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Edited by A.R. Perry

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BRITISH BRYOLOGICAL SOCIETY

The British Bryological Society exists to promote the study of mosses and liverworts. The Society was constituted in its present form in 1947, capturing 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 *Forays*, and the other for practical instruction in the examination and identification of bryophytes.

Members of the Society are entitled to receive the Society's *Journal* and its *Bulletin* free of charge. To borrow books, periodicals and reprints 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 on 1st January each year, is £15.00 for Ordinary Members, £11.00 for Family Members (who do not receive the *Journal*) and £7.50 for Junior Members.

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

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The cover illustration is of *Bryum pseudotriquetrum*, one of the drawings by S.R. Edwards from the *Mosses and Liverwort of Town and Garden - Handbook no. 1 London* 1992. The size of the originals is approximately 100 x 132 mm. The units of the scale bars are 1 mm.

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BRITISH BRYOLOGICAL SOCIETY
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1991

	£ 1991	£ 1990
INCOME		
Sales of Publications		
Journal of Bryology	14,449	14,714
Other	1,680	432
	16,129	15,146
Subscriptions	6,720	6,480
AGM and other meetings	2,438	1,934
Sale of lenses etc.	110	98
Sale of sweatshirts	360	-
Side bequest	24,554	550
Wallace memorial	2,548	-
Legacies and donations	122	711
Grant for publication of Atlas	-	2,500
Interest	3,969	3,641
Sundries	436	117
	£ 57,386	£ 31,177
LESS EXPENDITURE		
Printing and Distribution		
Journal of Bryology	22,174	21,335
Bulletin	1,158	672
Atlas (contribution)	-	3,500
Special Volumes	-	329
	23,332	25,836
Purchases for resale	2,122	-
Prospectus and membership list	270	-
Wallace Memorial	5,000	-
Malawi grant	1,000	-
Purchases of sweatshirts	502	-
Expenses - meetings	2,815	2,682
Officers	246	594
Atlas compilation	112	950
Insurance	87	87
Sundries	340	291
	£ 35,826	£ 30,440
SURPLUS FOR YEAR	£ 21,560	£ 737

BRITISH BRYOLOGICAL SOCIETY
STATEMENT OF AFFAIRS AS AT 31 DECEMBER 1991

	£ 1991	£ 1990
CURRENT ASSETS		
National Westminster Bank - Current account	2,606	4,021
National Westminster Bank - Business reserve	20,994	878
Girobank	1,008	785
National Savings Bank	34,115	30,685
Wallace Memorial Fund	-	1,611
	58,723	37,980
LESS CURRENT LIABILITIES		
Blackwells 1991 account	7,933	7,139
Subscriptions in advance	-	444
Members credit	-	54
	7,933	7,637
NET ASSETS	£ 50,790	£ 30,343
Represented by:		
Surplus brought forward 1 January 1991	30,343	27,995
Wallace Memorial Fund (utilised)/subscribed	(1,611)	1,611
Provisions not required	498	-
	29,230	29,606
Surplus for year	21,560	737
Surplus carried forward 31 December 1991	£ 50,790	£ 30,343

G C S CLARKE
Treasurer

I report that the Balance Sheet as at 31 December 1991 and attached Income and Expenditure Account are in accordance with the books and records of the Society.

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

8 November 1993

BRITISH BRYOLOGICAL SOCIETY
INCOME AND EXPENDITURE ACCOUNT FOR THE YEAR ENDED 31 DECEMBER 1992

	£ 1992	£ 1991
INCOME		
Sales of Publications		
Journal of Bryology	16,683	14,449
Other	448	1,680
	17,131	16,129
Subscriptions	8,185	6,720
AGM and other meetings	2,947	2,438
Sale of lenses etc.	163	110
Sale of sweatshirts	36	360
Side bequest	-	24,554
Wallace memorial	-	2,548
Legacies and donations	5	122
Interest	4,411	3,969
Sundries	130	436
	£ 33,008	£ 57,386
LESS EXPENDITURE		
Printing and Distribution		
Journal of Bryology	24,923	22,174
Bulletin	1,894	1,158
Special Volumes	586	-
	27,403	23,332
Purchases for resale	465	2,122
Prospectus and membership list	-	270
Wallace Memorial	404	5,000
Malawi grant	-	1,000
Purchase of sweatshirts	-	502
Expenses - Meetings	3,323	2,815
" Officers	385	246
Atlas compilation	-	112
Insurance	87	87
Sundries	418	340
	£ 32,485	£ 35,826
SURPLUS FOR YEAR	£ 523	£ 21,560

