylopus brevipilus* in an otherwise dull patch of bog to the north of Loch nam Faoileann.

The fragmented party reunited for lunch on the summit of Beinn Mhor, from where we could see all the watery mosaic of the Uists sparkling in the sun, St Kilda to the west and, north and south, the length of the Hebrides.

On the north and north-east slopes of the hill, which are quite different from the dull grassy south-facing slopes, we found a rich assortment of hepatics, growing on banks and ledges or among tall heather and boulders: *Anastrepta orcadensis*, *Bazzania tricrenata*, *B. pearsonii*, *Herbertus aduncus*, *Mastigophora woodsii*, *Plagiochila carringtonii*, *Scapania ornithopodioides* and *S. nimbosea*. Harold collected *Campylopus schwarzii*.

We returned to Loch Eynort by Bealach Crosgard, accompanied by two walkers, she young and silent, he about ten years older, talkative and inquisitive. We found *Campylopus shawii* near the bealach, (Martin Wigginton also found *Pohlia myldermansii*\* and *Cephalozia macrostachya*\* during the course of the day) but arrived at the vehicles mentally and physically drained.

## 2. Hecla (825 345) 11 August

On the last day, after the rest of the party had departed, Harold and I climbed from the deserted village of Lochskipport into Choire na h-Eitich, below Ben Scalavat. We again found *Anastrepta orcadensis*, *Herbertus aduncus*, *Mastigophora woodsii*, *Plagiochila carringtonii* and *Scapania ornithopodioides*, growing in tall heather at about 250-300m. Harold took a lot of stereo photographs and we returned in cold, heavy rain.

## SMALLER ISLANDS

### 1. Pabbay (890 880) 7 August

Pabbay lies in the Sound of Harris, at the Atlantic end, roughly mid-way between North

Uist and Harris. A hundred years ago it had three hundred inhabitants, now it has none. There is one house that the owner uses occasionally, about a thousand sheep, and a small domesticated herd of red deer. It is botanically interesting because the whole of the south slope (more than half of the island) is covered by calcareous blown sand, forming a 'climbing' dune system. Much of this sand is damp from water percolating down the slope, and it supports a rich variety of calcicolous plants. We travelled to the island in the boat used to transport the sheep, which is also the reserve boat for the Berneray Ferry. It has a huge engine (reassuring) but no seats (uncomfortable) and cost us £10.00 per head (the equivalent cost for a sheep would be less than 50p).

Among the dunes, flushes, slacks and grassland of the south side of the island we found *Amblyodon dealbatus*, *Barbula reflexa*, *Distichium inclinatum*, *Encalypta streptocarpa*, *Neckera complanata*, *Orthotrichum cupulatum*\*, *O. rupestre*, *Leiocolea alpestris*\*, *Meesia uliginosa*, *Riccardia incurvata*, *Riccia beyrichiana*, *Tortella fragilis*, *Philonotis calcarea* and a long list of commoner bryophytes.

We had lunch below the summit of Beinn a Charnain (196m) where we found *Archidium alternifolium* and, just to the north of the summit, *Salix herbacea* (this must be one of its lowest sites in Britain). We spent most of the afternoon looking at the north and north-east slopes of the island, where we found *Myurium hochstetteri*, growing reasonably frequently on rock ledges, in turf and here and there on open peat. *Radula aquilegia* was also seen growing on wet, almost bare peat. On one exposed line of rock running down towards Brenish Point, we found *Frullania fragilifolia*, *F. teneriffae*, *Harpalejeunea ovata*, *Saccogyna viticulosa*, *Odontoschisma elongatum*\* and *Colura calyptrifolia*. Nick Hodgetts found *Sphagnum platyphyllum* somewhere on the island, and one of us (not me) got lost in the

sand dunes on the way back to the boat.

and walked much further than the rest of us.

## 2. Berneray (910 820) 10 August

The ferry to Berneray is a much more sedate affair. Half the party arrived at the jetty after it had departed, but it came back for a second trip. Berneray has a massive dune and machair system, three miles long by a mile wide, more than half the area of the island. A large part of it has been cultivated for a long time (probably several thousand years), but we saw none of it under cultivation in 1992. The slacks and damp, low-lying areas are bryologically rich (it is one of the best machair sites), but it offered little that we had not already seen, so most of us decided to explore the north-east end of the island where, as on Pabbay, sand is blown over the slopes of a hill.

This ground is heavily grazed by sheep, and much of it has been cultivated in the past (the population of Berneray at its maximum was 2,000; now 200 or so). In the furrows of old ridge-and-furrow lines we found *Scapania aequiloba*, *Leiocolea alpestris* and abundant *Moerckia hibernica*. Rock protrudes through the sand around the west side of the foot of the hill. Here we found eight or nine species of *Barbula*, *Orthotrichum rupestre*, *Gymnostomum recurvirostrum*, *Porella obtusata* and *Trichostomum crispulum*.

Further round the north side of the hill, on the lower slopes we found large quantities of *Myurium hochstetteri*, growing in beautiful shining tufts. We also looked at several flushes (*Leiocolea bantriensis*, *Philonotis calcarea*) and some damp rock outcrops. Some of the rock habitats were particularly interesting. We recorded *Amblyodon dealbatus*, *Radula aquilegia*, *Leiocolea badensis*, *Harpalejeunea ovata*, *Lejeunea lamacerina*, *Frullania fragilifolia*, *F. teneriffae*, *Aphanolejeunea microscopica* and *Platydictya jungermannioides*\*. Ron Porley visited the sand dunes and saw *Catoscopium nigratum*, *Amblyodon dealbatus*, *Meesia uliginosa*, *Drepanocladus revolvens*, etc.,

I was helped greatly in planning the meeting and finding suitable accommodation by the local staff of Scottish Natural Heritage, Dr Mary Elliott and Miss Norah Macphee. Some of the new vice-county records (\*) have still to be confirmed.

PETER PITKIN

---

## AGM AND SYMPOSIUM MEETING, CHELWOOD GATE, EAST SUSSEX, 1992

A complete change from our normal venues for autumn AGM weekend meetings was provided by the University of Sussex's pleasant field centre, the Isle of Thorns. Situated in the Ashdown Forest, also known as Winnie the Pooh country, fine weather enabled us to make the very best of the beautiful surroundings.

The centre provided all that could be needed for the weekend (26-27 September) including a friendly atmosphere. The standard of accommodation was high, and David Streeter's organisation proved faultless. Francis Rose provided two interesting local excursions on the Sunday.

I am also grateful to the speakers who provided a satisfying mix of topics and presentations of excellent quality. The following short summaries have been provided by the authors.

PHILIP LIGHTOWLERS

• **Prof J.G. DUCKETT** (Queen Mary College, London), **Prof. R. Ligrone** (University of Naples) and **Drs J.A. Goode** and **A.D. Stead** (Royal Holloway and Bedford New College, London): 'How things fall off bryophytes.'

Loss of adhesion in the abscission regions of vascular plants, whether these be leaves, floral parts, seeds or vegetative propagules, results from hydrolysis of the middle lamellae coupled with expansion and rounding-off of the same cells. By contrast, the wide assortment of diaspores produced by bryophytes (Longton and Schuster, 1983) displays a range of abscission mechanisms paralleling those seen in the fungi and in the algae. Although used extensively in bryophyte taxonomy, until very recently (Bopp *et al.*, 1991; Duckett & Ligrone, 1992) the development and liberation mechanisms of diaspores have been virtually ignored since Correns' (1899) encyclopedic treatise.

Apart from fragile leaves, and caducous leaves and perianths, which become detached by breakage through an intercalary region of thin-walled living cells, other abscission mechanisms in bryophytes involve uniaxial filaments. The rhizoidal gemmae of mosses are the only examples of diaspores where an abscission mechanism (other than rotting of the subjacent cells) is lacking, a situation almost certainly related to the fact that these propagules are produced underground.

Deciduous shootlets (e.g. *Leucodon*), axillary bulbils (e.g. *Pohlia*) and cauline gemmae (e.g. *Tetraphis*) are liberated by the random breakage of thin-walled stalk cells. Formation of new internal walls followed by rupture of the old external walls is a feature shared by the gemmae in the liverworts *Riccardia* and *Metzgeria* and the mosses *Tortula latifolia* and numerous *Orthotricha*. Breakage along the middle lamella characterises the liberation of catenate gemmae in the Jungermanniales.

The most specialised liberation mechanisms are those involving the formation of abscission or tmema cells. These are a constant feature of the foliar gemmae in *Calymperes* (Ligrone *et al.*, 1992) and *Dicranoweisia cirrata*, the axillary gemmae in *Zygodon* and *Bryum flaccidum* and the protonemal gemmae in *Funaria* and many

species of *Bryum* (Goode *et al.*, 1993). In the last two genera a transverse array of microtubules characterises tmema cell development. Though reminiscent of a preprophase band otherwise unknown in moss protonemata, its function is more likely exclusion of chloroplasts from the tmema cell rather than positioning of the new cell plate. An equatorial band of microtubules and actin microfilaments found in the mature tmema cells of *Bryum* probably has a key role in wall breakdown leading to the fragmentation of the protonema.

In old cultures, or in the presence of abscissic acid, the cylindrical chloronemal cells of most mosses de-differentiate into spherical brood cells. These contain random arrays of microtubules recalling those seen in protoplasts and are frequently thick-walled and desiccation resistant. When transferred to new medium, brood cells rapidly regenerate new protonemata.

Although protonemal diaspores, and their liberation mechanisms, are most readily observed in axenic cultures, field observation reveal that they are also to be found in nature — often in great abundance (e.g. *Orthodontium lineare*). Thus protonemal diaspores probably have an important role in the natural reproductive biology of mosses.

## References

- Bopp, M., H. Quader, C. Thoni, T. Sawidis & E. Schnepf (1991). Filament disruption in *Funaria* protonema: formation and disintegration of tmema cells. *J. Plant Physiol.* **137**: 273-284.
- Correns, C. (1899). *Untersuchungen en uber die Vermehrung der Laubmoose durch Brutorgane and Stecklinge*. G. Fisher, Jena.
- Duckett, J.G. & R. Ligrone (1992). A survey of diaspore liberation mechanisms and germination patterns in mosses. *J. Bryol.* **17**: 1-20.

- Goode, J.A., F. Alfano, A.D. Stead, & J.G. Duckett (1993).** The formation of aplastidic abscission (tmema) cell and protonemal disruption in the moss *Bryum tenuisetum* Limpr. is associated with transverse arrays of microtubules and microfilaments. *Protoplasma* (in press).
- Ligrone, R., J.G. Duckett & A. Egunyomi (1992).** Foliar and protonemal gemmae in the tropical moss *Calymperes* (Calymperaceae): an ultrastructural study. *Crypt.Bot.* 2: 317-329.
- Longton, R.E. & R.M. Schuster (1983).** Reproductive biology. In Schuster, R.M. (ed.), *New Manual of Bryology*. Vol. 1, pp 386-462. Hattori Botanical Laboratory, Nichinan.

• **Prof. M.C.F. PROCTOR** (University of Exeter): 'Micro-environmental conditions and the growth of *Grimmia pulvinata*.'

• **Mr D. LONG** (Royal Botanical Garden, Edinburgh): 'The hepatic genus *Asterella* in continental eastern Asia.'

*Asterella* P. Beauv. (syn. *Fimbriaria* Nees) is one of the largest genera of Marchantiales, in the family Aytoniaceae. From its close relatives *Reboulia*, *Cryptomitrium* and *Mammia* it is distinguished by the unique "pseudoperianth", a peristome-like structure enclosing the sporophyte. *Asterella* is of particular interest for its diversity of branching patterns and almost world-wide distribution.

In continental east Asia no fewer than 29 taxa have been described, many of these based on herbarium studies of very inadequate material. Recent field-based studies in the Himalaya and China, combined with a reassessment of character stability, and fruitful study of spore morphology using SEM, have shown that in

the past rather plastic thallus characters have been over-utilised and have resulted in great taxonomic confusion and repeated description of some common species under many names. A notable exception has been Kashyap's work in the north-west Himalaya, based on field studies, with correct understanding of the common species. Kashyap, however, was not able to study types and applied the correct name to only one of his species.

The most useful characters have been branching patterns, sexual condition (parocious, autoicous and dioicous), morphology of ventral scale appendages and spore colour and ornamentation. SEM studies of spores have been especially useful in placing scrappy type specimens. Eight species are now recognised in continental E. Asia: one dioicous, three parocious and four autoicous species.

These autoicous species are of particular interest as each has a different arrangement of fertile branching patterns: (1) female terminal on main thallus, male on short ventral branches; (2) male terminal on main thallus, female on short ventral branches; (3) both male and female on short ventral branches and (4) female terminal on short terminal branch and male dorsal on opposite terminal branch which continues as a vegetative innovation.

This last condition is found in an undescribed species recently discovered in the east Himalaya, a feature of which appears to relate it most closely to two or three species in Mexico and California.

The eight species recognised show a diversity of ecology and distribution. Two species are restricted to strictly calcareous substrates, others are more calcifuge. The highest record is from 4,050m in East Nepal. Several species are opportunist and weedy in the Himalaya, especially favouring damp walls, religious buildings such as Buddhist "chortens", terrace walls and banks on cultivated hillsides. In the

Himalaya two species show specialised adaptation to the strict alternation of a wet monsoon season and a dry winter/spring season when xeromorphic thallus branches are produced. Lack of understanding of such seasonal modifications has contributed to past taxonomic confusion.

• **Dr R.E. LONGTON** (University of Reading) and **Yli Yong Min** (Guizhou Agricultural College, People's Republic of China): 'Agrobryology in China'.

Chinese gallnuts are galls that form on the leaves of sumac trees (*Rhus* spp.) in response to attack by aphids in the Eriosomatinae. Various mosses from obligate winter hosts for the aphids and thus gallnuts develop only when appropriate species of moss and sumac tree occur in close proximity. The walls of the gallnuts may comprise over 70% tannins and yield compounds of considerable commercial value, notably tannic acid, and gallic acid which derives its name from its occurrence in galls. Gallnuts therefore command a high price, currently around £2.50 per kilogram to the producer, and gallnut production can have a major impact on the local economy in rural areas of China.

At least 14 types of gall have been described from *Rhus* spp. in China, each caused by a different species of aphid, although the classification of galls and aphids may require clarification. A wide range of mosses act as winter hosts. Of greatest importance commercially is the true-horned gallnut which forms on *Rhus chinensis* in response to attack by *Schlechtendalia chinensis*, an aphid that overwinters on members of the Mniaceae, particularly *Plagiomnium acutum*. There are six generations of *S. chinensis* in each annual cycle. Reproduction is principally viviparous and parthenogenetic, except for a single sexual generation produced after spring migrants fly from mosses to the sumac trees in April and early May.

True-horned gallnuts are traditionally harvested from semi-natural woodland on rocky hillsides. Approximately 1-2% cover of *P. acutum* is adequate to support high production of gallnuts provided that it is uniformly distributed, and favourable distribution and abundance of the moss is achieved by transplantation. Attempts are also being made to produce gallnuts by growing sumac trees in agricultural fields, but success is limited by the difficulty of establishing *Plagiomnium* species in the fields. One solution is to cultivate the moss on soil in plastic bowls which are kept for most of the year in sheds. Five thousand of such bowls are in use at the Tso Ling Zhai Gallnut Experimental Station in Guizhou Province. In October each year the bowls are placed outside under the sumac trees for several weeks and autumn-migrant aphids fly into the moss colonies. The bowls are kept in the sheds during the winter, the moss mat is stripped from the bowls and placed under the sumac trees in April, and spring-migrant aphids then leave the moss and fly to the trees. The moss regenerates in the bowls during summer. We are currently investigating the growth and reproduction of *P. acutum* as an approach towards increasing gallnut production.

• **Mr C.C. TOWNSEND** (Twickenham): 'Temperate to tropical - taking the plunge.'

There is no reason why any reasonably competent bryologist cannot have a part in advancing the knowledge of tropical bryology; the BBS Tropical Bryology group will help as a vehicle for pooling knowledge and experience. There are four basic near-essentials to begin with:

1. To have access to, or determination to travel to, a good representative herbarium for checking determinations.
2. To be prepared to lay out cash for a basic library of books as they become

necessary – some expensive (especially Brotherus' treatment of the mosses in Engler and Prantl's *Die Natürlichen Pflanzenfamilien* ed. 2) , others quite cheap.

3. Be prepared to travel or, often, to recruit those who do (holidaymakers, overseas representatives, missionaries, etc.).
4. To be willing to seek (but not presume upon) advice of others more experienced.

At the beginning (and these remarks apply to other foreign parts as well as the tropics), set goals:

1. Is this to be a relaxation alone, to an attempt to contribute to knowledge? A demanding job need not disqualify – Dixon was headmaster of a school for the deaf and dumb.
2. Am I thinking of one region, or hoping to extend it to the world?
3. If the world, choose mosses OR liverworts – you can't do both (though it may be possible for a restricted area).
4. Shall I name material for expeditions or surveys (a fundamental need), or attempt revisionary work?

Such decisions as these are best made early to avoid gaining knowledge which will be lost later.

It is best to start in a small way, free of pressure of responsibility. Mosses used for packing or brought back by those with no interest in receiving names, or collected personally on a package holiday. Now is a good time to start – there is much more literature on tropical mosses than a few years ago, especially vital checklists; these are invaluable, and even a comparative beginner can produce one by a careful literature survey.

One of the first requirements is to shed preconceptions gained as a result of looking at British bryophytes, such as:

1. Lots of liverworts have underleaves, but mosses do not (Hypopterygiaceae and Racopilaceae will soon teach otherwise).
2. It is a waste of time to collect sterile *Bryum* (e.g. in West Indies much can be done in this state).
3. Some "key" characters will need a new conception. "Basal cells abruptly demarcated from the upper" is much more extreme in the Calymperaceae than in any European mosses.
4. Ranges of habitat are found over a comparatively short distance at times in the tropics, with corresponding diversity of bryophytes.
5. Realising that knowledge of British (even more, European) bryophytes will be of more use than expected in the tropics, both to genera and family, especially in the Old World uplands.