BRITISH BRYOLOGICAL SOCIETY
STATEMENT OF AFFAIRS AS AT 31 DECEMBER 1992

	£ 1992	£ 1991
CURRENT ASSETS		
National Westminster Bank - Current account	2,305	2,606
National Westminster Bank - Business reserve	20,522	20,994
Girobank	363	1,008
National Savings Bank	36,998	34,115
	60,188	58,723
LESS CURRENT LIABILITIES		
Blackwells 1992 account	8,875	7,933
	£ 51,313	£ 50,790
NET ASSETS		
Represented by:		
Surplus brought forward 1 January 1992	50,790	30,343
Wallace Memorial Fund utilised	-	(1,611)
Provisions not required	-	498
	50,790	29,230
Surplus for year	523	21,560
Surplus carried forward 31 December 1992	£ 51,313	£ 50,790

G C S CLARKE
Treasurer

I report that the Balance Sheet as at 31st December 1992 and attached Income and Expenditure Account are in accordance with the books and records of the Society.

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

8 November 1993

SUBSCRIPTIONS 1994

Subscriptions are due on 1 January each year. They remain at £15 for full members, £1 for family members and £7.50 for student members. Members are requested to check their records and to pay promptly in order to save the cost of sending out reminders. Cheques etc. should be made out to the **British Bryological Society** and forwarded to the Hon. Membership Secretary:

Mr 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, BRITTANY, 1993

Acting as local secretary for an area I barely knew was daunting but Council contributed towards a hectic, three-day reconnaissance snatched in October 1992. This was vital in assuring the success of the meeting. Most important, it caused me to switch bases to the picturesque fishing port of Douarnenez rather than inland Quimper with its bad traffic congestion, scarce parking and less suitable hotels. Douarnenez had *ambiance*.

The party proved to be an ideal size for trouble-free bryological exploration in a land *sans* grid references. It also encompassed a blend of personalities which ensured that our evenings in pleasant harbour-side restaurants were a delight. Those attending included our sole French 'guest' Odette Aicardi, plus Jeff Duckett, Nick Hodgetts, David Long, Siobhan McDermott, Ron Porley, Michael Proctor, Celia and Gordon Rothero, Angela, Anton and Ivan Russell, Robin and Wendy Stevenson, Harold Whitehouse and myself. Most were comfortably accommodated at *Hôtel Le Bretagne*. We were pleased to be joined on the excursions by Barbara (daughter of Ruprecht) Düll and her friend Jörg who were staying with friends at Quimper. Some people bryologized *en route* to Brittany. One of the best finds of the whole meeting was the discovery by David Long of *Tortula fragilis* on a shady wall top at Mont-St-Michel (Manche, Normandy) – a rare species in Europe and probably new for France. On entering the *département* of Finistère, where all but one of the days were spent, the streams were seen to be in spate although the weather elsewhere had been very dry. Later, we were left in no doubt about why Atlantic bryophytes are so frequent in Finistère compared to other *départements*. Nomenclature in this account follows Grolle (1983) for liverworts and Corley *et al.* (1982) with modifications by Corley & Crundwell (1991) for mosses.

THURSDAY 1 APRIL

Tréfeuntec and Dunes de Ste-Anne-la-Palud

A bright but breezy early spring morning found us, at low tide, in the small rocky cove of Tréfeuntec about 6 km north-east of Douarnenez. A Little Egret watched as the 'Caledonian' contingent headed with determination for the NE-facing slopes while others, with sights set