As knowledge of the literature is gained, it will also be realised that many drawings of tropical mosses are excellent. Those of the *Bryologia Javanica* and Renauld and Cardot's "Mousses de Madagascar" are every bit as fine as *Bryologia Europaea*. There are many encouragements for those who will "go for it".

• **Mr D. SYNNOTT** (National Botanical Gardens, Dublin): 'The BBS and Irish bryology.'

The new Regional Recorder Scheme for bryophytes highlights the continuing difficulty that Irish bryologists have in applying schemes in Ireland which were devised for application in Great Britain. Shortage of fieldworkers both native and imported militates against success of mapping schemes and other network research projects which are extended to Ireland from a base in Great Britain.

Recording of cryptogams in Ireland cannot keep pace with that in Great Britain unless

British botanists are prepared to come to Ireland more often than they do at present, both as individuals and in organized groups. The "Troubles" in Northern Ireland have not helped in furthering this necessary process. There was only one member from Great Britain at the recent BBS meeting in Northern Ireland and some really good friends of Irish bryology who have done more than their share of the work in Ireland already were deterred from participating because of their unease with the situation.

Ireland and Great Britain have since the time of Hooker and Taylor been treated as a biogeographical unit for bryophyte recording. The outstanding success of the BBS mapping scheme is a clear indication of the benefits for Irish botany which result from the involvement of British-based botanists and societies.

There have never been more than a few active field bryologists in Ireland. Some of them have made a major contribution to their subject and several species are named for Irish bryologists of the last century, e.g. Templeton, Taylor and Hutchins. It is worth recalling that the forerunner of the BBS, the Moss Exchange Club, was formed following a letter to three journals in 1895, *Science Gossip*, the *Journal of Botany* and the *Irish Naturalist* by a Northern Irish clergyman, Rev. C.H. Waddell of Saintfield, Co. Down. Waddell managed the Exchange until it was on a sound footing and had acquired that momentum which continues to this day.

There may be some British bryologists working in areas already overcrowded with field workers or who would enjoy a change of scenery of habitats. If such a person were to adopt an Irish vice-county (there are still thirty-nine to choose from – Limerick has already been adopted) I can give two guarantees, bryological fulfilment and a hearty Cead Mile Failte from the Irish botanical community.

• **Dr F. ROSE** (Petersfield) and **Mr R.C. STERN** (Chichester): 'Bryophyte distribution in Sussex - the new Sussex atlas.'

Sussex (vice-counties 13 and 14) has a bryophyte flora that is remarkably rich for a lowland county in south-east England. Five hundred and fifty one taxa have been recorded, of which 53 have not been seen for many years, and may be extinct; a few others, known until recently, have not been refound in their old localities and may also have gone, but could be found elsewhere.

The richness of Sussex in bryophytes is clearly a result of its varied geology and habitats. The massive sand rocks that outcrop on the sides of several valleys on the Hastings sandstones of the High Weald in East Sussex provide habitats for a number of hepatics and a few mosses that are otherwise absent (or else extremely rare) in England east of Exmoor and south of the central Pennines. The extensive chalk grasslands of the South Downs, particularly on north or east slopes, provide continuing locations for a large number of more exacting calcicole species. The deep gills of the High Weald, with their rocky beds and small waterfalls, have often a bryophyte flora more reminiscent of Wales or the valleys around Dartmoor than of any other areas in lowland England. Finally, there are still considerable areas of wet and dry heath, with occasional valley bogs, on both the Lower Greensand in the west of the county, and on the sands of Ashdown Forest in the east, that provide habitats still present in some other southern counties, but which have largely disappeared from most of midland and eastern England.

A number of slides were shown of maps (mainly tetrad maps from Rose, Stern, Matcham and Coppins, 1991) illustrating the various types of distribution shown by the more local bryophytes of Sussex. In many cases slides were also shown of photographs of the species themselves. These species

included a number of the very local Sussex sandrock species (e.g. *Harpanthus scutatus*, *Scapania gracilis*, *Bazzania trilobata*, *Dicranum scottianum*, *Tetradontium brownianum* and *Orthodontium gracile*) which are still persisting in a number of places. Also included were species of rocky streamsides or flushes in wooded Wealden gills (e.g. *Hycomium armoricum*, *Hookeria lucens* and *Trichocolea tomentella*) which are still remarkably frequent over wide areas of the High Weald of Sussex and in some cases extend to the wet alder carrs of the Lower Greensand. Local species of humid heaths (e.g. *Dicranum spurium*) or valley bogs (e.g. *Sphagnum papillosum*) which still persist in many places on Lower Greensand or in Ashdown Forest; and finally a number of the species of steep, open chalk grassland which are still widespread along the downs, particularly on humid north slopes (e.g. *Neckera crispa*, *Scapania aspera*, *Frullania tamarisci* and *Tortella tortuosa*), dry south facing slopes (e.g. *Pleurochaete squarrosa*) or on chalk stones in woodland (e.g. *Tortella inflexa*). *Frullania tamarisci* also occurs as an epiphyte on old trees (mostly oaks) in ancient woodland; the question arises, are there distinct ecotypes of this species?

#### Reference

Rose, F., R.C. Stern, H.W. Matcham & B.J. Coppins (1991). *Atlas of Sussex Mosses, Liverworts and Lichens*. Brighton, Booth Museum of Natural History.

\*\*\*\*

#### FIELD EXCURSION, 27 SEPTEMBER, 1992

The morning was spent in the Duddleswell Valley, high up in the Ashdown Forest. Over 30 members were led by Francis Rose accompanied by the local ranger, Chris Marrabel. An area of wet heath and bog was examined first; 10 *Sphagna* were seen including *S. molle*, a rare species in S.

England, and confined in Sussex to a few places in the Ashdown Forest. *Nardia compressa* was seen in reasonable quantity in the stream above the main ravine; in lowland Britain, this liverwort is confined to this site and one further north in the Ashdown Forest. Mark Hill collected *Sphagnum auriculatum* var. *inundatum* as well as *S. recurvum* var. *tenue* (= *S. angustifolium*), which was new to Sussex, in boggy parts of the valley, where Jean Paton found *Cephaloziella rubella* (first recent record for E. Sussex) and *C. elachista*. In the main ravine, the abundance of *Hycomium armoricum* c.fr. was admired, but *Diphyscium foliosum* could not be refound. To round off a successful morning, David Long found *Cryptothallus mirabilis*, only the third record for Sussex, and new to the Ashdown Forest.

The sandrocks at Wakehurst Place were the location for the afternoon excursion. A steadily reducing party saw some of the sandrock liverworts such as *Scapania gracilis*, *Bazzania trilobata* and *Kurzia sylvatica* on the way to Tilgate Wood. The main rocks in the wood were somewhat elusive, mainly as a result of the recent erection of a deer fence, and in searching for these we found the devastation caused by the Great Storm of 16 October, 1987 was still much in evidence. Eventually the rocks were found and a limited number of the party were available to admire *Harpanthus scutatus* on them.

ROD STERN

---

#### BRYOPHYTE WORKSHOP, UNIVERSITY OF EAST LONDON, 1992

Thirteen members attended the taxonomic workshop over the weekend of 31 October - 1 November at the University of East London. We were very fortunate in having the expert guidance of the distinguished Dutch bryologist, Dr Ida Bruggeman-Nannenga, who has spent many

years studying the European *Fissidens* taxa and has built up an encyclopedic knowledge of their variation in the field. Using stained permanent slides of every European taxon, she demonstrated their essential diagnostic features with a video projection microscope, and afterwards members were able to study the slides for themselves. It was a great relief to have confirmed that members of the *F. bryoides* group are not always clearly defined, and would probably be better given the rank of "expression" rather than full specific or varietal status, as the morphology of several taxa tend to converge under certain habitat conditions. It was also illuminating to see how the various taxa behave in the wider context of the continent.

Dr Harold Whitehouse brought along a selection of his superb stereo-photographs of *Fissidens* and *Tortula* species, complementing Ida's microscope slides with an indication of disposition of some of the taxa in the third dimension.

Having had such a feast on *Fissidens*, the 'afters' on *Tortula* brought everyone literally down to earth by concentrating on just two species and their look-alikes. The update on *Hemmediella macrophylla* (= *T. brevis*) pointed out the rather sordid fact that it was apparently being spread along the banks of very mucky London streams and rivers, and on bare soil under trees in London parks, by none other than the brown rat. So far its look-alike *H. standfordensis* has not yet extended its range sufficiently to overlap. It was suggested that members might like to look out for evidence of it also being spread by rats, and to contemplate just how well the two might be recorded when eventually they expand their ranges and end up in mixed populations.

The other *Tortula* members were alerted to was *T. virescens*, which is turning up all over eastern England on tarmac paths, on damp brickwork, and on tombs in churchyards, and seems to be relatively uncommon on trees.

On the Sunday Tim Pyner took us to Hatfield Broad Oak churchyard where it was growing in small tufts on brick tombs together with its look-alike *T. intermedia*. In the same churchyard a fine example of another plant that has been overlooked on stone in eastern England, *Leucodon sciurioides*, in two large patches on the limestone capping stones of buttresses on either side of the south door of the church. It has also been found recently on stone/brick elsewhere in Essex and in Cambridgeshire, and from the large patches present has clearly been overlooked in this habitat.

Unfortunately we were unable to visit the chalk pits in the Grays area as planned, due to problems with access. Members instead spent a pleasant sunny morning in Epping Forest looking at luxuriant patches of *Zygodon forsteri*, and both species of *Leucobryum* with capsules, as a substitute.

KENNETH J. ADAMS

---

## REPORTS OF LOCAL MEETINGS

### North West Group/North Western Naturalists' Union

Outings during the year have generally been well attended, with up to 20 people coming to the more popular meetings. The Derbyshire dales are always popular venues. A very few members (6 at most) attended the Cumbria weekend in October, where BBS member Dr Peter Bullard in his capacity as Conservation Officer for the Cumbria Wildlife Trust, had arranged visits to some of the Trust reserves. Excellent accommodation and, thanks to Peter, some very interesting sites, made this a very enjoyable weekend.

Notable species seen have included *Targionia hypophylla* and *Lophocolea fragrans* and we have always found much of interest and plenty of specimens to puzzle over!

Next year's programme will be prepared early in 1993 and will be circulated to regular attenders of the meetings. Any person who is interested and would like to receive a copy of the programme should contact Mr A V Smith – tel.: 0663-744499.

### **Southern Group**

The Southern Group held the first of the winter 92/93 season at Briddlesford Copse, Isle of Wight. A rewarding day started with a short journey on a steam train from Smallbrook Junction to Havenstreet. It was great fun, bringing back old memories to the four of us who had travelled over from the mainland. At Havenstreet we were met by Mrs Lorna Snow, our leader for the day and two non-members. The day was spent recording part of Briddlesford Copse where 63 species were recorded including three county records: *Pohlia lutescens*, *Zygodon baumgartneri* and *Hypnum mammillatum* c. fr. Also found were the first record of *Orthotrichum tenellum* since H.H. Knight found it at the Landslip in 1910 and the lichen *Lobaria pulmonaria* in its fourth extant location on the island.

---

## **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, 1993, Brittany, 31 March - 7 April.**

Local Secretary: Dr Jeff Bates, Department of Biology, Imperial College at Silwood Park, Ascot, Berkshire, SL5 7PY. Tel.: 0334-294228, home 0344-884500.

The meeting will be based at Douarnenez, not

Quimper as previously advertised. The headquarters hotel is Hôtel Le Bretagne\*\*, 23 rue Dugay-Trouin, 29100 Douarnenez, Finistère, France, tel. 98 92 30 44. The price of a room per night is about 188 FF (with W.C. and douche) or 204 FF (with W.C. and bath) whether occupied by one person or a couple. Breakfast is provided at 23 FF per person per day but evening meals are not available in the hotel. The patron speaks English if you wish to telephone or write but he may not be available during the day.

Following a reconnaissance visit in October 1992 an exciting programme has been organised. Most of the excursions will be in the département of Finistère and will include dunes, coastal cliffs, Atlantic beech-oak woodlands, heath, rocky hilltops and a bog with the rare *Sphagnum pylaesii*. On Sunday 4 April there will be a boat trip to the schistose Island of Groix where we should find *Riccia ciliifera* and a range of other Mediterranean taxa. Please contact the local secretary for a detailed programme, accommodation list and registration form.

Members should note that the BBS will be able to accept no liability for any injury, accident or loss on this trip so they are strongly advised to take out private holiday insurance. They should also read the BBS Safety Code in *Bulletin 43*.

### **SUMMER FIELD MEETING, 1993, Dumfries and Galloway, 29 July - 3 August.**

Local Secretary: Alastair Rowan, 1 Robertson Avenue, Dumfries, DG1 4EY. Tel.: 0387-63051.

Headquarters: Urr Valley Country House Hotel, Castle Douglas.

This year's summer meeting will be based on Castle Douglas. The town is centrally situated for a good variety of terrain, climatically mild for the most part. The geology is

predominantly Ordovician and Silurian, giving a wide range of habitats. In the east of the region the hills of Annandale above Moffat provide high elevation grassland and sandstone ravines. The tributary valleys of Nithsdale and Glenken hold much bryological interest, particularly in the broad-leaved woodlands. The coastal woodlands of the Cree estuary have their own special features.

Bog habitats are also varied. While members may have heard of the Silver Flowe NNR (visited by the BBS/IAB *Sphagnum* Symposium in July 1991), the low level mosses of the Nith estuary, notably Kirkconnel Flowe NNR, are less well known. We will also have a look at some of the lead spoil heaps in the Leadhills-Wanlock area to see what is special in these distinctive habitats.

Castle Douglas has a good range of accommodation, from AA two-star through smaller establishments to private house B. & B. There is also a convenient caravan and camp site. Members are asked to make their own arrangements for accommodation but the local secretary will send a list on request. Early booking is advised as the number of single rooms is limited in most establishments. Travel to Castle Douglas by car is straightforward. The nearest railway station is Dumfries. Let the local secretary know if you intend coming by train so a lift can be arranged.

#### **AGM AND SYMPOSIUM MEETING, 1993, Ripon, 17 - 19 September.**

Local Secretary: Mike Longman, 8 St Quentin Rise, Bradway, Sheffield, S17 4PR. Tel. 0742- 368010.

A meeting with a special theme, the 100th anniversary of the death of Richard Spruce, the famous nineteenth century hepaticologist. Spruce was an extremely active bryologist in the UK before starting his collecting and

studies in South America, for which he is now mostly remembered.

The meeting is to be held in his native Yorkshire, close enough to York for members to travel on to another anniversary meeting in the city if they wish. This latter meeting is being organised by the Linnean Society on 20-22 September; see under 'Other Bryological Meetings, 1993', page 24, for further details.

All facilities in Ripon will be provided by the College of Ripon and York St John. The cost is likely to be about £38 per day full board.

---

### **LOCAL MEETINGS PROGRAMME, 1993**

#### **CAMBRIDGE GROUP**

Interested members should contact Harold Whitehouse, Tel. 0223-333900 or 0223-352417.

#### **LEICESTERSHIRE BRYOLOGICAL SURVEY**

A regular season of meetings is held by the survey, which is mapping the county's bryophyte flora. Contact: Dennis Ballard, 84 Leicester Road, Groby, Leicester, LE6 0DN.

#### **NORTH WEST GROUP/NORTH WESTERN NATURALISTS' UNION**

Saturday March 13th: ALDERLEY PARK. Mr E.W. McCann. 11.00 a.m. **No Late-comers. Booking necessary.** Lay-by 0.5km past Alderley Mill on A34, SJ 843758

Saturday April 3rd: CLOUGH WOOD. Dr M.E. Newton. 11.30 a.m. Car Park N.W. of Matlock, SK 258619

Saturday May 8th: WHITE COPPICE. Mr M.M. Gosling. 11.00 a.m. Cricket Pitch nr. Chorley. From M61 Jct 8 -

Rt. off A674 and past Heapey, SD 619191

Saturday June 19th: VALE ROYAL LOCKS. Mr W. Hay. 11.00 a.m. Hartford Bridge (west side), south side of Northwich by-pass, SJ 647713

Saturday July 24th: DEAN WOOD. Mr N. Bamford. 11.00 a.m. Gathust Bridge SW of Shevington, NNW of Wigan, SE 541072

Saturday August 21st: WILD MOOR CLOUGH. Mr A.V. Smith. 11.00 a.m. Car Park off Goyt Valley Road, SK 024752

Saturday September 25th: DEEP DALE. Prof. B.W. Fox. 11.00 a.m. Car Park nr. Taddington Dale, SK 167705

Saturday October 16th: RIVER HODDER. Dr M.E. Newton. 11.30 a.m. SW of Clitheroe, SD 697412

Saturday November 20th: WINNATS PASS. Mr A.V. Smith. 11.00 a.m. Roadside nr. slip road, SK 145808

Saturday December 4th: MOORE NATURE RESERVE. Mr J. Holness 11.00 a.m. Moore Lane End, SJ 578854

BRING FOOD AND DRINK AS REQUIRED. **DO CHECK** WITH LEADER OR SECTION SECRETARY BEFOREHAND.

A.V. SMITH: 0663-744499 (BBS).

E.W. McCANN: 061-962 1226 (NWNNU)

### **SOUTH EAST GROUP**

For further details contact Roy Hurr, 6 The Woodlands, Chelsfield, Orpington, Kent BR6 6HL. Tel. 0689-852966.

### **SOUTHERN GROUP**

Covering Hampshire, Berkshire, Sussex, Surrey and south London. Regional secretary: Howard Matcham, 21 Temple Bar, Strettington, Chichester, PO18 0LB.

Sunday 14 March 1993. Harewood Forest,

near Andover, Hants. Meet at 10.30 a.m. Park at a side road south of the A303 at Balls Cottages. Grid ref. SU 396442. Leader: Alan Crundwell.

---

## **OTHER BRYOLOGICAL MEETINGS, 1993**

March 26-28, 1993: INTRODUCTION TO MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. Details from the Warden.

April 14-21, 1993: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Orielson Field Centre, Pembroke, Dyfed, SA71 5EZ. Details from the Warden, Dr R.G. Crump.

April 23-25, 1993: MANX MOSSES. Tutor: Dr Martha Newton. This course offers an opportunity in Spring to see a wide range of the rich variety of species occurring on the Isle of Man. Particular emphasis will be placed on learning to identify them in the field, as well as on discovering what they tell us about the habitats in which they grow. Details from the Director of Continuing Education, University of Liverpool, P.O. Box 147, Liverpool, L69 3BX (please enclose a stamped, addressed envelope).

April 23-26, 1993: BRYOPHYTES. A course particularly suitable for beginners based near Dunkeld and led by our member, Brian Brookes, who has run these courses for many years. Details from the Warden, Mr B.S. Brookes, Highland Field Studies, Borelick, Trochry, Dunkeld, Perthshire, PH8 0BX (sae appreciated). Tel: 0350- 723222.

- May 21-23, 1993: SPHAGNUM WEEKEND. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. Details from the Warden.
- May 27-30, 1993: BEGINNING MOSSES. Tutor: Dr June Chatfield, The Leonard Wills Field Centre, Nettlecombe Court, Williton, Taunton, Somerset, TA4 4HT (Tel.: 0984-40320). An introductory course on mosses in the Brendon Hills of Somerset which offer a good variety of habitats and species. Course fee residential £116.00. Details from, and bookings to, the Warden.
- June 16-21, 1993: ANNUAL MEETING AND EXCURSION OF THE NORDIC BRYOLOGICAL SOCIETY.** This is on the island of Gotland, Sweden where the bedrock is Silurian and consists mainly of different types of limestones and cementstones. The more important habitats are 1) alvars, which include smooth and ± flat rocks, partly with karst erosion, partly with a thin soil layer and sometimes with water-filled depressions or sparse or dense shrub cover, 2) escarpments along the coast and inland, formed of various rocks, dry or wet, and 3) wetlands, especially spring-influenced calcareous fens. The planned four days in the field will allow participants to acquaint themselves with many bryophytes occurring on calcareous ground, many of them rare or very rare in other parts of Fennoscandia. For a circular please write to Lars Hedenäs, Naturhistoriska Riksmuseet, Kryptogambotani, Box 50007, S-104 05 Stockholm, Sweden, as soon as possible.
- July 31 - August 7, 1993: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Kindrogan Field Centre, Enochdu, Blairgowrie, Perthshire, PH10 7PG. Details from the Warden, Dr A. Lavery.
- August 20-27, 1993. MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Preston Montford Field Centre, Montford Bridge, Shrewsbury, SY4 1DX. Details from the Warden, Mr J.A. Bayley.
- August 21-28, 1993: BRYOPHYTES. A course particularly suitable for beginners based near Dunkeld and led by our member, Brian Brookes, who has run these courses for many years. Details from the Warden, Mr B.S. Brookes, Highland Field Studies, Borelick, Trochry, Dunkeld, Perthshire, PH8 0BX (sae appreciated). Tel: 0350-723222.
- August 27 - September 3, 1993. MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Malham Tarn Field Centre, Settle, North Yorkshire, BD24 9PU. Details from the Warden, Mr K. Iball.
- August 28 - September 3, 1993. XV INTERNATIONAL BOTANICAL CONGRESS, TOKYO.**
- The second circular advertizing the Congress includes details of the proposed programme of papers. In addition to many sessions of general interest to bryologists, four are to be devoted entirely to bryophytes:
- Systematics and Evolution of Bryophytes* (organized by T. Koponen, J.J. Engel, Z. Iwatsuki)

*Experimental Biology of Bryophytes: Phylogenetic Aspects*  
(organized by M. Bopp, J. Shaw, K. Nehira)  
*Reproductive Biology of Bryophytes*  
(organized by R.E. Longton, L. Söderström, H. Deguchi)  
*Recent Results on the Chemistry of Bryophytes* (organized by Y. Asakawa, R. Mues)

A call for papers and posters has been made, and two copies of the abstract should be submitted no later than 10 April, 1993, on official forms. These, together with copies of the second circular, are available on request from Dr R.E. Longton, Department of Botany, University of Reading, Whiteknights, P.O. Box 221, Reading, RG6 2AS, or direct from Dr Z. Iwatsuki, Secretary XV IBC, Botanical Gardens, University of Tokyo, 3-7-1 Hakusan, Bunkyo-ku, Tokyo 112, Japan.

#### DEADLINES

Advance payment of registration fee  
10 April 1993  
Submission of abstracts  
10 April 1993  
Stating preference for excursions  
30 November 1992  
Notice of society meetings  
30 November 1992  
Booking congress excursions  
30 June 1993

The third circular will be circulated only to those who have submitted pre-registration forms. If you have not yet done this, and wish to attend, please contact, as soon as possible, the Registration Secretariat, XV International Botanical Congress, c/o International Communications Inc. (ICS), Kasho Building 2F, 2-14-9 Nihombashi, Chuo-ku, Tokyo 103, Japan.

September 11-12, 1993. Langstone and Chichester Harbours. Leaders: Dr F. Rose, Mr B.A. Gale and local wardens. A special meeting of the BSBI which BBS members are very welcome to attend. Visits to normally inaccessible islands (such as Binnesses and Pilsey) and Farlington Marshes NNR. Pilsey has an exquisite full gamut of marine habitats – including perhaps the finest strand-line in the UK. The Langstone islands (an RSPB non-public reserve) have not been visited by specialist botanists for forty years. The islands of Langstone Harbour will be explored by boat on the Saturday morning and afternoon (landing parties using a dinghy from the launch and paddling ashore); Farlington Marshes will be visited on Saturday evening; and Pilsey Island (accessible, with MOD permit, by paddling at low tide) will be the base for Sunday's activities. The areas are rich in lichens and maritime bryophytes, and this meeting will be open to BLS and BBS members. The whole area is of major importance for birds, and the RSPB warden will be present. For the Saturday, there will be a charge of £10 per person to cover the cost of the boats and the coxswain, and numbers will be limited (by boat capacity) to 25. Please book immediately (enclosing a cheque for £10 payable to Portsmouth Sailing Centre) with Mr B.A. Gale, 6 Roker Way, Fair Oak, Eastleigh, Hants, SO5 7LD.

#### September 20-22, 1993. RICHARD SPRUCE CONFERENCE, YORK.

As indicated in the previous *Bulletin* (60:15), The Linnean Society of London will be hosting a Commemorative Conference on Richard Spruce (1817-1893), botanist and explorer, on the above dates at the University of York. The dates and

venue complement those of the BBS AGM and Symposium (17-19 September, see this *Bulletin* page 21) and it is hoped that BBS members will take advantage of this to attend the Conference. Bryology figures largely in the lecture and exhibition programme, which will include lectures by Dr Marshall Crosby (Missouri Botanical Garden) and Dr Raymond Stotler (Southern Illinois University) on Spruce's contribution to the study of mosses and liverworts respectively. A varied and interesting programme has been arranged, including a public lecture by Prof. G.T. Prance (Kew) and a reception at York Museum, a Remembrance service at Terrington where Spruce is buried, visits to Spruce's home and Castle Howard, and a conference dinner. Accommodation and other meals have been arranged at the University of York for the period 19-22 September. Early registration is advised. The normal registration fee is £30.00, but for BBS members this will be £20.00; the student fee is £10.00. Those wishing to participate (including presentation of paper, poster or exhibit) should apply for a registration form as soon as possible by contacting:

*Prof. M.R.D. Seaward, Department of Environmental Science, University of Bradford, Bradford BD7 1DP (Tel.: 0274-384212; FAX: 0274-384231).*

---

## RECORDING MATTERS 5

### Regional Recorders

A full list of BBS recorders for vice-counties in Britain and Ireland appeared in this column, *Bulletin* 60. The following new recorders have since been appointed:

**17:** Mr P.G. Adams, 5 Elm Cottages, Byttom Hill, Mickleham, Dorking, Surrey, RH5 6EL

**33:** Mr P. Martin, The Archway, The Green, Frampton-on-Severn, Gloucestershire, GL2 7DY

Martin Corley has relinquished v.-c. 33 (see above) but remains recorder for the Western Isles region (v.-c.s 101-104,110). Two addresses were inadvertently given for Nick Hodgetts. The correct details are:

**31,76,86-88,99:** Mr N.G. Hodgetts, Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough, PE1 1JY

Recorders are still needed for 5, 39, 56, 76, 68, 71-75, 77, 78, 85, 90-95, 111, 112 and most vice-counties in the Republic of Ireland.

### Record Cards

A second batch of the new-style record cards (National, RP22; S.E. England, RP23) with slight improvements has now been produced. These are available from the Recording Secretary (address below) or from Chris Preston at BRC. Although many cards have been given out, the number of completed cards returned to the Recording Secretary for the continuing mapping scheme has been disappointingly small, and from only a handful of vice-counties. It is suggested that Regional Recorders return completed cards at the end of each year or at one of the Society's meetings. Organisers of major BBS field meetings and regional group meetings are requested to make sure that completed cards are sent in. I have received surprisingly few cards from recent meetings – but it is never too late! Remember to keep copies of the cards for your own and future recorders' archives.

### Epiphyte Recording

About thirty Regional Recorders and other active field bryologists have been invited to participate in a new recording venture in part

of southern Britain. This is a pilot scheme, approved by Council, to explore the distributions of epiphytic bryophytes in selected 10-km squares stretching in a belt from Pembroke/N. Devon to East Anglia. The scheme is aimed particularly at documenting the spread of epiphytes into areas once affected by sulphur dioxide pollution. To improve the rigour of recording only three tetrads in each 10-km square are being sampled. Also, data on tree hosts, position on tree, frequency (number of trees occupied) and fertility are being recorded using a special recording card. The pilot scheme is running from 1 September 1992 until 31 May 1993 so that a 'snapshot' of the current situation is obtained. Participants are requested to send tetrad cards to the Recording Secretary as soon as possible after completion. Early returns show that the simple methodology works adequately, some interesting bryophytes are turning up in unexpected places and the recording is an enjoyable and rewarding exercise. The project may be extended to a wider area if the pilot scheme is successful.

#### **Leicestershire Bryological Survey**

Our Regional Recorder, Dennis Ballard, has kindly written the following account of recent bryological exploration in vice-county 55. Dennis organises a busy programme of meetings during the winter in Leicestershire and also produces a bryological newsletter summarising progress.

The *Leicestershire Museums, Art Galleries and Records* service and its predecessors, and the associated *Literary and Philosophical Society (Natural History section)* have been the main-spring in the production of the county's floras and continue to give support.

The first account of the bryophytes was by Dr R. Pultney in *Nichol's 1795-1815*. Bryophytes were included in the floras of 1886 and 1909, and in F.A. Sowter's cryptogamic flora of 1941. Apart from various lists of records in the *Literary and Philosophical Society's Transactions*, there

has been no comprehensive flora since 1941.

Vice-county 55 has been known traditionally as *Leicestershire & Rutland* and the two components have usually produced separate floras. In 1990 Dr P.E. Jackson published his Rutland bryophyte flora but in 1983 he was already contacting local botanists to continue with the Leicestershire section of v.-c. 55 on the 2x2 km grid that he had used in Rutland. It was in 1984 that I became involved in the survey. In 1988 the most recent vascular plant flora for Leicestershire was published and gave further impetus to the production of a cryptogamic flora. Work proceeds in this direction with different groups working on lichens, fungi and bryophytes. Only a few people are involved in the bryophyte project.

Approximately 300 mosses and 60 liverworts have been recorded in v.-c. 55. In the old county of Leicestershire there are 617 tetrads wholly or partly within the area. Earlier workers did not record the commoner species systematically and the aim of the present group is to rectify this omission. New county records are being made, perhaps because new areas are being looked at. The extent of losses through habitat destruction is not yet known but there have been losses in previously recorded sites.

The museum service is a great help in obtaining access permission to normally inaccessible sites for our regular Autumn/Winter field visits. It may be a long time before we can produce a flora but the foundations are being laid.

D.W. Ballard, 84 Leicester Road, Groby, Leicester, LE6 0DN

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

## COUNCIL NEWSLETTER NUMBER 9

Events and achievements of recent months signify consolidation of previous effort, but also considerable innovation. Before telling you about them in detail, however, I am glad to tell you that it was with evident pleasure that members at the A.G.M. elected Dr Michael Proctor, a former President, to Honorary Membership. Not only is he a leading international authority on bryophyte photosynthesis and water-relations, but he has also encouraged many young bryologists undertaking Ph.D. work, introducing many more people to bryology through field course, formerly at Malham Tarn and latterly at Slapton Ley, and his photographs are, of course, legendary.

There is sad news, too, for I must report the deaths of no fewer than six B.B.S. members, Dr Alison Furbank (née Christie), Dr Sinske Hattori, Miss Phyllis Henley, Dr Eustace Jones, Dr Geneva Sayre, who relinquished membership only in recent years, and Dr T.D.V. Swinscow. All were highly respected. Dr Jones had been a mainstay of the Society for 59 years, and both he and Dr Hattori were Honorary Members.

### **Journal of Bryology**

Having approached six firms, two of which submitted tenders, Council has agreed a contract with W.S. Maney & Son Ltd., of Leeds, to publish *J. Bryol.* from volume 17 part 3 onwards. The transition from our present publisher to the new one is expected to be smooth, allowing completion of the current volume without a change of format. Thereafter, our new editor, with Council's support, envisages a number of alterations, which are intended to enhance the *Journal's* reputation as a major outlet for bryological papers, and also to update its image.

### **Cumulative Index to B.B.S. Journals**

At the instigation of several members,

Council has agreed to the publication of a cumulative index drawn up by Dr P.E. Stanley. To be printed by our new publisher in the format of *J. Bryol.*, it is fitting that it should come at the time of these inevitable changes, although it also covers the predecessors of *J. Bryol.* and the *Bulletin*.

### **Travelling Exhibition**

After five years of display around the country, this exhibit will shortly be returned to the Society. It has served its purpose well, having been in great demand by various museums, but Council recognizes in it some further potential for promoting an interest in bryophytes. Several ideas are being examined, and any you may have would be very welcome.

### **Bryophyte Atlas and Recording**

With the appearance of volume 2, containing maps for all mosses except the Diplolepideae, ecological survey work and phytogeography have received a significant boost. This is being capitalized on, not only by the recent availability of two types of mapping card on which to compile additional data, but also by the launch in parts of South Wales and southern England of a monitoring scheme to assess the feasibility of a rapid resurvey of epiphytic bryophytes on a larger scale, to which all members will be invited to contribute.

### **English Names for Bryophytes**

Council has responded to persistent demands, particularly by conservationists, for the recognition of English names for bryophytes by setting up a small committee, convened by Dr S.R. Edwards, to compile a list of preferred names. The results are intended to enable the Society to advise legislators, and others, who wish to use English names rather than scientific ones, and yet to do so without introducing ambiguity.

### **Centenary in 1996**

The B.B.S., which lays claim to the oldest bryological society in the world, will celebrate

the centenary in 1996 of its formation as the Moss Exchange Club. Ways of marking the occasion are beginning to be discussed, and now is the time to put forward whatever suggestions you would like Council to consider. Ideas to date include the possibility of some form of international gathering. At one and the same time, it would demonstrate the vast development of the Society over the years, for no meetings at all were held at the outset, and also expand on one of its current strengths – a well-supported programme of meetings.

While looking back to the Society's origins, it is vital to plan, also, for the future. In doing so, Council welcomes dialogue with every member of the Society and is keen to hear your views.

M.E. NEWTON

---

### **BBS MOSS POSTCARDS, LAST REMINDER**

Members are invited to submit mossy (including liverworts and hornworts) pictures, for the Society to use to produce our own postcards. For full information, see *Bulletin* 59 (February 1992), page 29.

The response from members over the last year has literally been a hundred times greater than it was for the previous year, but further submissions are still very much requested. Remember, the CLOSING DATE is still the SPRING MEETING 1993. This is from 31 March to 7 April, in Brittany, and I shall unfortunately not be there, so please make sure that any submissions are sent to me by then, at the address below.

*Sean Edwards, Manchester Museum,  
Manchester University, Oxford Road,  
Manchester M13 9PL*

---

### **MOSS GARDENS**

A small number of British moss gardens have come to my attention, mostly by chance. These vary from parts of gardens open to the public, through small intended moss gardens owned privately, to gardens where the battle against moss has been lost and the gardener has decided to cooperate with the inevitable.

I should like to establish a list of such gardens, partly from the point of view of the BBS, and partly because interested members might like to contact each other and share problems, solutions, advice, and even cultures of successful moss species.

Please contact me at the address below, even if you think the garden is so well known that I am bound to know about it already, or even if you think it is so small that I wouldn't be interested!

*Sean Edwards, Manchester Museum,  
Manchester University, Oxford Road,  
Manchester M13 9PL*

---

### **EASTERN ENGLAND BRYOPHYTE MAPPING PROJECT UPDATE**

Mapping is now almost complete in Beds., Hunts. and Essex, and is well under way in Norfolk and Suffolk. English Nature has generously provided the BBS with a grant to purchase a complete set of the new Pathfinder 1:25,000 maps of the area to support the project. Any competent bryologists interested in joining the team of recorders would be more than welcome, especially if they can assist in the daunting task of covering Norfolk (see *Bulletin* 55:14 for an outline of the project).

---

## B.B.S. LIBRARY SALES AND SERVICE 1993

### 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 off-prints of individual papers. A catalogue of the books and journals is available price £1.00.

(b) Transparency collection, list available (s.a.e.). 630 slides in the collection. Loan charge (to cover breakage of mounts) 50p plus return postage. Only 50 slides may be borrowed at a time to minimise possible loss or damage.

(c) Microscope stage-micrometer slide for calibration of eyepiece graticules. 10µm divisions. Loan deposit £15.00.