on Mediterranean bryophytes, made for the warmer SW-facing slopes. *Epipterygium tozeri*, *Fissidens curnovii*, *F. limbatus*, *Pottia crinita*, *Frullania fragilifolia*, *Porella obtusata* and *Plagiochila killarniensis* were seen only on the lusher NE-facing cliffs. The sunny slopes, with schist outcrops protruding from a community of *Ulex gallii*, *Erica cinerea* and *Ruscus aculeatus,* provided many of the anticipated Mediterranean-Atlantic taxa. *Gongylanthus ericetorum* grew sparsely on peaty soil under *Erica* with *Entosthodon obtusus* and *Juncus capitatus* at the top of the slope. Bare rocks and soil-filled crevices supported *Campylopus fragilis*, *C. pilifer*, *Encalypta vulgaris*, *Grimmia laevigata*, *G. montana*, *Gymnostomum viridulum*, *Pleurochaete squarrosa*, *Pterogonium gracile*, *Tortula atrovirens*, *Trichostomum crispulum*, *Riccia crozalsii*, *Scapania compacta* and abundant *Hypericum linariifolium.* Interestingly, amongst these indicators of warmth and aridity, on some locally shaded or irrigated SW-facing slabs, were copious quantities of *Andreaea rothii* and *Bryum alpinum*, the latter with sporophytes. Repeatedly during the meeting, we were to observe the remarkable capacity of moisture-loving bryophytes to make a living in tiny 'safe sites' in otherwise exposed and unpromising localities on the sea-cliffs. *Schistidium maritimum* (rarely plentiful in Brittany), *Tortella flavovirens* and *Trichostomum brachydontium* occurred on rocks just above high tide level. Overall this proved to be one of the richest (76 taxa) of the coastal sites visited and an excellent introduction to Brittany. The softer schist rocks and associated 'head' deposits seem to provide a wider range of niches than the harder granites which form most of the exposed coastline.

After an hour or so, the party walked round on uncovered sand flats to the Dunes de Ste-Anne-la-Palud to the north. On a large dune system with familiar species such as *Tortula ruraliformis*, *Homalothecium lutescens* and *Brachythecium albicans* in abundance, we found that *Pleurochaete squarrosa*, *Scorpiurium circinatum* and *Rhynchostegium megapolitanum* were also plentiful. Most pleasing was a large population of *Cheilothela chloropus,* first found in October 1992, on a low grassy hummock in the south-west corner of the area with *Didymodon acutus, D. fallax* and *Pseudocrossidium hornschuchianum*. The only site for *Cheilothela* in Brittany listed by Gaume (1956) is Belle-Ile (Morbihan). Damp ruts produced several *Bryum* spp. including *B. pseudotriquetrum* and *B. inclinatum*, and *Reboulia hemispherica*. Patches of *Sambucus* scrub yielded the epiphytes *Tortula laevipila*, *Orthotrichum tenellum*, *Zygodon conoideus* and *Z. viridissimus*. Gathering clouds forced us back to the cars where lunch was taken during a violent shower.

Locronan and Forêt du Duc

In resumed sunshine a brief halt was made in the 'showpiece' village of Locronan which is built almost entirely from granite and has earth-capped drystone walls along the main street. In one wall hollow, a colony of *Targionia hypophylla* was discovered and immortalized in plane and '3-D' photography by Michael Proctor and Harold Whitehouse among others. The main interest was provided by spectacular sheets of *Leptodon smithii* growing directly on the rough granite blocks constituting the south and west walls of the impressive church. Much fun was had photographing both the moss and those photographers who balanced precariously on buttresses to capture wet and dry states of *Leptodon*. *Bryum radiculosum*, *Cololejeunea minutissima* and *Porella obtusata* were also found on walls in Locronan, and a large *Tortella* which entirely lacked quadrate cells on the ventral face of the nerve and appears to be intermediate between *T. tortuosa* and *T. densa*.

After congregating by an impressive outdoor granite pulpit of the chapel on Locronan 'mountain' (289 m) the party visited Forêt du Duc on its gentle northern slope. Predominantly a neglected *Fagus sylvatica* coppice with some *Quercus petraea* and *Sorbus aucuparia*, the

wood has an understorey of *Vaccinium myrtillus* and a little of the character of Wistman's Wood. This results from low stature of the beech regrowth, a smattering of granite boulders and an extraordinary abundance of *Rhytidiadelphus loreus* and other robust mosses such as *R. triquetrus*, *Plagiothecium undulatum* and *Dicranum majus*. The most productive habitats were acid banks and boulders along the track into the wood where *Pogonatum nanum*, *Ptychomitrium polyphyllum* and *Plagiochila killarniensis* were among the more interesting species noted. The luxuriant but relatively species-poor epiphytic vegetation included *Lejeunea lamacerina*, *L. ulicina*, *Metzgeria temperata* and *Ulota bruchii*. *Hylocomium brevirostre* occurred in a few places on stumps and, in one instance, at a height of about one metre on a *Fagus* stem but we did not see *Leptodontium flexifolium* which was once abundant here (Gaume, 1956).

Afterwards the group dispersed, some examining fallow fields. At Rosaguen (1 km west of Locronan) *Bryum sauteri*, *Ditrichum pusillum*, *Entosthodon fascicularis*, *Pohlia camptotrachela*, *P. lutescens* and *P. melanodon* were noted by Harold Whitehouse's party. Gordon Rothero and David Long visited the Forêt de Nevet near Douarnenez and, among some common acidiphilous woodland bryophytes, found *Leucobryum glaucum* and *L. juniperoideum* both in fruit. A wonderfully varied day's bryology was perfectly rounded off in a quiet seafood restaurant on the quayside where the patron's wife almost went into shock at the unannounced arrival of 14 bryologists but who afterwards coped admirably.

FRIDAY 2 APRIL

Menez-Hom

On most days short stops were made to examine the epiphytes of village trees and species on church walls. At Ste-Marie-du-Menez-Hom, *Leptodon smithii*, *Orthotrichum tenellum*, *Tortula papillosa* and *Ulota phyllantha*, all common in Brittany, were found on *Ulmus* in the car-park. More *Leptodon* was seen on the granite church wall. A diversion was also made to the summit of Menez-Hom (330 m) which forms the western extremity of the Montagnes Noires range and from which we enjoyed a superb view of western Brittany intensified by distant rain storms. *Menez* is the breton equivalent to Welsh *mynydd* – a mountain. We did not bryologize seriously on the eroded, heathy top which is famous for Per Størmer's original discovery of *Campylopus introflexus* in Europe and as one of the few localities in Brittany for *C. atrovirens*.

Bois du Loc

Bois du Loc is the 'forêt domaniale' of nearby Landévennec, a village at the mouth of the River Aulne. Steep north-facing slopes, at the base of the Crozon peninsula, are clothed with dense *Quercus petraea-Fagus sylvatica* forest almost down to the sheltered rocky shore of the estuary. Again, luxuriance of a few robust species such as *Dicranum majus*, *Isothecium myosuroides*, *Pleurozium schreberi*, *Rhytidiadelphus loreus*, *R. triquetrus* and *Frullania tamarisci* was the main feature. However, some commoner Atlantic bryophytes were seen, particularly associated with granite clitter, including *Heterocladium heteropterum* var. *flaccidum*, *Hookeria lucens*, *Cololejeunea minutissima* (a common epiphyte in Brittany), *Lejeunea lamacerina*, *L. patens*, *L. ulicina*, *Plagiochila killarniensis*, *Saccogyna viticulosa*, *Scapania compacta* and *S. gracilis*. Amongst a reasonable list of woodland bryophytes *Leucobryum juniperoideum* (c.spor.) was also noteworthy. Much interest was generated by the discovery of *Ditrichum subulatum* and *Entosthodon attenuatus* on a clayey bank just above the shore. Surprisingly, Gaume (1956) lists only one locality in Finistère for *D.*

subulatum. *Amphidium*-like cushions on a shaded cliff on the shore misled most people and were in fact formed by *Rhabdoweisia fugax*. *Schistidium maritimum* and *Frullania microphylla* (one previous record for Finistère: Gaume, 1955) were seen nearby. Deserted picnic tables at the top of the wood provided an ideal site for lunch in warm and sunny conditions.