### 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	(£3.00), parts 2-3 out of print
Vols.3 & 4	parts 1-5	(£2.40 each) £12.00 per volume
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 1-4	(£8.00 each) £32.00 per volume
Vol. 11	parts 1-4	(£10.00 each) £40.00 per volume
Vol. 12	parts 1-4	(£11.50 each) £46.00 per volume
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 1-2	(£38.00 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., Census Catalogue of British Mosses, 2nd edition, 1926	(20p)
Sherrin, W.R., Census Catalogue of British Sphagna, 1946	(20p)
Warburg, E.F., Census Catalogue of British Mosses, 3rd edition, 1963	(20p)
Paton, J.A., Census Catalogue of British Hepatics, 4th edition, 1966	(20p)
Corley M.F.V. & M.O. Hill, Distribution of Bryophytes in the British Isles: a census catalogue of their occurrence in vice-counties, 1981	
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)
 BBS Tie, claret with single BBS logo	 (£4.95)
Swift x20 handlens and leather case	(£11.70)
Idealtek no. 3 stainless steel forceps	£5.50)

\*\*\*\*\*  
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.*

\*\*\*\*\*

## MOSSES IN ENGLISH LITERATURE

### Supplement One

This *Supplement* is the first part of an occasional column in the *Bulletin*. It is hoped to maintain an interest in the way bryophytes are perceived by the general public, and supplements will continue as members send in quotations of particular interest. The criteria are the same as for the BBS *Special Volume No.4* (1992).

The first of the two entries here is unusual in that the moss is named, and comes closest to Gash's (1983) presumed mock erudition concerning *Sphagnum*. But it is no doubt part of a wider genre in which Latin names are thrown surprisingly into everyday conversation, and which is probably increasing with the widening general interest in green issues.

The second entry remedies a peculiar oversight in the original work; perhaps the association of moss with "soft underfoot" is so obvious that it was overlooked; it certainly ranks with beds, nests, pillows, etc.

Domum, Dulcie. Bad Housekeeping. *The Guardian*, 8 February 1992. [BJO'S].

**Gertrude was seated on a mat of *Grimmia pulvinata* gazing thoughtfully out across glittering Rough Dike reservoir.**

**"Hello, darling," she murmured vaguely.**

**"Ey up, tha bonny cossup, here's a nosegay for 'ee," cried Fanny.**

In the same column, 22 February 1992, occurs: **"Allow me to introduce myself. My name is Melvyn Potter, and I am an artist in oils, chalks, and watercolours. I was sketching some mosses when your laughter attracted my attention ..."**. The name Potter is surely coincidental with Beatrix Potter, whose beautiful watercolours of mosses made a hundred years earlier are less well-known than her fungus paintings.



**Fig. 1.** The hoary round-tufted Tile Bryum with Hidden Heads (*Grimmia pulvinata*). From Dillenius, (1741) *Historia Muscorum*: L 65 ABC

Mephisto (1991) *Mephisto* (Shoe Catalogue: Marc Titeux - 08/91 - printed in Germany).

**Latex mousse midsole for moss-soft walking.**

In the hard-sell for soft shoes, moss is several times used to conjure up the ultimate softness for feet; moss presumably has the right image for

Ecologically Correct walking. This brings to fifteen the associations found with "soft underfoot". There are nine with foot or feet: Hood (*The Haunted House*), Gorky (1920), Keats (1818), Kenyon (*Tacita*, see: *The Bryologist* 76:332 (1973)), Kipling (*The Spring Running*), Thomas (1922), Townsend (*A Georgia Volunteer*), and possibly Browning (*St. Martin's Summer*). To these can be added two for tread: Clare (*Careless Rambles*), Cowper (*The Shrubbery*), two for walk: Hardy (*Far from the Madding Crowd*) and even Wodehouse (*Blandings Castle*), and two more for step: De la Mare (*The Dark Chateau*), and Shelley (*Alastor*).

References refer to entries in the *Special Volume No.4*. Thanks are given to Brian J. O'Shea for the Dulcie Domum quotations. Please send any quotations to:

Sean Edwards, Manchester Museum, Manchester University, Oxford Road, Manchester M13 9PL.

---

### COPY DEADLINE

Deadlines for receiving copy for the July and February *Bulletins* are 15 May and 15 December, respectively. Articles should be typed and those of more than one page in length should, in addition, be submitted on disk, as two files: a) a word processed file (AmiPro, or Wordstar, WordPerfect, etc.), and b) an ASCII file without underlining, boldface or italics. Disks will be returned.

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

## MOSSES IN THE MEDIA

The year 1992 was probably an above-average one for mosses in the media, with even the BBS getting a mention in *The Guardian* in November. As someone who is constantly exposed to the coverage of all the national press, I can't resist the temptation to summarise the coverage bryophytes have received.

"Gather no moss or face a fine" (*Guardian*, 23 November) detailed the difficulties of the Derbyshire feather moss which has "forgotten how to reproduce" – poor thing! There is only one square metre of the plant left clinging to a rock in a waterfall in Derbyshire, the article tells us. The moss is one of 91 lower plants listed as a protected species by the Joint Nature Conservation Committee (JNCC).

Collection of the Derbyshire feather moss, or any one of the other 90 protected lower plant species could now attract a fine of £1,000 under the Wildlife and Countryside Act 1981, *The Guardian* continues. But "obscure societies like the BBS (mosses and liverworts, membership about 500)" have helped the JNCC decide which species need protection from collectors like themselves.

For those trying to guess, the Derbyshire feather moss is also known as *Thamnobryum angustifolium*, at least, so Nick Hodgetts of the JNCC – also quoted in the article – tells me. In fact, Environment Minister gave a complete list of all plants to be added to Schedule 8 – as the protected plants list is known – this year, in answer to a parliamentary question on 15 July (*Hansard*, columns 852-853).

Twenty four of the names are noticeably bryophytic, although I must confess I could only guess at latin names for a few. The bryophytes listed were: blunt leaved grimmia,

Lindenberg's leafy liverwort, alpine copper moss, Baltic bog moss, blue dew moss, blunt leaved bristle moss, bright green cave moss, cordate beard moss, Cornish path moss, Derbyshire feather moss (see above), dune thread moss, glaucous beard moss, green shield moss, hair silk moss, large yellow feather moss, multifruited river moss, millimetre (sic) moss, knothole moss, Nowell's limestone moss, rigid apple moss, round leaved feather moss, Schlicher's (sic) thread moss, triangular pygmy moss and Vaucher's feather moss.

Well, if like me, you don't know what the Minister is talking about, you better buckle down and learn these unfamiliar English names. As things stand, only our honourable friends in the House seem to know what plants we are not supposed to be collecting!

In June, *The Guardian* (the bryologist's paper, it would appear) noted "Bomb wrecks rare moss" (6 June). Apparently a practice bomb dropped by a US Air Force jet destroyed a "rare lichen moss" at Golspie SSSI, Sutherland. But the truth of the matter is that no mosses were involved – at least no rare ones.

According to the Scottish Natural Heritage area officer, Fraser Symonds, the bomb fell on lichen heath and a subsequent fire destroyed about an acre of poor *Calluna* vegetation on a raised beach. No species were exterminated but some of the best habitat in the area was lost.

The case is reminiscent of the sad affair of the *Scopelophila cataractae* colony destroyed in 1990 in Pwllheli, Gwynedd (*Daily Telegraph*, 14 April). Apparently (a necessary qualification in media stories about mosses, it seems) it happened when Abersoch Golf Club bulldozed an acre of old mine workings on which the moss was growing. A club spokesman said the contractor involved was using an out-of-date map and did not realise he was bulldozing a conservation area. The

club was fined £800 under the Wildlife and Countryside Act and ordered to pay costs of £750.

The moss was originally discovered at the site by BBS member Fred Rumsey. It is only recorded in three other sites in Britain – in Swansea, in Devon and in Cardiganshire.

PHILIP LIGHTOWLERS

---

## BBS TROPICAL BRYOLOGY GROUP – PROGRESS IN 1992

The main activities of the group continue to be related to the 1991 Malawi expedition, and good progress has been made in specimen identification and in preparing papers for publication. Both introductory papers (a general introduction and a checklist of Malawi bryophytes) are ready for publication, and the first taxonomic paper (probably on *Sphagnum*) is expected soon. Several of the more obvious groups, such as Polytrichaceae, Mniaceae, Thuidiaceae, Calymperaceae, *Campylopus*, *Andreaea* and *Leucoloma/Dicranoloma* are being extracted from collections and sent for refereeing. Already a large number of species new to Malawi have been identified, and several new to mainland Africa. (Of 16 *Campylopus* species so far identified, 9 are new to Malawi, 4 new to mainland Africa; one of the *Sphagnum* species is new to Africa; both Andreaeaceae (4 species) and Grimmiaceae are families new to Malawi. A large number of hepatics, mainly in the Lejeuneaceae, are new to Malawi.) A further workshop was held at Reading University during January, organised by Royce Longton, where common problems and progress were discussed, attempts were made to standardise locality names on collections, and all the collections not so far examined (those of the African-based expedition members) were checked through and given preliminary identifications. At the workshop we were

pleased to welcome Zac Magombo of the Cryptogamic Herbarium at Zomba, Malawi, who is currently working on an MSc in taxonomy at the Royal Botanic Garden at Edinburgh, as well as two non-expedition members (Robin Stevenson and Peter Martin).

As a by-product of the Malawi work, several documents have been produced, including English translations of Frahm's key to African *Campylopus* and Petit's key to African pleurocarps. Other documents have been Martin Wigginton's list of sub-Saharan liverworts, and a list of 'experts' for all the taxonomic groups known from Malawi, who have agreed to look at our collections. The latter has resulted in contacts being made with bryologists all over the world, and will, we hope, result in some of their expertise being transferred to BBS members. On the domestic front, 5 newsletters have now been published, as well as notes of the AGM. The list of literature for identifying tropical bryophytes has now been published in Tropical Bryology. A list of the mosses of Africa is now in preparation, based on literature records.

Following the death of Eustace Jones, the TBG has taken on the task of ensuring his 'work in progress' – a hepatic flora of West Africa – is made ready for publication. The manuscript is in typescript, which needs retyping into a word processor for final editing. Martin Wigginton is organising this (see appeal for typists below), and David Long will act as the botanical editor. Ten 'typists' have taken on about 20 pages each, which covers almost half the flora.

Following the success of the Malawi expedition, a further trip is now being considered. Following a suggestion from one of our Dutch members (Dries Touw), Madagascar is being considered as a destination. Although the island is supposedly well-known, quite casual collections have resulted in new taxa to the island, so it is

thought still relevant to visit the island whilst it still has a bryophyte flora to see. A joint Dutch/British trip is a possibility, and the TBG AGM agreed to pursue this for 1994.

Membership of the group is free: just write to Brian O'Shea at the address below.

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

---

## APPEAL FOR TYPISTS

We are currently trying to convert Eustace Jones' West African hepatic flora from typescript to word processor, as a preliminary to publication. There are already ten volunteers, but more would be welcome. However slow you are, if you have an IBM PC-compatible wordprocessor, your help would be appreciated. There are brief instructions on layout, standards, etc., available from Martin Wigginton (who is co-ordinating the project), at the address below.

*Martin Wigginton, Joint Nature Conservancy  
Council, Monkstone House, Peterborough,  
PE1 1UA*

---

## OXFORD UNIVERSITY HERBARIA (OXF and FHO)

Teaching and research in Plant Taxonomy at Oxford has recently been reviewed by a Panel chaired by the Director of the Royal Botanic Gardens, Kew. Acknowledging the increasing commitment to the plant sciences at Oxford, the Panel recommended that taxonomic research be developed through an integrated programme of restructuring. The first step in this reorganisation will be the securing of funds for the comprehensive refurbishment of the herbaria and associated laboratories. Changes are already being made but throughout these improvements there will be

no restriction on loans. However, inquiries should now be addressed to the Acting Curator, Dr David J. Mabberley.

One of the Panel's recommendations was that the Fielding Herbarium cease to accumulate new material and that the Forest Herbarium be the repository for new specimens. The Druce Herbarium will continue to be the repository for all British material and the Forest Herbarium will now be that for material from the rest of the world. The latter (FHO) will accordingly be known henceforth as the Daubeney Herbarium as it will no longer be merely the repository of forest plants. The name commemorates Charles Giles Bridle Daubeney, MA, MD, FRS (1795-1867), Professor of Botany from 1834, having been Professor of Chemistry from 1822. He did much to restore the teaching of botany at Oxford, reviving the Botanic Garden and introducing experimental techniques into the subject. He was instrumental in the University's acquisition of the Fielding Herbarium in 1853.

The disposition of the Herbaria is now as follows:

Fielding-Druce Herbarium (OXF): herbaria of Fielding, Sherard, Dillenius, Sibthorp, Morison, DuBois, Bobart, Druce, of which only the last is accepting new (British) material.

Daubeney Herbarium (FHO): world herbarium for all new non-British material.

C.J. Leaver F.R.S., Sibthorpiian Professor and Head of Department.

H.G. Dickinson, Sherardian Professor and Keeper of the Botanic Garden.

---

## THE DISTRIBUTION OF *LEUCOBRYUM* SPOROPHYTES IN THE BRITISH ISLES

by T.H. Blackstock

*Countryside Council for Wales, Penrhos Road, Bangor, Gwynedd, LL57 2LQ*

### Introduction

Sexual reproduction in *Leucobryum* is associated with a number of specialized features. The species are dioecious and in many cases exhibit a pronounced sexual dimorphism. In the two European representatives, *L. glaucum* and *L. juniperoideum*, well-grown female plants form large mounds or cushions, while males are often dwarf and epiphytic on female shoots. In fruiting populations, dwarf males are most commonly found among dense growths of rhizoids which arise from leaves of barren perichaetia. (Such female rhizoidal heads also develop in non-fruiting colonies where dwarf males are absent.) Larger males, associated with female plants, have also been reported in both species. A potent capacity for vegetative regeneration and spread via shoot and leaf fragmentation is often evident, as has been noted by Plitt (1909), Crum (1973) and others in *L. glaucum*.

In the British Isles, sporophytes of *L. glaucum* and *L. juniperoideum* may be locally frequent but it has long been known that they have a much more restricted distribution than gametophytic plants. An attempt is made here to draw together records of fruiting populations, for comparison with the distribution of each species mapped in Hill *et al.* (1992).

### Sources of Records

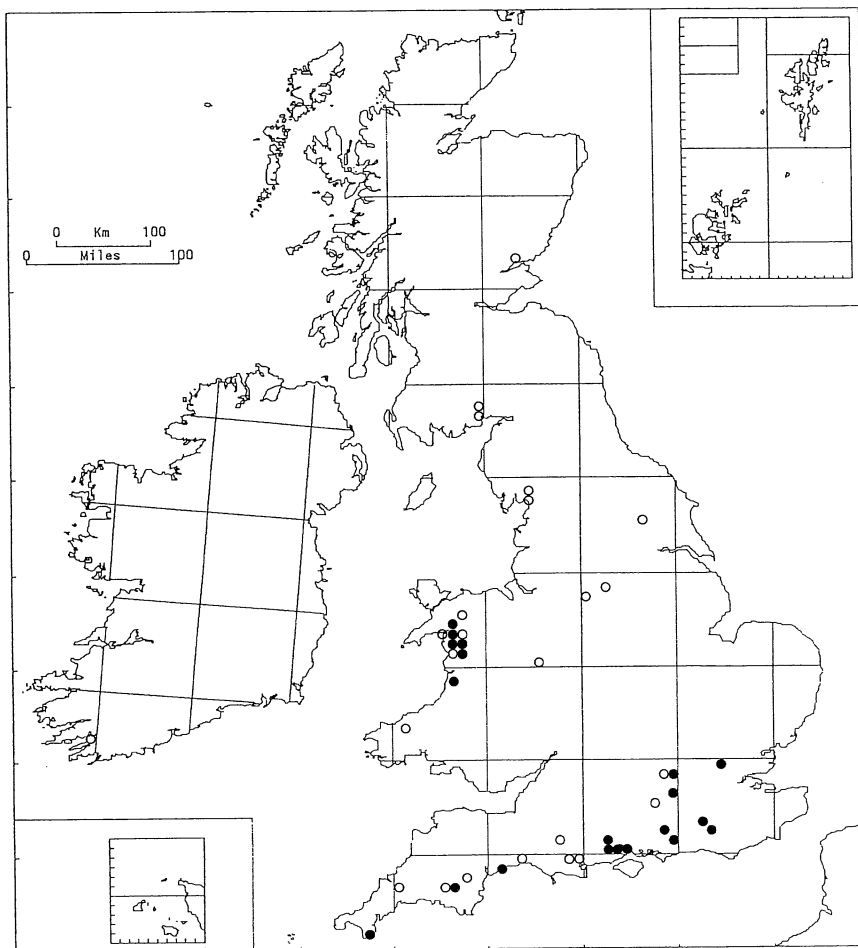
Records of sporophytes have been gleaned from a variety of sources, including herbaria, local floras, check-lists and other publications. Information has also been kindly supplied by a number of bryologists, and by the Biological Records Centre (BRC).

Fruiting plants are amply represented in national herbaria, and collections held in BBSUK, BM, DBN, E and NMW were examined. Many herbarium specimens had been collected before the distinction between *L. glaucum* and *L. juniperoideum* in Britain was described by Crundwell (1972). In *L. glaucum* the capsules are larger, strumose and more strongly curved and inclined than the small, sub-erect and only weakly strumose capsules of *L. juniperoideum*. There is, however, variation in capsule size and shape, especially within *L. glaucum* where at least some capsules in a gathering may be smaller, less curved or strumose than usual. Particular difficulties over species determination were occasionally encountered in samples with only a few sporophytes present. When identification could not clearly be resolved from the available sporophytes, a range of gametophyte characters, including leaf shape and mean leaf epidermal cell width (estimated using the procedure outlined in Corley & Hill, 1981), were also considered. For comparison, leaf cells were also measured in a number of specimens bearing distinctive sporophytes. Although almost all specimens could be assigned with reasonable confidence, it should be emphasised that both taxa are highly variable. Some narrow-leaved forms of *L. glaucum*, for instance, may have small leaf epidermal cells (mean width <30µm), while the estimated mean leaf cell width of plants bearing small *L. juniperoideum* sporophytes can exceptionally be up to c. 34µm.