Cap de la Chèvre

The long drive to this southernmost prong of the Presqu'ile de Crozon took us through Crozon, Morgat and a long stretch of wind-clipped heathlands which, in autumn, are resplendent with flowering *Erica ciliaris* and *Ulex gallii*. This is typical breton granite cliff-top habitat and it looks extremely unpromising for bryophytes. In the eroded heathy peat the most conspicuous species were *Campylopus introflexus*, *Entosthodon obtusus*, *Cephaloziella divaricata*, *Diplophyllum albicans*, *Frullania tamarisci* and *Scapania compacta*. More careful inspection of sheltered granite outcrops, and particularly a line of scree below gentler cliffs on the west side of the semaphore, led to discovery of *Scapania gracilis* and *Plagiochila killarniensis*. *Leucobryum glaucum* turned up in a seepage patch in otherwise exposed salt-clipped heath. A small stream gully nearby produced *Fossombronia angulosa* and *Sphagnum denticulatum*. Gordon Rothero found *Plagiochila punctata*, *Riccardia chamedryfolia*, *R. multifida* and *Saccogyna viticulosa* in similar niches on the east side of the cape.

Afterwards several people bryologized further along the east side of the cape. Sunny cliffs around the Anse de St Nicholas near Keravel were notable for *Campylopus pilifer*, *Grimmia montana* and *Plagiochila killarniensis* plus *Hypericum linariifolium* and much *Teesdalia nudicaulis*. Groups of white-flowering *Asphodelus albus* enlivened the mats of dead *Pteridium* fronds on the cliff slopes and splendid evening views were enjoyed across the Baie de Douarnenez during the drive back.

SATURDAY 3 APRIL

Montagne St-Michel D'Arrée

We left the cars in appalling conditions of wind and rain and were soon sheltering in a dripping huddle in the hilltop chapel (380 m). A meeting of eyes told us that this would not do and, as one, we ventured onto the relatively sheltered north-east slope where a Dartmoor-like clitter of granite boulders is the main interest. The hill is now badly abraded by tourist pressure but *Dicranum scottianum*, *Grimmia trichophylla*, *Racomitrium lanuginosum*, *Barbilophozia attenuata*, *Lophozia ventricosa*, *Plagiochila punctata* and *Scapania gracilis* were found with some commoner species during the briefest of searches.

The whole party halted momentarily in the nearby village of Brasparts where a brief respite in the rain enabled the detection of *Habrodon perpusillus*, *Orthotrichum tenellum*, *Tortula laevipila* and *T. papillosa* on *Aesculus* trunks outside the church. *Aloina aloides* and *Didymodon luridus* were found on a churchyard wall.

Yeun-Elez

The considerable expanse of bog and wet heath called Yeun-Elez near Brennilis, in a depression in the Arrée mountains, now contains a large reservoir and associated nuclear power station which dominates the landscape ominously. The main objective, to find *Sphagnum pylaisii*, was soon satisfied, again in heavy rain. Small quantities of the curious

Rhizomnium-like 'sedoides' form were present in a roadside runnel but vast quantities of the normal, blackish, branched form were present in shallow pools. These, it was presumed, dry out in summer but they were vengefully flooded during our visit. In trying conditions more than one person noted that a less attractive bryophyte than *S. pylaisii* would be hard to imagine. The other *Sphagna* seen were *capillifolium*, *compactum*, *cuspidatum*, *denticulatum* (including large 'obesum' forms), *fallax*, *magellanicum*, *palustre*, *papillosum*, *subnitens* and *tenellum* together with *Campylopus brevipilus*, *Cephalozia bicuspidata*, *Gymnocolea inflata* and *Odontoschisma sphagni*, *Pogonatum nanum* was found on a roadside bank nearby.

Forêt du Cranou

Lunch was taken on arrival in sodden condition at this extensive area of attractive ancient *Fagus sylvatica* forest and the rain stopped. Forêt du Cranou has a similar 'feel' to the New Forest. A singular feature is an extraordinary abundance of *Neckera crispa*, often fruiting, on even quite young *Fagus* stems. There are no calcareous rocks to account for this phenomenon, just clean air and long continuity of the forest cover. Several trees in an area with picnic tables bore the large lichen *Lobaria virens* and one patch of *L. pulmonaria* was seen. Other bryophyte epiphytes were also luxuriant including *Neckera complanata* (c.spor.), *N. pumila*, *Ulota crispa*, *U. bruchii*, *Zygodon rupestris*, *Lejeunea lamacerina*, *L. ulicina*, *Metzgeria temperata* and *Plagiochila killarniensis*. The ground flora was less luxuriant on the clayey soils than at rockier sites visited earlier but included *Hylocomium brevirostre*, *Ctenidium molluscum* 'woodland taxon' and *Trichocolea tomentella. Marsupella emarginata*, *Metzgeria conjugata*, *Plagiochila spinulosa*, *Porella arboris-vitae*, *Fissidens dubius* and *Diphyscium foliosum* were recorded on stone or earth-filled crevices.

Back at the car-park, Jeff Duckett's birthday was celebrated with slices of *tarte aux pommes*. Later our President reciprocated by contributing a superb and much appreciated seafood spread to the evening's feast. Brief halts on the return journey produced *Habrodon perpusillus* and *Tortula papillosa* at Châteaulin, *Leptodon* at Hanvec, and *Leptodon*, *Tortella nitida* and *Porella platyphylla* at Le Faou where, on another day, *Tortula pagorum* was also found on town trees.

SUNDAY 4 APRIL

Ile de Groix

A fine spring day commenced with an early drive to the docks at Lorient from where a small car ferry of the *Compagnie Morbihannaise et Nantaise de Navigation* took us across to Groix in about an hour. This island of Precambrian schist lies about 6 km from the mainland of Morbihan and is like a diminutive version (8 by 3 km) of Belle-Ile which was just visible on the southern horizon. After landing at Port Tudy we walked through the main town, Groix, and then to the exposed south coast at Locqueltas. Species of stone walls, hedgebanks, elders and stubble fields noted *en route* included *Cryphaea heteromalla*, *Dicranella staphylina*, *Didymodon insulanus*, *Epipterygium tozeri*, *Phascum cuspidatum*, *Pseudocrossidium revolutum*, *Scorpiurium circinatum*, *Weissia brachycarpa*, *Riccia glauca* and *R. sorocarpa*. A range of rocky and earthy habitats was examined during a leisurely walk westwards along the cliffs, and part way up a coastal *vallon*, until we reached Port St-Nicholas. Lunch was enjoyed in perfect conditions near Locqueltas amid sheets of the impressive non-British species *Riccia ciliifera* which was encountered in many places, usually on peaty earth receiving some seepage. On soil or rock in different niches on the cliffs were *Acaulon muticum*, *Bryum alpinum*, *B. dunense*, *B. pseudotriquetrum*, *Campylopus pilifer*, *Entosthodon*

obtusus, *Ephemerum sessile*, *Grimmia laevigata*, *G. trichophylla*, *Phascum cuspidatum* var. *piliferum*, *Pleurochaete squarrosa*, *Pottia crinita, P. recta, P. davalliana*, *Scorpiurium circinatum*, *Tortula atrovirens*, *Trichostomum brachydontium*, *T. crispulum*, *Weissia perssonii* (probably new to France), *Fossombronia husnotii*, *F. pusilla* var. *maritima* (believed new to Brittany), *Gongylanthus ericetorum* (scarce), *Riccia crozalsii*, *R. nigrella* and *Scapania compacta. Armeria maritima*, *Mibora minima*, *Plantago coronopus*, *Romulea columnae*, *Scilla* spp., *Trifolium subterraneum*, *T. suffocatum*, *Tuberaria guttata* and *Ulex gallii* were among the commoner flowering plants. Scanty turf on the exposed Pointe de l'Enfer concealed confusing mixtures of stunted *Pterogonium gracile* and *Scleropodium touretii*. Nearby, a few bryologists descended into the dripping Trou de l'Enfer and found *Fossombronia angulosa* and *Mnium hornum*. At the head of Port St-Nicholas some sheltered cliffs with seeps produced *Campylopus fragilis*, *Plagiochila killarniensis* (which we were all coming to recognize from its musty smell, nearly lacking in wetted *P. spinulosa*), *P. porelloides* and *Saccogyna viticulosa*. On the walk across the island back to Port Tudy further stubble fields near Kerloret yielded *Anthoceros agrestis* and *Entosthodon fascicularis*, and *Scleropodium cespitans* was found on a sheltered wall top near Port-Lay. On a vertical exposure of 'head' by the track just east of Port Tudy, David Long pointed out a large quantity of *Tortula cuneifolia* (c.spor.) which most of us would have overlooked. It was so comfortable socializing outside the harbour-side café that we almost missed the ferry back to Lorient. That evening we learnt that a relative of Odette had died and she had to leave us.