### Distribution of Sporophyte Records

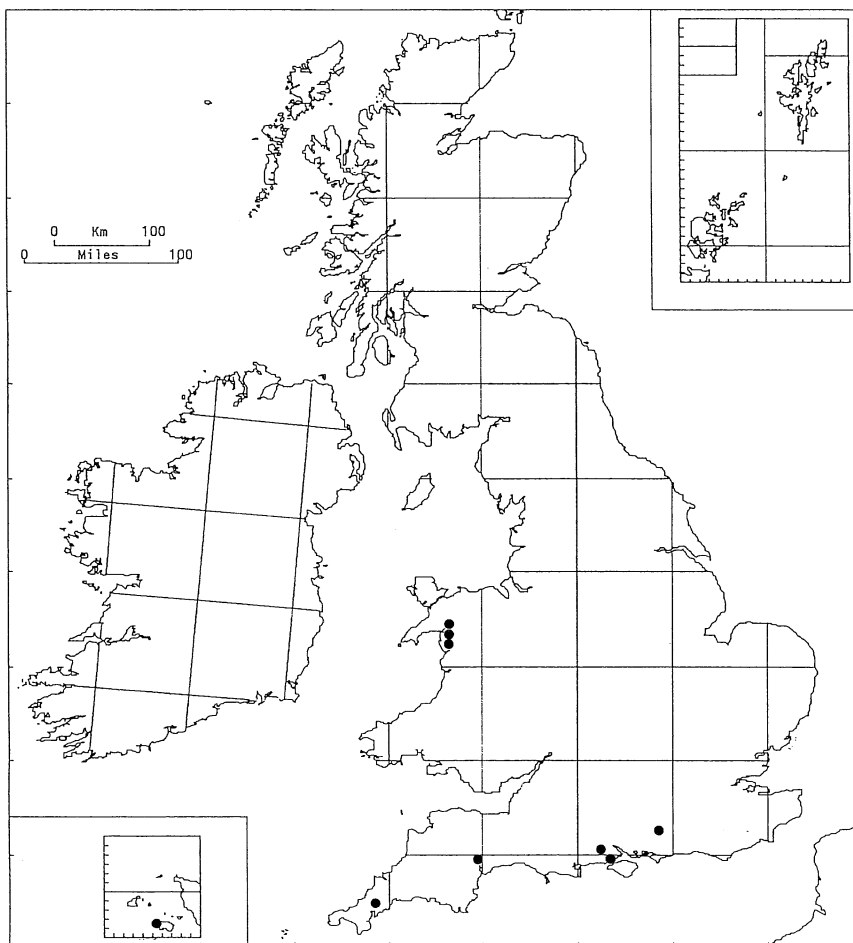
The 10-km square distribution of sporophyte records of *L. glaucum* and *L. juniperoideum* in the British Isles is shown in Figs 1 and 2. For *L. glaucum*, squares with only old records dating from the last century are distinguished from those where sporophytes have been observed more recently; in the case of *L. juniperoideum*, there are post-1900 records for each square in which sporophytes have been found. The localities traced for sporophytes of both species are given in an Appendix.

Fig. 1. The distribution of *Leucobryum glaucum* sporophytes in the British Isles. Dots represent post-1900 records; circles represent pre-1900 records.



Some records may have been overlooked, but the available information indicates that fruiting populations of *L. glaucum* and *L. juniperoideum* have been scarce and localized over the last one hundred and fifty years. There are very few records of *L. glaucum* sporophytes from northern Britain and Ireland, and modern records are confined to north-west Wales and scattered localities in the south of England. In contrast, gametophyte populations of *L. glaucum* are much more frequent and widely distributed, extending to the far north, mainly in woodlands, mires and damp heathlands. In favourable conditions, it is a locally abundant component of the ground vegetation, forming massive cushions which may be up to sixty years or more in age (Bates, 1989).

Fig. 2. The distribution of *Leucobryum juniperoideum* sporophytes in the British Isles. Dots represent post-1900 records.



The overall distribution of *L. juniperoideum* is less well-known, and most records are from wooded habitats. At two woodland localities in Merioneth, sporophyte frequency of both species was recently found to be restricted by the availability of male plants (Blackstock, 1987); in other non-fruiting populations of *L. glaucum* investigated in north Wales no males were observed.

The mainly southern distribution of fruiting *L. glaucum* in the British Isles is matched in Scandinavia where *Leucobryum* sporophytes are largely confined to southern and eastern districts. This has prompted suggestions that fertility may be restricted by climatic conditions (Persson, 1943; Størmer, 1969; Rasmussen, 1973). Furthermore, Bates (1989) found that the growth rate of *L. glaucum* in a Berkshire oakwood was strongly correlated with air temperature, and he considered that it may be relatively thermophilic. It is not known whether male plants are particularly warmth-demanding.

Asexual reproduction presumably predominates within most populations of *L. glaucum* in the British Isles. Nevertheless, at a number of localities, including the New Forest, Epping Forest and various woodlands in Merioneth, spore production has persisted over long periods, often extending back to the 19th century. It is possible that sporophytes are still produced in a number of localities from which only old records are known, but the lack of modern records from Scotland and various parts of England (early, unlocalized records from Oxfordshire, Gloucestershire and the Clova region are not shown in Fig. 1) is suggestive of a decline. A number of the old records are from peatland habitats, such as the 'mosses' round Morecambe Bay, some are from woodlands, while for others the habitat is unspecified.

Table 1. *Habitats at sites from which Leucobryum glaucum sporophytes have been recorded in the British Isles over different time periods.*

	Number of sites*		
	pre-1900	1900-1950	post-1950
Heath-Mire	14	3	4
Woodland	4	9	21
Habitat unknown	21	4	1

\* Records from different sites at the same general locality are treated separately.

Since 1950, records from north Wales and southern England are mostly from wooded localities (Table 1). Survival of males and the annual sporophyte generation may have been adversely affected by environmental degradation and land-use change, including loss and isolation of suitable habitat, but direct evidence is lacking. In Ireland, *L. glaucum* sporophytes seem only to have been recorded very locally in West Cork, by Miss Ellen Hutchins in the first part of the 19th century.

Sporophytes of *L. juniperoideum* are very rare in Britain and have a similar, but more restricted, present-day distribution to those of *L. glaucum*. It is notable that *L. glaucum* also produces sporophytes at each locality in which *L. juniperoideum* fruits in north Wales, as well as in the New Forest and Northpark Copse in the south of England.

### Summary

Records of sporophytes in populations of *Leucobryum glaucum* and *L. juniperoideum* in the British Isles are compiled and mapped. The sporophyte generation of both species is similarly rare and localized; recent records are confined to southern Britain. The production of *L. glaucum* sporophytes has persisted at some localities, but there appears to have been a slight overall decline since the 19th century, particularly from peatland habitats.

### Acknowledgments

I am very grateful to T. Blockeel, A.C. Crundwell, Dr M.O. Hill, Mrs J.A. Paton, Dr M.C.F. Proctor, R.G. Woods and others for supplying records and useful information. For loans of herbarium collections thanks are due to A.R. Perry (BBSUK, NMW), L.T. Ellis (BM), D.G. Long (E) and D.M. Synnott (DBN). C.D. Preston kindly provided records held in the Biological Records Centre and prepared dot maps which were adapted by Dr E.A. Howe.

### REFERENCES

- Adams, K.J. (1974).** Bryophytes. In: S.T. Jermyn (ed.), *Flora of Essex*, pp. 227-271. Essex Naturalists' Trust, Fingringhoe.
- Baker, J.G. (1906).** *The Flora of North Yorkshire*. London.
- Barnes, E.F. (1958).** *Flora of Devon*. Volume II, part 2. The mosses and liverworts (Bryophyta). Devonshire Association, Torquay.
- Bates, J.W. (1989).** Growth of *Leucobryum glaucum* cushions in a Berkshire oakwood. *J. Bryol.* **15**: 785-791.
- Blackstock, T.H. (1987).** The male gametophores of *Leucobryum glaucum* (Hedw.) Ångstr. and *L. juniperoideum* (Brid.) C. Muell. in two Welsh woodlands. *J. Bryol.* **14**: 535-541.
- Braithwaite, R. (1887).** *The British Moss Flora*. Volume 1. London.
- Corley, M.F.V. & Hill, M.O. (1981).** *Distribution of Bryophytes in the British Isles. A Census Catalogue of their Occurrence in Vice-counties*. British Bryological Society, Cardiff.
- Crum, H. (1973).** Mosses of the Great Lakes Forest. *Contr. Univ. Mich. Herb.* **10**: 1-404.
- Crundwell, A.C. (1972).** *Leucobryum juniperoideum* (Brid.) C. Müll. in Britain. *J. Bryol.* **7**: 1-5.
- Dalby, D.H. (1958).** Fruiting *Leucobryum glaucum*. *Trans. Br. bryol. Soc.* **3**:448.
- Hill, M.O., Preston, C.D. & Smith A.J.E.(eds) (1992).** *Atlas of the bryophytes of Britain and Ireland*. Volume 2. *Mosses (except Diplolepidae)*. Colchester.
- Hooper, S.S. (1952).** *Leucobryum glaucum* (Hedw.) Schp. fruiting in Windsor Park (v.c. 17). *Trans. Br. bryol. Soc.* **2**:86-87.
- Jones, E.W. (1991).** The changing bryophyte flora of Oxfordshire. *J. Bryol.* **16**:513-549.
- Knight, H.H. (1914).** List of mosses from Gloucestershire. *Proc. Cotteswold Fld Cl.* **18**: 257-291.
- Linton, W.R. (1903).** *The Flora of Derbyshire*. London.
- M'Andrew, J. (1890).** List of mosses [from Dumfriesshire and Kirkcudbrightshire]. *Trans. Dumfr. Gall. Nat. Hist. Soc.* **6**: 89-101.
- Moore, D. (1873).** The mosses of Ireland. *Proc. Roy. Irish Acad., 1 Series II*:1-146.
- Nicholson, W.E. (1908).** The mosses of Sussex. *Hastings E. Suss. Nat.* **1**:79-110.
- Paton, J.A. (1961).** A bryophyte flora of South Hants. *Trans. Br. bryol. Soc.* **4**:1-83.
- Persson, H. (1943).** Bryological notes. 1. Regarding the distribution and fertility of *Leucobryum glaucum* (Hedw.) Schimp. in Sweden. *Svensk Bot. Tidskr.* **37**: 161-168.

- Plitt, C.C. (1909).** Asexual reproduction of *Leucobryum glaucum*. *Bryologist* 12:79-81.
- Rasmussen, L. (1973).** *Leucobryum juniperoideum* (Brid.) C. Muell. og *Leucobryum glaucum* (Hedw.) Aongstr. i Danmark. *Lindbergia* 2:137-138.
- Smith, A.J.E. (1971).** The annual meeting 1970. *Trans. Br. bryol. Soc.* 6:385-387.
- Størmer, P. (1969).** Mosses with a western and southern distribution in Norway. Oslo-Bergen-Tromsø.
- Wilson, A. (1938).** *The Flora of Westmorland*. Arbroath.

## Appendix

Details of records traced for sporophytes of *Leucobryum glaucum* and *L. juniperoideum* in vice-counties of the British Isles. For each locality, the earliest and most recent records are given. An unlocalized record is only included if it is the earliest in a particular vice-county.

### *Leucobryum glaucum*

**West Cornwall (v.-c. 1).** Cornwall (unlocalized), J.S. Tozer pre-1900 (BM). Goonhilly Downs (10.71), E.W. Jones 1940 (J.A. Paton, *in litt.* 1990), H.J.B. Birks & J. Dransfield 1966 (BRC).

**East Cornwall (v.-c. 2).** Halgavor Moor (20.06), R.V. Tellam 1879 (BM).

**South Devon (v.-c. 3).** Devonshire (unlocalized), W.J. Hooker 1819 (E). Roborough Down (20.56), J.S. Tozer pre-1900 (BM). Hoo Meavy (20.56), J.S. Tozer pre-1900 (BM), E.M. Holmes pre-1900? (Barnes, 1958). Upper Yealm Valley (20.66), W. Watson post-1900 (Barnes, 1958). Haytor (20.77), E.M. Holmes pre-1900? (Barnes, 1958). Sidmouth (30.18), G.T. Harris 1912 (Barnes, 1958).

**Dorset (v.-c. 9).** Bog below Lambert's Castle (30.39), A. Lister 1876 (Braithwaite, 1887). Holwell (31.71?), H.H. Wood 1879 (BM). Bloxworth (30.89), O.P. Cambridge 1880 (E; BM). Morden Park (30.99), H.H. Wood 1879 (BM), O.P. Cambridge 1882 (BM).

**South Hampshire (v.-c. 11).** All records from the New Forest. Holmsley Station (41.20), H.N. Dixon 1889 (BBSUK; BM). Under beech, Wood Crates (41.20, 41.21), A.C. Crundwell, F. Rose & E.C. Wallace 1972 (NMW), B.J. Coppins & F. Rose 1973 (E). Under beech, Vinney Ridge Inclosure (41.20), J.A. Paton 1959 (Paton, 1961) and A.J.E. Smith 1959 (NMW). Beechwood, 2.5 miles south-west of Lyndhurst (41.20), 1957 (Dalby, 1958). Bog, Rhinefield (41.20), L.B.C. Trotter 1956 (NMW). In woodland and moorland, near the Rufus stone (41.21), frequently collected, C. Lyell 1813 (Braithwaite, 1887), A.C. Crundwell 1964 (herb. A.C.C.). Denny Wood (41.30), P.F. Hunt 1960 (herb. A.C.C.; BM). Denny Lodge Inclosure (41.30), P.F. Hunt 1960 (Paton, 1961). Stubbs Wood (41.30), E.C. Wallace 1976 (NMW). In open pine wood, Hartford Heath (41.30), C. Reid 1872 (BM). Spearbed Copse (41.40), J.A. Paton 1959 (Paton, 1961). Near Hythe (41.40), C.H. Binstead 1927 (BBSUK; NMW).

**North Hampshire (v.-c. 12).** Bramshill Park (41.75?), R.S. Hill 1861-9 (Braithwaite, 1887; E; BM).

**West Sussex (v.-c. 13).** Under chestnut, Northpark Copse (41.82), frequently collected, R.A. Boniface 1952 (BM) and E.C. Wallace 1952 (E), J.C. Gardiner 1970 (BM). North-facing chestnut coppice, Telegraph Hill (41.82), E.C. Wallace & A.C. Crundwell 1954 (herb. A.C.C.; NMW). Stedham Common (41.82), E.C. Wallace 1958 (NMW). Heathland near Duncton, Burton Park (41.91), E.C. Wallace 1957 (NMW). St Leonard's Forest (51.23?), E.C. Wallace 1954 (herb. A.C.C.; NMW), R.A. Boniface 1955 (BM) and J. Appleyard 1955 (NMW).

**East Sussex (v.-c. 14).** Ardingly (51.32?), J.? Woods pre-1900 (Braithwaite, 1887), W.E.

Nicholson post-1900? (Nicholson, 1908). Chailey North Common (51.32), probably W. Mitten pre-1900 (Nicholson, 1908). Chailey Common (51.32?), W. Mitten pre-1900 (Braithwaite, 1887; BM).

**Surrey (v.-c. 17).** Damp grass-heath, ride between Virginia Water and Windsor Park (41.96?), S.S. Hooper 1952 (Hooper, 1952).

**South Essex (v.-c. 18).** Several records from Epping Forest. Great Monk Wood (51.49), P. Thompson 1909-10 (Adams, 1974; BM). Jack's Hill (51.49), E. Saunders 1964 (Adams, 1974). Sporophytes numerous, south of Loughton Camp and the Green Ride (51.49), K.J. Adams 1974 (Adams, 1974) and E.C. Wallace 1974 (NMW). Under beech, near Baldwins Hill (51.49?), G.G. Geyman 1978 (NMW). Epping Forest (51.49?), J.C. Gardiner 1981 (BM).

**Oxfordshire (v.-c. 23).** Jones (1991) notes that J. Sibthorp recorded fruiting *L. glaucum* in *Flora Oxoniensis* (1794), but there appear to be no more recent records from Oxfordshire.

**Buckinghamshire (v.-c. 24).** Near Great Marlow (41.88?), T. Walker pre-1900 (Braithwaite, 1887). Woods about Beaconsfield (41.98?) and Dropmore (41.98), herb. Hooker pre-1900 (Braithwaite, 1887). Burnham Beeches (41.98), W.R. Sherrin 1906 (BBSUK; BM). Birch woodland, Egypt Woods, north of Burnham Beeches (41.98), T. Howse 1880 (Braithwaite, 1887; BM).

**Gloucestershire (v.-c.s 33 and 34).** Knight (1914) noted that *L. glaucum* sporophytes were reported from Gloucestershire by W. Wilson in *Bryologia Britannica* (1855), but he was unaware of any more recent records.

**Shropshire (v.-c. 40).** Shomere Moss, adjoining Bomere Pool (33.50?), E. Williams pre-1900 (BM).

**Pembrokeshire (v.-c. 45).** "Also in fruit at base of the Preselly Hills, Pembroke, as you ascend Voel Cwm Cerwyn from Eglwys Rw" (22.13?), J.S. Tozer pre-1900 (note below specimen of *L. glaucum* with sporophytes from Devon, ex herb. W. Wilson, BM).