MONDAY 5 APRIL

Roc'h Trévézel

More rain and south-westerlies accompanied our visit to this granite tor (365 m) in the Montagnes D'Arrée a few kilometres north of Montagne St-Michel. First the party examined another tor to the south of Roc'h Trévézel which had a similar flora. These rocks arise from the surrounding heathland with much *Luzula sylvatica* about their bases and drapes of *Silene maritima*. Bryophytes found on the granite surfaces included *Andreaea rothii*, *Campylopus fragilis*, *C. paradoxus*, *Dicranoweisia cirrata*, *Dicranum fuscescens*, *D. scottianum*, *Grimmia ovalis*, *G. trichophylla*, *Hedwigia ciliata*, *Heterocladium heteropterum*, *Isothecium myosuroides*, *Mnium hornum*, *Polytrichum juniperinum*, *P. piliferum*, *Racomitrium aquaticum*, *R. heterostichum*, *Rhabdoweisia fugax*, *Barbilophozia attenuata*, *Diplophyllum albicans*, *Frullania fragilifolia*, *F. tamarisci*, *Lophozia ventricosa* var. *silvicola*, *Plagiochila punctata*, *P. spinulosa*, *Porella obtusata* and *Scapania gracilis*. The robust mosses *Dicranum majus*, *Hypnum jutlandicum*, *Plagiothecium undulatum*, *Pleurozium schreberi*, *Pseudoscleropodium purum*, *Rhytidiadelphus loreus*, *R. triquetrus and Thuidium tamariscinum* were common in sheltered heath between the granite outcrops. On the twigs of *Prunus spinosa* scrub near the summit one group found *Colura calyptrifolia*, *Lejeunea ulicina* and *Ulota calvescens*. The latter, collected by Nick Hodgetts, is believed to be new for France. *Metzgeria temperata* was plentiful on both sallows and slate faces in a small quarry on the north face of Roc'h Trévézel. *Ulota phyllantha*, *Plagiothecium denticulatum* and *Sphagnum denticulatum* were also seen here. *Racomitrium ericoides* was found on heathy gravel near the car-park.

Le Gouffre, Huelgoat

Huelgoat is the most famous place in Brittany for Atlantic bryophytes (but see below); I am assured the name is pronounced with hard Celtic syllables; *-goat*, is the same as Welsh *-coed*, a wood. The afternoon's exploration was limited to Le Gouffre ('the chasm'), a wooded

ravine of the Argent river with several waterfalls. The wooded slopes to the north suffered terribly in the 1987 storm and the following clear-up, and tree cover had also been reduced in Le Gouffre. The bed of the river contains many large granite boulders and on the bank there are concrete steps and metal handrails at this popular tourist venue. One party crossed to the southern bank and explored a number of side valleys. Others worked the north bank and also examined a large area of carr beyond the ravine. On the boulders, banks and tree boles of the ravine were *Blindia acuta*, *Brachythecium plumosum*, *B. rivulare*, *Cirriphyllum piliferum*, *Dicranum majus*, *D. scottianum*, *Diphyscium foliosum*, *Fissidens dubius*, *Heterocladium heteropterum* vars. *heteropterum* and *flaccidum*, *Hylocomium brevirostre*, *Isothecium holtii*, *Oxystegus tenuirostris*, *Racomitrium aciculare*, *R. aquaticum*, *Rhizomnium punctatum*, *Rhynchostegium riparioides*, *Sphagnum quinquefarium*, *Tetraphis pellucida*, *Adelanthus decipiens*, *Bazzania trilobata*, *Calypogeia arguta*, *Frullania fragilifolia*, *Harpanthus scutatus*, *Lejeunea cavifolia*, *L. lamacerina*, *L. patens*, *Lophocolea fragrans* (especially bases of large boulders in the river), *Marsupella emarginata*, *Metzgeria conjugata*, *M. temperata*, *Nowellia curvifolia*, *Plagiochila porelloides*, *P. punctata*, *P. spinulosa*, *Riccardia chamedryfolia*, *Saccogyna viticulosa*, *Scapania gracilis*, *S. undulata* and *Trichocolea tomentella*. David Long and Gordon Rothero discovered *Jubula hutchinsiae* in more than one locality in side valleys on the south side of the river. This species had not been seen at Huelgoat, its sole locality in Brittany, since 1878 (Gaume, 1955).