**Cardiganshire (v.-c. 46).** Boggy meadow by the Afon Leri, above Talybont (22.68), P.W. Richards 1946 (NMW).

**Merioneth (v.-c. 48).** Harlech (23.53), D.A. Jones 1898 (BM) and E.C. Horrell 1898 (E). Barmouth (23.61), C.H. Binstead 1890 (E). Woodland, Nantcol ravine (23.62), S.P. Rowlands 1931 (NMW). Oak woodland, Coed Crafnant (23.62), frequently collected, H.H. Knight 1913 (NMW), T.H. Blackstock, D.P. Stevens & M.M. Yeo 1989 (field record). Woodland, near Talsarnau (23.63), H.H. Knight 1909 (NMW). Rocky woodland, Bryn Bwbach (23.63), J. A. Paton & A.C. Crundwell 1970 (herb. A.C.C.) and BBS 1970 (Smith, 1971). Llandecwyn (23.63), D.A. Jones & P.G.M. Rhodes 1910 (BM), D.A. Jones 1917 (BBSUK; E). Oak woodland, Ceunant Llennyrch (23.63), frequently collected, E.C. Horrell & D.A. Jones 1898 (BM; E; NMW), T.H. Blackstock, T. Herben, M.O. Hill & M.M. Yeo 1985 (field record). Oak woodland, Hafod Garegog (23.64), T.H. Blackstock 1981-3 (Blackstock, 1987). Oak woodland, Coed Cymerau (23.64), P.M. Benoit 1966 (N. Wales Flora notebook), T.H. Blackstock 1981-3 (Blackstock, 1987). Dolgellau (23.71?), R. Jackett 1920 (BM). Oak woodland, Coed Ganllwyd (23.72), W.R. Tetley 1920 (BBSUK), T. H. Blackstock 1982 (herb. T.H.B.). Cwm Prysor (23.73), D.A. Jones & E.C. Horrell 1898 (BM; E; NMW).

**Caernarvonshire (v.-c. 49).** Capel Curig (23.75), Mr Bose pre-1900 (ex herb. Braithwaite, BM).

**Derbyshire (v.-c. 57).** Combes Moss (43.07), A. Ley 1886 (Linton, 1903). Hathersgate (43.28), pre-1900? (Linton, 1903).

**West Lancashire (v.-c. 60).** Carnforth (34.47), J.M. Barnes pre-1900 (BM). Bogs between

Carnforth and Milnthorpe (34.47?), J.M. Barnes 1867 (BM).

**North-East Yorkshire (v.-c. 62).** Stockton Forest (44.65?), R. Spruce 1847 (Baker, 1906).

**Westmorland (v.-c. 69).** Lindale (34.48), ex herb. H.W. Lett pre-1900 (DBN). Ulpha Moss (34.48), J.M. Barnes 1866-8 (Braithwaite, 1887; Wilson, 1938; BM). Foulshaw Moss (34.48), G. Stabler 1870 (DBN). Near Levens (34.48), G. Stabler 1867 (BM), W. West 1869 (NMW) and J.M. Barnes 1869 (E).

**Dumfriesshire (v.-c. 72).** Near Dumfries (25.97?), J. Cr[uickshank] 1850 (E).

**Kirkcudbrightshire (v.-c. 73).** Several collections from boggy ground, between Loch Kindar and Criffell (25.96), mostly by J. Cruickshank 1840-6 (Braithwaite, 1887; M'Andrew, 1890; BM; E).

**Angus (v.-c. 90).** Clova, R. Brown (Braithwaite, 1887). 'Clova Mts' (undated specimen, lacking further details, in BM). Edge of a boggy pool, White Hill of Auchterhouse?, Sidlaw Hills (37.33?), A.O. Black 1852 (BM).

**West Cork (v.-c. H3).** Near Bantry, E. Hutchins pre-1900 (Moore, 1873; Braithwaite, 1887; BM; E).

### ***Leucobryum juniperoideum***

**East Cornwall (v.-c. 2).** Under oaks, Lamorran Wood (10.84), J.A. Paton 1971 (BRC).

**South Devon (v.-c. 3).** Near Exeter (20.99?), E. Parfitt 1833 (BM). Exwick Wood (20.99?), G. Davies 1856 (BM). Dry oakwood, near Exwick Barton (20.99), M.C.F. Proctor 1952, (NMW); locality incorrectly given as Exton Barton on some packets (M.C.F.P., *in litt.* 1990).

**South Hampshire (v.-c. 11).** All records from the New Forest. Holmsley Station (41.20) and Boldre Bridge (40.39), B. Piffard 1882 (Braithwaite, 1887), 1903 (GL, Crundwell, 1972). On roots of beech trees, north-west of Lyndhurst (41.20), B. Piffard 1882 (BM). Under trees, near Lyndhurst (41.20?), B. Piffard 1902-3 (BM; E; NMW). On soil and tree roots in beech-holly woodland, Wood Crates (41.20), F. Rose 1972 (herb. A.C.C.). Brockenhurst (41.20?), B. Piffard 1903 (E).

**West Sussex (v.-c. 13).** Under chestnut, Northpark Copse (41.82), frequently collected, E.C. Wallace 1952 (herb., A.C.C.; NMW), 1970 (NMW) and J.C. Gardiner 1970 (BM). Under chestnut, wood on Telegraph Hill (41.82), E.C. Wallace 1954 (NMW).

**Merioneth (v.-c. 48).** Oak woodland, Coed Crafnant (23.62), A.C. Crundwell *et al.* 1964 (Crundwell, 1972) and S.G. Harrison 1964 (NMW), T.H. Blackstock, D.P. Stevens & M.M. Yeo 1989 (field record). On boulders in woodland, Coed Gerddi-bluog (23.62), R.G. Woods, P.M. Benoit & F. Rose 1981 (herb. R.G.W.). Oak woodland, Ceunant Llennyrch (23.63), D.A. Jones 1908 (in herb. E.W. Jones, Crundwell, 1972). Oak woodland, Hafod Garegog (23.64), T.H. Blackstock 1981-3 (Blackstock, 1987). Oak woodland, Coed Cymerau (23.64), P.W. Richards 1969 (NMW), T.H. Blackstock 1981-3 (Blackstock, 1987).

**Channel Islands (v.-c. C).** St Ouen, Jersey, A. Martin 1901 (BM).

\*\*\*\*\*

**SCAPANIA ULIGINOSA (SW. EX LINDENB.) DUM. ERRONEOUSLY  
RECORDED IN IRELAND**

By D.G. LONG

*Royal Botanic Garden, Edinburgh*

Corley & Hill (1981) recorded *Scapania uliginosa* from seven Irish vice-counties, H1, 2, 12, 20, 27, 31 and 35, some of which are counties without high mountain habitats to which the plant is normally exclusive in Scotland. Concern that some of these records might be erroneous, at a time when current status of rare bryophytes in Britain and Ireland is being considered during compilation of 'Red Data Books', led N.F. Stewart to request a re-examination of some voucher specimens of this species. A search of relevant herbaria has yielded the following Irish specimens labelled *Scapania uliginosa*.

**SOUTH KERRY, v.-c. H1:** Knockavohila near Dunkerron, 3.ix.1846, T. Taylor (E); Anniscaul near Dingle, Co. Kerry, v.1894, D. McArdle (DBN); glen near Lough Cruttia, Brandon, 17.ix.1897, H.W. Lett (DBN); Mt Brandon, Co. Kerry, vi.1900, D. McArdle (BM, DBN); in stream on Faha Mtn, Brandon, 23.vi.1952, coll.? (DBN); all are *S. undulata*. **NORTH KERRY, v.-c. H2:** marshy streams at Cromaglow, Killarney, v.1866, D. Moore (DBN); is *S. undulata*. **WEXFORD, v.-c. H12:** no specimen traced. **WEST GALWAY, v.-c. H16:** Kylemore, Co. Galway, ix.1894, D. Moore (DBN); is *S. undulata*. **WICKLOW, v.-c. H20:** Lough Bray, no date, Dr Moore (BM, DBN); on rocks in upper Liffey, 1600 ft., nr Sally Gap, 7.viii.1952, coll.? (DBN); both are *S. undulata*. **WEST MAYO, v.-c. H27:** Pontoon, v.1901 & vii.1904, D. McArdle (DBN); is *S. undulata*. **SLIGO, v.-c. H28:** Hazlewood, Co. Sligo, vii.1904, D. McArdle (DBN); is *S. undulata*. **LOUTH, v.-c. H31:** Carlingford Mountain, 1882, Mrs Henry (DBN); Anglesey Mountain, v.1883, C.H. Waddell (DBN); Carlingford Mountain, Golden River, 13.ix.1899, H.W. Lett (BM); Anglesey Mtn., Louth, no date, H.W. Lett (DBN); all are *S. undulata*. **WEST DONEGAL, v.-c. H35:** Tory Island, 12.vii.1910, H.W. Lett (DBN); is *S. undulata*. **DOWN, v.-c. H38:** Mourne Mtns, Deer's Meadow, 17.vi.1885, H.W. Lett (DBN); is *S. irrigua*.

Thus possible vouchers for all Irish vice-county records, except that for Wexford, have been seen and found to belong to other species. According to an unpublished manuscript on the distribution of Irish Hepaticae, compiled by Donal Synnott (pers. comm.) the Wexford record is based on 'banks of a stream, Knockroe, 1899, D. McArdle'. The absence of a voucher and the identity of other McArdle collections of '*S. uliginosa*' mean that this record must be treated as doubtful. *Scapania uliginosa* must therefore be deleted from the Irish Hepatic list.

REFERENCE

Corley, M. F. V. & M. O. Hill, 1981. *Distribution of Bryophytes in the British Isles. A Census Catalogue of their Occurrence in Vice-Counties*. British Bryological Society, Cardiff.

\*\*\*

## COARSE *SCOPELOPHILA* GROWING

By MICHAEL V. FLETCHER

70 South Street, Reading, Berkshire, RG1 3RA

In January 1990 I read that the North Welsh site for the copper-tolerant moss *Scopelophila cataractae* at Cors Lleferin (one of only four sites in the British Isles) had been disturbed some months before, that the plant was perhaps destroyed there, and that Martha Newton had kept some alive from an original gathering by Fred Rumsey in 1988. She sent me moist live material in good condition. A few shoots were kept for a voucher, and the rest split three ways.

Having no copper-rich soil, a dark lead-rich neutral soil from Derbyshire was used. A thin layer was put on peat, in plastic pots. Two cultures were waterlogged on a top north-facing greenhouse shelf, a third on a lower shelf in rather deep shade (<10% full light in summer). I was able to report to Martha in April 1990 that it was "slowly making a green boring turf". During the long hot summer, and in 1991, the material on the top shelf went on doing that, slowly. It eventually covered the available soil completely and was not ousted by other species, though it had a few weedy associates. There are not very many well-lit waterlogged cultures of acrocarps here, apart from sphagnum, and they tend to be rather unstable, often producing a wide range of weeds, especially *Bryum pallens*, *Marchantia* spp., or unwanted *Philonotis* and *Pohlia*. Also, summer shade temperatures among these cultures can often exceed 40°C, and not all are protected from sunshine. In hot weather even many of the weedy species often die back or deteriorate. *Scopelophila* therefore seems unusual in its persistence, and in its tolerance of high temperatures. However, it made little growth in the cooler months, when most waterlogged cultures were doing best. In April 1992 these original cultures looked sickly and were becoming overrun, especially by *Philonotis* species. They were re-planted for the first time. In the warm May weather *Scopelophila* soon reasserted itself.

The third shaded culture grew less well, and in 1991 and 1992 almost disappeared after being dry for 3-4 months in summer. Moved to waterlogged well-lit conditions in spring 1992 it produced a dense though not extensive green felt of new protonema, on which leafy shoots arose from July onwards, ousting some rather moribund *Leptobryum pyriforme*. In April 1992 several shoots were placed on mounted granite, and kept wet in a shaded enclosed frame. These soon made terminal growth, and a few branches. By July there were some stout threads of brown (not green) protonema, up to about 8 mm long. There was no protonemal mat and only one or two new shoots have yet arisen from them.

I possess a large jar of copper sulphate. It seemed a pity to waste it. Small pieces (up to 5 mm across) were put on two waterlogged cultures in May 1992, where they dissolved, but were in part re-deposited on soil nearby. Some nearby bulbiliferous *Pohlia* shoots died in an inconclusive way, but adjacent *Scopelophila* seemed unaffected. A piece of copper sulphate on the mounted culture, also in May, stained one corner bright green. A shoot of the moss in this stained area was bathed in a strong, perhaps even a saturated solution, for some weeks. It survived and grew, though only just, and produced no protonema. The resistance of this moss to copper sulphate suggests a convenient way of maintaining reasonably pure and persistent cultures. It would be good to see this population of such a rare plant, maintained elsewhere. If anyone would like live material, please send me a stamped, addressed envelope.

## **DITRICHUM FLEXICAULE AND *D. CRISPATISSIMUM* IN GREAT BRITAIN AND IRELAND**

By A.J.E. SMITH

*School of Biological Sciences, University of Wales,  
Bangor, Gwynedd, LL57 2UW*

In a recent paper Frisvoll (1985) recognised two species in what he calls *Ditrichum flexicaule* s.l. These are *D. flexicaule* s.s. and *D. crispatissimum*, both of which he reports from Great Britain. With the aid of Frisvoll's account it became evident that about 95% of specimens of *D. flexicaule* s.l. could be allocated to one or other of the species with the naked eye or a  $\times 10$  lens, the remaining 5% requiring microscopic examination.

The common plant in the British Isles, described by Dixon (1924), Smith (1978) and Watson (1981) and various non-British authors as *D. flexicaule*, is *D. crispatissimum*. *D. flexicaule* s.s. is the plant described by Dixon (1924) and Nyholm (1954, 1986) as *D. flexicaule* var. *densum* (B., S. & G.) Braithw. (the footnote to *D. flexicaule* in Nyholm (1986) is confusing).

As the only detailed descriptions and illustrations of the two species by Frisvoll (1985) are not readily available to all bryologists it was thought useful to provide descriptions and illustrations (Figs. 1-4) based on material from the British Isles. Frisvoll (1985) lists sixteen differences between *D. crispatissimum* and *D. flexicaule*. These tend to be relative and some are somewhat intangible or ambiguous and I have included only those which I have found most useful in Table 1.

### ***Ditrichum flexicaule* (Schleich. ex Schwaegr.) Hampe (Figs. 1,3,5)**

Dioecious. Bright green to dark green, dense or very dense, rarely lax tufts or patches. Shoots 1-5(-6) cm, stems fragile, usually densely tomentose below. Leaves rarely flexuose or secund, apices not twisted together when dry, 1.0-3.5 mm long, from sheathing basal part constituting 1/3-1/2 total leaf length gradually to abruptly tapering to entire channelled subula; cells in basal part of leaf variable in shape, near nerve shortly rectangular to rectangular, cells above  $\pm$  uniformly quadrate or shortly rectangular, strongly incrassate, marginal at about halfway between base and subula non-hyaline, thick-walled,  $\pm$  quadrate to oval, rarely rectangular. Microphyllous flagelliform shoots often present. Innermost perichaetial leaves from sheathing base narrowed to long subula. Capsules not known in Britain or Ireland. On basic soil in grassland, sand-dunes, quarries, on walls, cliff ledges, 0-1200 m, widely distributed but rare (see Fig. 5 and list of v.-c. records); Spain, Austria and Romania north to Spitzbergen, Caucasus, Siberia, northern N. America, Greenland.

### ***Ditrichum crispatissimum* (C. Müll.) Par. (Figs. 2,4)**

Dioecious. Yellowish green to green, often glossy and silky, lax to moderately dense tufts or patches. Shoots (2-)4-11 cm, stems fragile, usually only sparsely tomentose below. Leaves erect to secund, usually flexuose with apices sometimes twisted together when dry, 3-8 mm long, from sheathing base constituting 1/4-1/3 total leaf length gradually tapering to long channelled smooth to finely denticulate subula; basal cells near nerve rectangular to narrowly rectangular, cells above uniformly rectangular to elongated but more usually variable in size

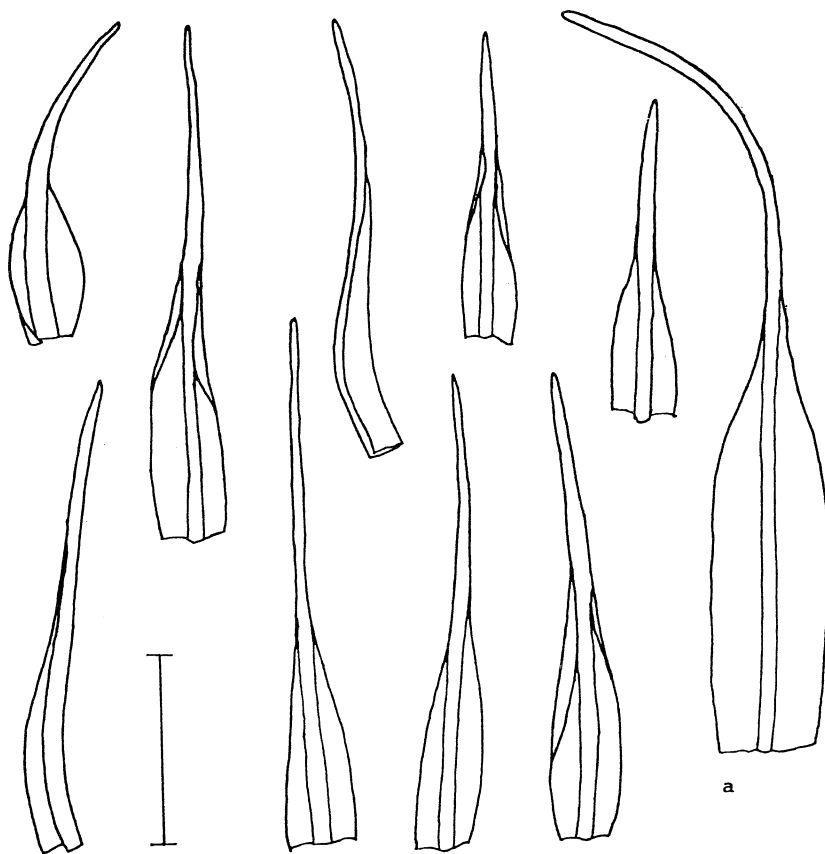


Fig. 1. *Ditrichum flexicaule*. Stem leaves. (a), perichaetial leaf from Swedish plant. Scale = 1 mm.

with rounded to elongated cells mixed together, the latter often curved, cells rarely  $\pm$  quadrate, marginal cells at about halfway from base to subula hyaline, very thin-walled, very narrowly rectangular to linear, rarely shorter. Flagelliform shoots lacking. Innermost perichaetial leaves with sheathing base abruptly narrowed into subula. Capsules very rare in Scotland (?). On basic soil in grassland, sand-dunes, quarries, cliff ledges, 0-990 m, common in basic areas, rare elsewhere (see Map 14/2 in Hill *et al.*, 1992); from Spain, Italy and Romania north to Spitzbergen, Faroes, Iceland, Siberia, China, New Guinea, N. America, Greenland, Guatemala, New Zealand.

I have seen no fruiting material of either species from the British Isles and although Dixon (1924) reports capsules being found twice in Perthshire in 1902 it is uncertain to which species these belong. I have seen four reputedly fruiting specimens but three were *Distichium inclinatum* and one *Barbula tophacea* (!).



Fig. 2. *Ditrichum crispatisimum*. Stem leaves. (a), perichaetial leaf from Norwegian specimen. Scale = 1 mm.

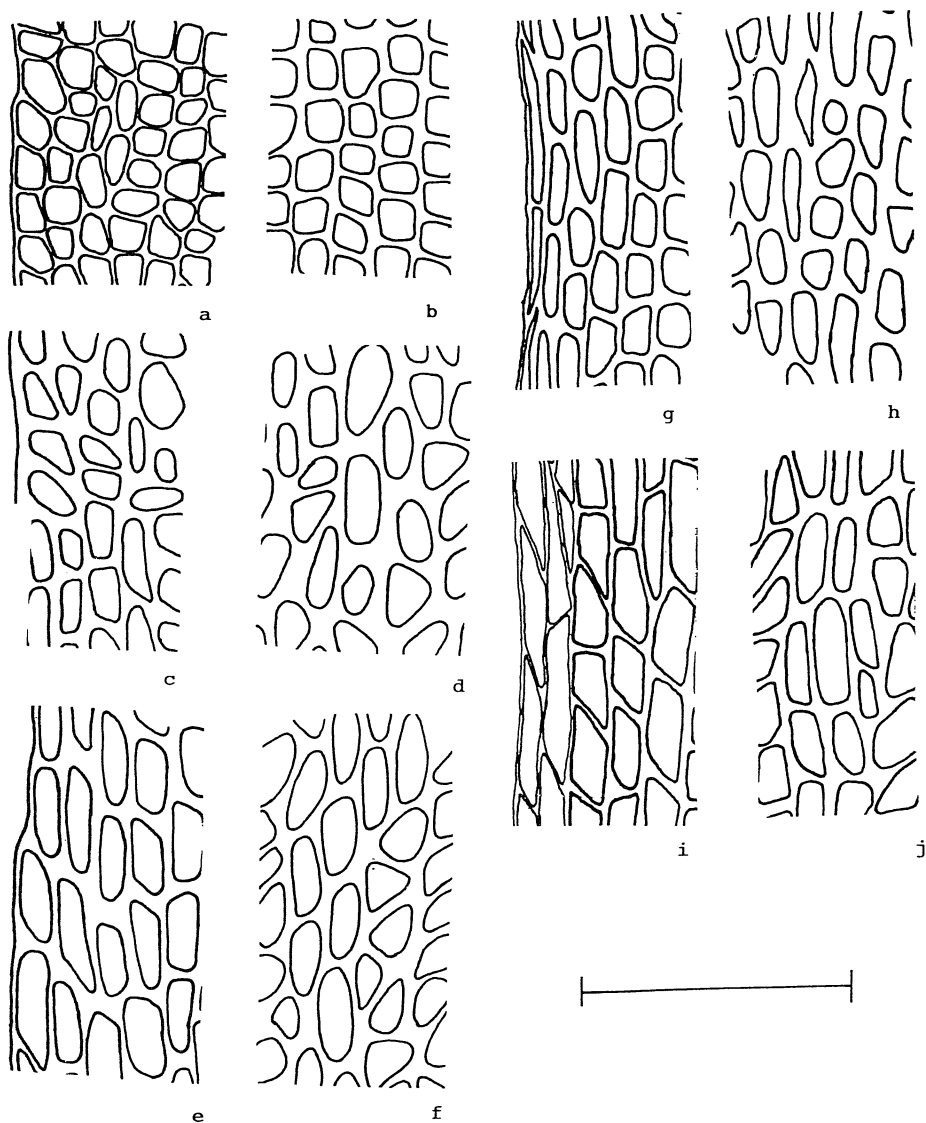


Fig. 3. *a-h*, *Ditrichum flexicaule*: marginal and mid-leaf cells from different plants, each pair of marginal and mid-leaf cells from the same leaf. *g, h*, from *D. flexicaule* with narrow but thick-walled marginal cells; *i, j*, from *D. crispatisissimum* with relatively short but hyaline marginal cells. *a, c, e, g, i*, marginal cells from widest part of leaf; *b, d, f, h, j*, cells from widest part of leaf midway between margin and nerve. Scale = 50  $\mu$ m.

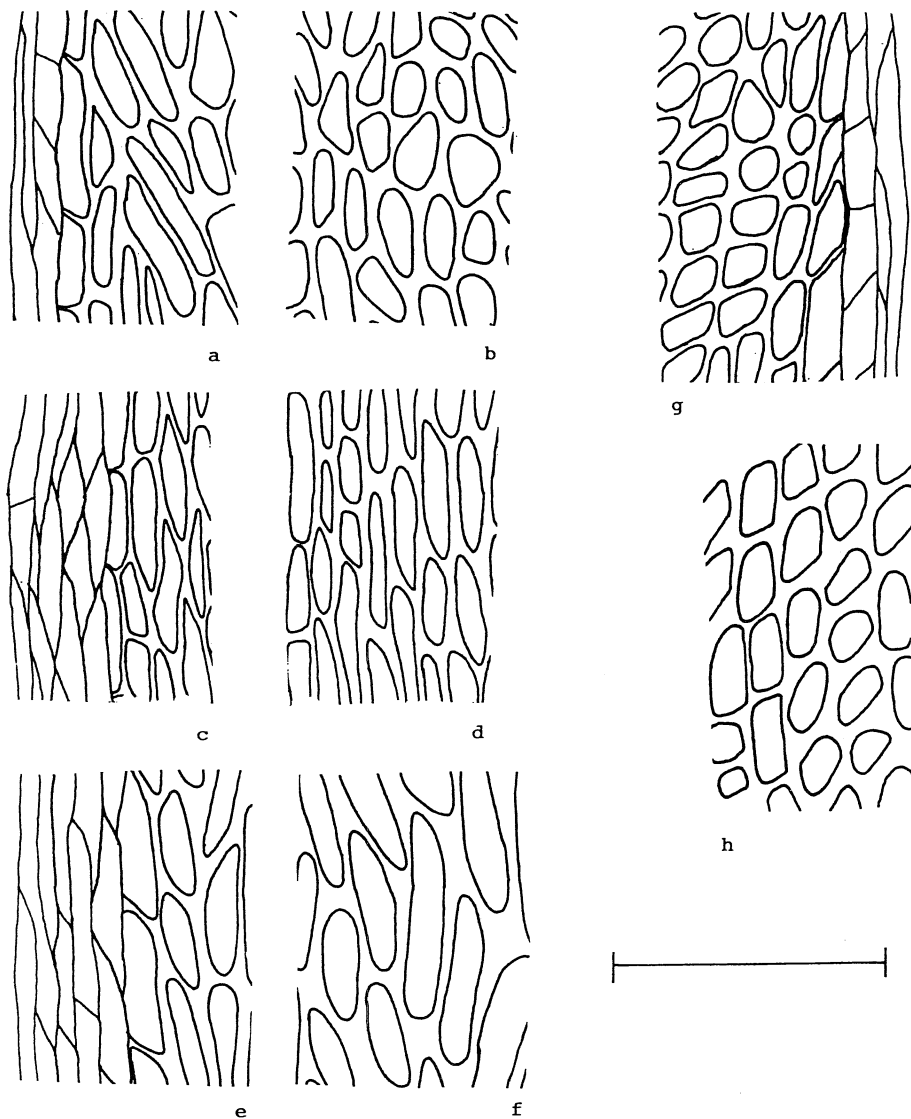


Fig. 4. *Ditrichum crispatisissimum* marginal and mid-leaf cells from different plants, each pair of marginal and mid-leaf cells from the same leaf. *g, h*, drawings from a plant with relatively short cells.

*a, c, e, g*, marginal cells from widest part of leaf; *b, d, f, h*, cells from widest part of leaf midway between margin and nerve. Scale = 50  $\mu\text{m}$ .

## DIFFERENTIATION

Although most specimens are easily identifiable, *D. flexicaule* and *D. crispatisimum* are poorly defined species on a par with species pairs such as *Racomitrium heterostichum* and *R. affine* or *Ulota bruchii* and *U. crispa*. Lax forms of *D. flexicaule* may be difficult to separate from stunted or dry ground forms of *D. crispatisimum* and can only be named with difficulty on the basis of summation of characters.

This point is illustrated by reference to Fig. 3g-j and Fig. 4g-h. The plant from which Fig. 3j-h were taken, despite the relatively long cells had abruptly narrowed leaf bases and non-hyaline thick-walled marginal cells (i.e. *D. flexicaule*). Fig. 3i and j came from a specimen with gradually tapered leaves; the marginal cells, despite being relatively short were hyaline and thin-walled (i.e. *D. crispatisimum*). Fig. 4g and h are from a plant with short leaf cells but the marginal cells are characteristic of *D. crispatisimum*.

Plants from stunted *D. crispatisimum* that have proved most difficult to name are small laxly tufted forms from sand-dunes which, except for leaf cell structure are indistinguishable from *D. flexicaule*. In extreme instances naming depends upon the nature of the marginal cells alone. However, in the case of *D. crispatisimum* careful search will usually reveal a few larger leaves with areolation more typical of that species. That the two taxa may be so difficult to separate may lead to the suspicion that they merely represent habitat forms of a single species but Frisvoll (1985) reports a number of mixed populations within which the two species are always distinct.

Care must be taken when observing marginal cells as even in forms of *D. crispatisimum* with long narrow lamina cells the marginal cells become more or less isodiametric above where the lamina narrows into the subula or even before this. As the leaves are somewhat variable in this respect marginal cells should be examined about halfway between base and commencement of subula (often the widest part of the leaf in *D. flexicaule*).

Not all the characters listed by Frisvoll (1985) are used here. He describes the basal cells near the nerve in *D. crispatisimum* as being porose whilst those of *D. flexicaule* are not or only pseudoporose (?). I have been unable to find this. He also points out that in *D. crispatisimum* the cells on the abaxial face of the nerve are shorter than the lamina cells. This is only true sometimes. In *D. flexicaule* the abaxial nerve cells are said to be longer than the lamina cells. This again varies. He reports that small auricles are sometimes present at the bases of leaves of *D. flexicaule*; I only found auricles on two leaves. Differences in T.S. of the nerve are also reported. Admittedly I have only examined sections of leaves of three plants from each species but was unable to distinguish differences between slides merely labelled 1-6.

## ECOLOGY

Habitat details on herbarium specimens are woefully inadequate and it is impossible to comment on the ecology of the more typical densely tufted forms of *D. flexicaule* as I have not seen them in the field. However, it is clear that less typical forms approaching stunted laxly tufted *D. crispatisimum* occur in similar habitats to that species on sand-dunes, wall tops and chalk grassland.

Table 1. *Characters differentiating* *Ditrichum flexicaule* and *D. crispatisimum*.

Character	<i>D. flexicaule</i>	<i>D. crispatisimum</i>
Habit	Usually densely tufted	Not densely tufted
Height	1-5(-6) cm	(2-)4-11 cm
Propagules	Flagelliform shoots often present	None
Dry leaves	Rarely flexuose Not secund Apices not twisted together	Often flexuose Sometimes secund Apices sometimes twisted together
Leaf shape	Gradually to abruptly tapered into subula	Gradually tapered into subula
Leaf length	Mostly 1.0-3.5 mm	Mostly 3-8 mm
Subula length	1/2-2/3 leaf length	2/3-3/4 leaf length
Lamina cells half-way to subula	Uniformly quadrate to shortly rectangular	Variable in shape or uniformly rectangular to elongated; rarely quadrate
Marginal cells halfway to subula	Incrassate Not hyaline Quadrate to rectangular	Thin-walled Hyaline Elongated, rarely rectangular
Subula apex	Entire	Sometimes denticulate

Table 2. *Time of collection of herbarium specimens of specimens of* *Ditrichum flexicaule* s.s.

Date	Number of specimens
186 - 1899	57
1900 - 1914	33
1915 - 1949	17
1950 -	8

## FREQUENCY AND DISTRIBUTION

A curious feature is that the majority of herbarium specimens of *D. flexicaule* were collected before the First World War with very few later gatherings (see Table 2). This is also borne out by the accumulation of vice-county records (as var. *densum*). In Ingham (1907) there were 28 records, an additional 7 in Duncan (1926) but no further records in Duncan (1935) or subsequent lists prior to the dropping of the variety by Richards & Wallace (1950).

Almost all the old specimens are densely tufted (approaching taller forms of *D. zonatum* in appearance) with very short leaves and quadrate leaf cells. Most of the more recent gatherings of *D. flexicaule* s.s., named var. *densum* or not, are more laxly tufted and resemble stunted *D. crispatisimum* and it is evident that such plants have been overlooked as *D. crispatisimum*.

Of the numerous specimens of *D. crispatisimum* (labelled *D. flexicaule*) that I have examined only a very small number (5 or 6) have proved to be *D. flexicaule* s.s. and it is clear that Map 14/2 in Hill *et al.* (1992) is accurate and that the vice-comital distribution of *D. crispatisimum* does not require revision. This is also supported by the fact that in the vice-counties where *D. flexicaule* s.s. is found it only occurs in one or a very few localities. The only exception is Derbyshire (v.-c. 57) from whence I have seen 27 different gatherings from 12 localities (with an additional 9 literature records as var. *densum*).

I have seen *D. flexicaule* from 30 vice-counties and 69 localities. There is one further unconfirmed literature record (see below). I have been unable to trace records from v.-cs. 2, 8, 28, 39, 51, 52, and 92 which are listed for var. *densum* in Duncan (1926).

### CONFIRMED VICE-COUNTY RECORDS OF *DITRICHUM FLEXICAULE* S.S.

Sand dunes, Perranporth, 10/75 (1), August 1932, B.M. (BBSUK); Downs above the Needles, 40/28 (10), July 1904, H. Reader (E); Highfield Wood, Waterloo, 41/60 (11), 1922, E.F.B. (NMW); Calcareous turf, Micheldever spoil heaps, 41/58 (12), 16 June 1991, N.A. Sanderson & A.C. Crundwell (herb. A.C.C.); N. slopes of Box Hill, 51/15 (17), 25 January 1931, E.C. Wallace (E); short turf on chalk, Devil's Dyke, 52/56 (29), 27 April 1929, P.W. Richards & E.F. Warburg (NMW); Colly Weston quarries, 43/90 (32), 26 April 1886, H.N. Dixon (NMW); Limestone rocks, The Wyndcliffe, 31/59 (35), 9 April 1891, C.H. Binstead & W.A. Shoolbred (NMW); Near Fawnhope, 32/53 (36), April 1905, A. Ley (NMW); Merthyr Mawr Warren, 21/87 (41), 7 September 1950, A.C. Crundwell (herb. A.C.C.); Craig Cille (= Craig Cilau), 22/11 (42), 31 August 1906, A. Ley & H.H. Knight (NMW); Pembrey Burrows, 22/40 (44), 16 January 1906, H.H. Knight (NMW); Mochras, 23/52 (48), September 1905, F.J. Chittenden (UCNW); Rock by stream, Beddgelert, 23.54 (49), 19 June 1886, C.H. Binstead (MANCH); Bryn Erwyn, Llandrillo, 23/86 (50), 23 August 1897, herb T. Barker (MANCH); Limestone rocks, Ketton Quarries, Rutland, 43/90 (55), May 1930, F.A. Sowter (BBSUK); Buxton, 43/07 (57), July 1978, herb. J. Barker (MANCH); Sandhills, Southport, 34/31 (59), October 1865, R. Schofield (MANCH); Rocks near Haweswater, Silverdale, 34/47 (60), May 1899, J.A. Wheldon (NMW); Magnesian limestone quarry, Brodsworth near Doncaster, 44/50 (63), April 1898, W. Ingham (DUB, E); Malham Moor, 34/86 (64), April 1879, B. Hobkirk (MANCH); On stone, Askrigg common, 1600 ft, 34/99 (65), 11 June 1905, W. Ingham (DUB, E, MANCH, NMW); Widdy Bank, 35/82 (66),

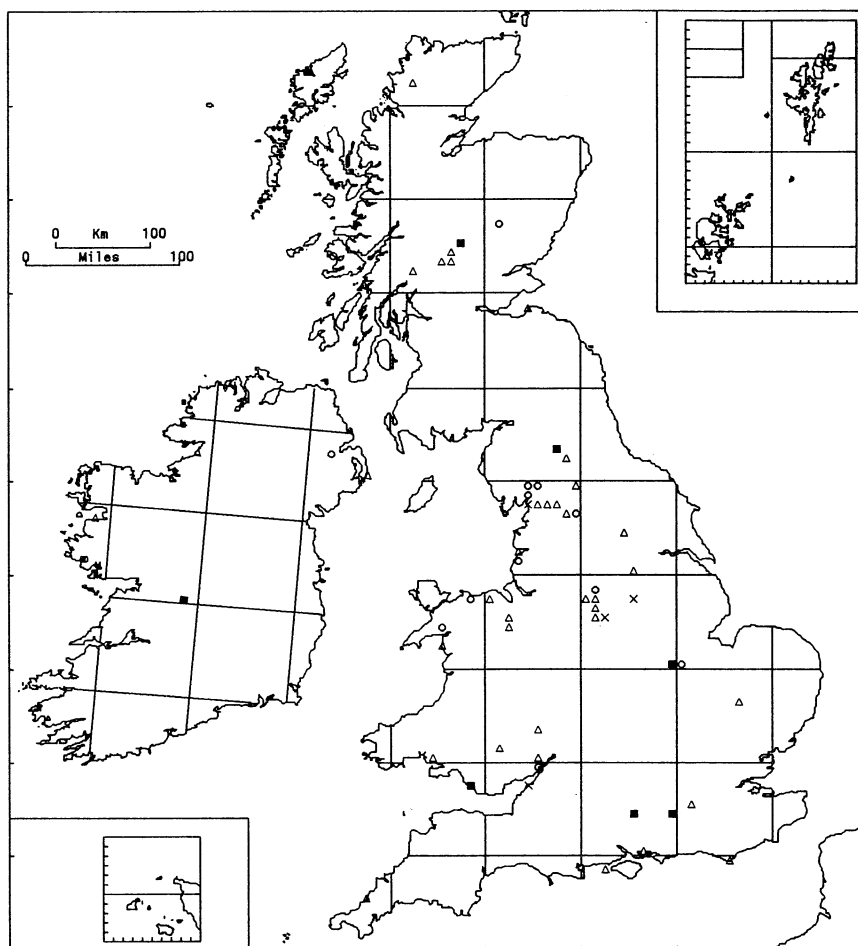


Fig. 5. Distribution map of *Ditrichum flexicaule* s.s.

Solid squares	1950 onwards
Open triangles	1900-1949
Open circles	before 1900
Crosses	literature records

April 1906, C.H. Cheetham (DUB); Middlethorpe, (69), November 1871, J.M. Barnes (MANCH); Gullane Links, 36/48 (82), 6 April 1909, herb. J. McAndrew (E); Ben Lawers, 27/64 (88), June 1866, Dr. Stirton (MANCH); Glen Beag, Glen Phee, 37/1374 (89), July 1879, herb. T. Barker (MANCH); Glen Dubh, 29/22 (108), 18 July 1899, W.E. Nicholson, E.S. Salmon & H.N. Dixon (CGE); Wall, E. bank of R. Shannon near Portumna, 12/80 (H10), 28 August 1957, P.W. Richards (DUB); near Louisburgh, 02/88 (H27), 30 September 1910, H.W. Lett (DUB); Rossnowlagh, 12/8569 (H35), September 1916, W. Lett. (DUB); Shore at Kirkestown, 31/65 (H38), June 1931, W.R. Megaw (BBSUK); On peat, Divis, 33/27 (H39), 31 August 1882, C.H. Waddell (DUB).

#### UNCONFIRMED LITERATURE RECORD OF *DITRICHUM FLEXICAULE* S.S.

Clevedon, 31/07 (6), W. Watson, in *Proc. Somerset Arch. Nat. Hist. Soc.* 58, 114, 1912.

#### ACKNOWLEDGEMENTS

I am most grateful to Mr A.C. Crundwell, Mr A.R. Perry (BBSUK and NMW), Dr H.L.K. Whitehouse (CBE) and the Curators, DUB, E and MANCH, for the loan of specimens and to Mrs Alison Bell for cutting leaf sections. Mr C.D. Preston kindly prepared the distribution map of *Ditrichum flexicaule* s.s.

#### REFERENCES

- Dixon, H.N. (1924). *The Student's Handbook of British Mosses*, ed. 3. Sumfield and Day, Eastbourne.
- Duncan, J.B. (1926). *A Census Catalogue of British Mosses*, ed. 2. British Bryological Society, Berwick-upon-Tweed.
- Duncan, J.B. (1935). *Supplement to Census Catalogue of British Mosses (2nd Edition) and Census Catalogue of British Hepatics (3rd Edition)*. British Bryological Society, Berwick-upon-Tweed.
- Frisvoll, A.A. (1985). Lectotypifications including nomenclatural and taxonomical notes on *Ditrichum flexicaule* sensu lato. *Bryologist* 88, 31-40.
- Hill, M.O., C.D. Preston & A.J.E. Smith. (eds.) (1992). *Atlas of the Bryophytes of Britain and Ireland. Volume 2 - Mosses (except the Diplolepidae)*. Harley, Colchester.
- Ingham, W. (1907). *Census Catalogue of British Mosses*. Moss Exchange Club.
- Nyholm, E. (1954). *Illustrated Moss flora of Fennoscandia. II. Musci*. Fasc 1. Gleerup, Lund.
- Nyholm, E. (1986). *Illustrated Flora of Nordic Mosses*. Fasc. 1. Nordic Bryological Society.
- Richards, P.W. & E.C. Wallace (1950). An annotated list of British Mosses. *Trans. Br. bryol. Soc.* 1, i-xxi.
- Smith, A.J.E. (1978). *The Moss Flora of Britain and Ireland*. Cambridge University Press, Cambridge.
- Watson, E.V. (1981). *British Mosses and Liverworts*, ed. 3. Cambridge University Press, Cambridge.

## C.F. WHITE, BOTANICAL ARTIST

Mrs Madeline Harley is seeking information on the botanical artist Charles Frederick White (c. 1820-1897), who included mosses among his subjects. If anyone has such information, would they please write to her at:

The Herbarium, Royal Botanic Gardens,  
Kew, Richmond, Surrey, TW9 3AB

---

## BOOKSHELF

*An Atlas of Bryophytes found in Kent* (1970) by the late A.G. ("Trudy") Side is still available. It is an A5 book and contains, for each species, a 10 km square distribution map accompanied by ecological or distributional notes. At a cost of £3.50 including postage, it is very good value, and may be obtained from Keith Palmer, Hon. Secretary Kent Field Club, 62 Judd Road, Tonbridge, Kent, TN9 2NJ. Please send cheque with order.

*Sphagnum: a field guide*, by M.O. Hill, revised and updated by N.G. Hodgetts and A.G. Payne, Joint Nature Conservation Committee, Peterborough, pp. iii, 1-31, text figs., A5 (1992). [ISBN 1 873701 14 4.] Softback (laminated cover) £3.50 plus postage. The booklet is distributed solely by Natural History Book Service Ltd., 2 Wills Road, Totnes, Devon, TQ9 5XN. It uses keys illustrated by line drawings to aid the non-specialist in identifying species in this critical moss genus and will be welcomed by all who need to identify *Sphagnum* for the bryophyte mapping scheme and for ecological work. A x10 lens is required to use the key, but a x20 lens will also be useful and sometimes microscopic examination will be necessary to determine particularly difficult specimens.

A.R. PERRY

## ADDITIONS AND AMENDMENTS TO THE MEMBERSHIP LIST

8 February, 1993

### TRANSFER

To Honorary Membership.

**Proctor**, Dr M.C.F., Hatherly Laboratories,  
The University, Prince of Wales Road,  
Exeter, EX4 4PS (1950)

### NEW MEMBERS

**Aleffi**, Dr Michele, Dipartimento di  
Botanica Ed Ecologia, Universite di  
Camerino, Via Pontoni 5, I 62032,  
Camerino (MC), Italy. (1993)

**Belyea**, Ms Lisa R., School of Biological  
Sciences, Queen Mary & Westfield  
College, Mile End Road, London, E1  
4NS (1993)

**Bolton**, Ms Alison, Boldre Bridge Cottage,  
Boldre, Lymington, Hants, SO41 8PD  
(1993)

**Bungard**, Dr S.J., Kirngarth, Aislaby Road,  
Eaglescliffe, Stockton-on-Tees,  
Cleveland, TS16 0JJ (1992)

**Cox**, Dr Jonathan H.S., Witheygrove Hse,  
Curload, Stoke St Gregory, Nr.  
Taunton, Somerset, TA3 6JE (1993)

**Giordano**, Dr Simonetta, Dipartimento di  
Biologia Vegetale, Via Foria 223,  
80139 Napoli, Italy. (1993)

**Herber**, Mr Ingemar, Majgardsv 7, S -  
14144 Huddinge, Sweden. (1992)

**Holyoak**, Dr David T., 18 Buttermere  
Drive, Warndon, Worcester, WR4  
9HX (1992)

**Ingram**, Mr David C., 12 Langton Road,  
Great Bowden, Market Harborough,  
Leicestershire, LE16 7EZ (1992)

**Jones**, Mr Vincent, "Hillways", Ingleby  
Greenhow, Middlesbrough,  
Cleveland, TS9 6LL (1993)

**Lowell**, Mr H., 37 Henley Avenue,  
Cheadle Hulme, Cheshire, SK8 6DE  
(1992)

- Lowell**, Mrs H., 37 Henley Avenue, Cheadle Hulme, Cheshire, SK8 6DE (1992)
- Martin**, Miss Janice A., Tanyfynwent, Llanilar, Aberystwyth, Dyfed, SY23 3QY (1992)
- Monteith**, Mr D.T., Environmental Change Research Centre, University College, 26 Bedford Way, London, WC1H 0AP (1993)
- Olson**, Dr Storrs L., 3201 North First Road, Arlington, Virginia 22201, U.S.A. (1992)
- Perry**, Dr C.E. Windrush, 39 Haven Road, Haverfordwest, Dyfed, SA61 1DU (1992)
- Raistrick**, Mr Keith, 1 Drewton Avenue, Morecambe, Lancs., LA3 1NU (1992)
- Rutter**, Mr Orlando, 8 De Vere Close, Wivenhoe, Essex, CO7 9AX (1993)
- Sanderson**, Mr Neil A., 52 Cygnus Gardens, Dibden, Hythe, Hampshire, SO4 5UH (1992)
- Shaw**, Professor Jonathan, Dept of Biology, Ithaca College, Ithaca, New York 14850, U.S.A. (1993)
- Shimwell**, Dr D.W., School of Geography, The University, Manchester, M13 9PL (1993)
- Velluti**, Ms Caterina, Cannaregio 2268, 30121 Venezia, Italy. (1993)
- Williams**, Mr R.J., Troedyrhiw, Talgarreg, Llandysul, Dyfed, SA44 4HB (1992)
- CHANGE OF ADDRESS**
- Adams**, Mr Paul G., 5 Elm Cottages, Byttom Hill, Mickleham, Dorking, Surrey, RH5 6EL (1991)
- Campbell**, Dr Ella O, Department of Plant Biology, Massey University, Palmerston North, New Zealand. (1979)
- Castle**, Miss Gillian, 11 Peace Cottages, Old Coleham, Shrewsbury, Shrops, S43 7BT (1967)
- Duda**, Dr J., Liptovska 34, 747-06 Opava, Czechoslovakia. (1966)
- Glading**, Dr Paul R., 5 Alderwood, Kendal, Cumbria, LA9 5EF (1979)
- Hallet**, Professor J.-N., Laboratoire de Biologie Végétale, Université de Nantes, Rue de la Houssinière, F 44072 Nantes, Cedex 03, France. (1975)
- Hausler**, Dr Michael, Kopernikusstrasse 1, D 6940 Weinheim, Germany. (1978)
- Higuchi**, Dr Masanobu, Botanical Institute, Faculty of Science, Hiroshima University, Higashihiroshima-shi, Hiroshima 724, Japan. (1987)
- Hughes**, Dr Marion G.B., c/o Scottish Natural Heritage, 106 High Street, Dalbeattie, Kircudbrightshire, DG5 4HB (1989)
- Kemp**, Dr R.F.O., 2 Mortonhall Road, Edinburgh, EH9 2HW (1955)
- Lewinsky**, Dr J.T., Kuopio Museum of Natural History, Myhkyrinkatu 22, SF-70100 Kuopio, Finland. (1970)
- McAllister**, Dr Hugh A., 3 The Flaxyard, Woodfall Lane, Little Neston, South Wirral, L64 4BT (1976)
- Martin**, Mr P., The Archway, The Green, Frampton-on-Severn, Gloucestershire, GL2 7DY (1978)
- Martinez-Abaigar**, Dr Javier, Universidad de la Rioja, Ed Politécnico, Luis de Ulloa 20, 26004 Logroño, Spain. (1991)
- Newell**, Mr P.S., Rowanshaw, 35 Wyedale Crescent, Bakewell, Derbyshire, DE45 1BE (1952)
- Norris**, Prof. Daniel H., Department of Botany & Plant Pathology, Oregon State University, Corvallis, Oregon 97331, U.S.A. (1978)
- O'Shea**, Mr B.J., 141 Fawnbrake Avenue, London, SE24 0BG (1963)
- Pannell**, Dr C.M., 2 Wolvercote Court, Wolvercote Green, Wolvercote, Oxford, OX2 8AB (1977)
- Perkins**, Mr R.J., 11 Pennine View, Heage, Derbyshire, DE56 2TE (1967)

Parley, Mr R.D., English Nature, Foxhold House, Crookham Common, Newbury, Berks. RG13 3EL (1984)

Pinnard, Dr Peter M., Countryside Council for Wales, Directorate of Science & Policy Development, Plas Fawrion, Bangor, Gwynedd LL57 2LD (1990)

Pitch, Dr T.C.G., 24 Lombardy Drive, Peterborough, PE1 3TF (1990)

Robinson, Mr T.F., The Stable, Bag House Farm, Horton Lindsey, Warwickshire, CV38 3DE (1980)

Rossell, Mr Shaun, British Council, Madock Street, Manchester, M15 4AA (1972)

Saunders, Miss Mary E., National Trust, 23 Sheep Street, Chichester, Chichestershire, GU1 1QW (1985)

Smith, Mr Graeme, 59 Tappin Court, Sharncliffe, Herts, SG1 1XR (1985)

Solomonson, Prof. Lars, Department of Ecology, University of Tromsø, N-7035 Dragsvåg Norway (1984)

Thompson, Dr G.K., Department of Mathematics, University College of Northern Ireland, Edwards Road, P.O. Box 100, Belfast, Antrim (1968)

Vogel, Mr J.C., Department of Botany, Natural History Museum, Cromwell Road, London, SW7 5BD (1990)

Wentling, Mr Michael, 13 Addington School, Margate Road CT9 1PE (1990)

Wigginton, Mr Martin L., Island Nature Conservation Committee, Monknoy House, City Road, Peterborough, PE1 1UY (1978)

#### RESIGNED

Austin, Mrs Christine, The School House, Ewyas, Wils, SN3 0AB

Bramble, Mr J.D., Avellyn, Penns, Tragenon, Dyfed

Canwell, Mr A.E., 140 Hestham Road, Hestham, Lancs.

Dassler, Dr Cynthia, Dept of Botany, Iowa State University, Ames, IA 50011,

#### U.S.A.

Dulson, Mr John E., Computing Laboratory, The University, Newcastle-upon-Tyne

Ellis, Mr D.E., 3 Langholm Street, Newcastle

Harvey, Dr Ruth, 73 St Christopher Avenue, Peckham, Stock-on-Trent

Nat., Dr Sandra, Zealand House, Woodland Bishop, Aucklnd

Orrmond, Mr E., 7 Peel Park Close, Clitheroe, Lancs

Verdu, Dr G., Telemark Distrikthøgskole, 3200 Rø, Norway

#### DECEASED

Porter, Dr Alison, 18 Grylls Crescent, Cook, ACT 2014, Australia (1977)

Martin, Dr S., Heron Biological Lab, 3888 Old-Finch, Richmond-Stn, Milwaukee-Ken, Wisconsin, Japan (1949)

Harley, Miss P.A., 14, Harmanus Drive, Bracon, Derby, DE7 3AL (1972)

James, Dr E.W., The Green, Buntingford, Oxford, OX5 1HU (1983)

Swinscow, Dr T.D.V., 24 Monmouth Street, Tipton, Essex, Devon, EX3 0AJ (1954)

Wansell, Mr P.I., 5 Mills Road, Trunderson, Dor, Dorset, IP21 4BA (1946)

*Edited and produced by*

*A.R. Peary, Department of Botany, Natural History Museum of Wales, Cardiff CF1 1NP, U.K.*

CONTENTS

Subscriptions	2
Proceedings of the British Bryological Society	
Spring Field Meeting, North Chropshire, 1992	2
Summer Field Meeting, 1992, first week, Lochmower	3
second week, The Uists and Benbecula	9
AGM and Symposium Meeting, Chelwood Gate, East Sussex, 1992	12
Bryophyte Workshop, University of East London, 1992	18
Reports of Local Meetings	19
Future Meetings of the Society	20
Local Meetings Programme, 1993	21
Other Bryological Meetings, 1993	22
Recording Matters §	25
Council Newsletter Number 9	27
BBS Moss Postcards, Last Reminder	28
Moss Gardens	28
Eastern England Bryophyte Mapping Project Update	28
B.B.S. Library Sales and Service 1993	29
Mosses in English Literature, Supplement One	30
Copy Deadline	31
Mosses in the Media	32
BBS Tropical Bryology Group - Progress in 1992	33
Appeal for Typists	34
Oxford University Herbaria (OXF and FHO)	34
The distribution of <i>Leucobryum</i> sporophytes in the British Isles. By T.H. Blackstock	35
<i>Scapania uliginosa</i> (Sw ex Lindb.) Dum. chronobically recorded in Ireland. By D.G. Long	43
Coarse <i>Scapellophila</i> growing. By Michael V. Fletcher	44
<i>Danthonia flexuosa</i> and <i>D. crispissimum</i> in Great Britain and Ireland. By A.J.E. Smith	45
C.F. White, Botanical Artist	51
Bookshelf	53
Additions and amendments to the membership list	53

*Bulletin of the British Bryological Society* is published twice a year by the British Bryological Society, Department of Botany, National Museum of Wales, Cardiff, CF1 3NP, U.K. Items for publication and enquiries for advertising space should be addressed to A.R. Perry (Tel: 0222-397951 - FAX 0222-373219)

Printed by J & P. Dawson, 7 James Place, Trofrest, Pontypool, Mid Glamorgan