Downstream of the ravine, I guided Jeff Duckett to an area of carr where there was much *Sphagnum palustre* and *S. angustifolium* and enquired whether this was right for *Cryptothallus mirabilis*. He knelt down, peeled back the *Sphagnum* layer and there it was (new to France). A spectacularly luxuriant epiphytic flora was seen on the twigs of sallow and birch here including *Neckera pumila*, *Orthotrichum pulchellum*, *Colura calyptrifolia* and *Lejeunea ulicina* and the lichens *Lobaria pulmonaria* and *L. scobiculata*. *Plagiothecium ruthei* and *Conocephalum conicum* grew on wet litter and tree roots. On drier ground nearby *Hylocomium brevirostre* grew to the exclusion of all other species along a stretch of track bank. On the way back to the car-park, *Andreaea rothii*, *Oxystegus tenuirostris*, *Rhabdoweisia fugax* and *Racomitrium aquaticum* were recorded on dripping cliffs by the D769 road. On the return journey David Long recorded *Tortula pagorum* on *Tilia* at Cast.

At Huelgoat I noticed that planting with exotic oak species had been undertaken in some areas in place of the original storm-damaged beech and oak forest. Conservation of the Atlantic bryophyte and lichen species must surely deserve a high priority in the management aims at this rich breton site. Establishment of the original canopy species would seem to be an important prerequisite for the continued welfare of the bryophytes.

TUESDAY 6 APRIL

Fontaine and Vallon Saint-Pierre and Pointe de Leydé

On the final day three contrasting sites on Cap Sizun, the westernmost extremity of France were visited. We started in calm and hazy conditions on the north-facing, sheltered coast just west of Tréboul-Douarnenez. The cars were parked near Fontaine Saint-Pierre, a holy well in which luxuriant *Riccia rhenana* and *Octodiceras fontanum* were floating. Hilarity followed as several bryologists examining these plants were photographed on their knees before an effigy of the saint. We next descended a small *vallon* carrying the blessed streamlet to the shore. Several common hygrophilous species were seen (e.g. *Fissidens dubius*, *Fontinalis antipyretica*, *Hookeria lucens*, *Oxystegus tenuirostris*, *Thamnobryum alopecurum*,

Chiloscyphus polyanthos, *Conocephalum conicum* and *Riccardia chamedryfolia*) but one of the best finds, by Nick Hodgetts, was of *Marchesinia mackaii* (rare in Brittany: Gaume, 1955) on the cliffs below. Further westwards in the vicinity of Pointe de Leydé some granite outcrops yielded *Campylopus fragilis*, *Frullania fragilifolia*, *F. microphylla* (rare or under-recorded in Brittany), *Lejeunea lamacerina*, the almost ubiquitous *Plagiochila killarniensis*, *Saccogyna viticulosa* and *Scapania gracilis*. Soil and rocks by the coast path produced *Didymodon tophaceus*, *Fissidens viridulus*, *Schistidium maritimum* and *Weissia perssonii* and several commoner species but the party soon craved a change of habitat.

Pointe de Lervily

A longish drive to the next site, about half way along the south side of Cap Sizun, was interrupted by halts to view village trees. Pointe de Lervily is a headland on the western side of Audierne composed of a low platform of 'head' material with a boulder beach. The landscape westwards is a sober prospect of abandoned fields marked by drystone walls of granite enclosing deep gorse. On sparsely-vegetated flat ground in front of the semaphore tower we crawled over an intricate crust of *Archidium alternifolium*, *Barbula unguiculata*, *Bryum alpinum, B. bicolor, Campylopus introflexus, Ceratodon purpureus, Entosthodon obtusus*, *Fissidens viridulus*, *Pleuridium acuminatum*, *Polytrichum juniperinum*, *Pottia crinita*, *Scleropodium touretii*, *Tortella flavovirens*, *Trichostomum brachydontium*, *Cephaloziella divaricata*, *Fossombronia husnotii*, *Gongylanthus ericetorum*, *Lophozia excisa*, *Riccia crozalsii* and *R. nigrella*. A local resident, puzzled and somewhat alarmed by our activities, relaxed when he discovered we were English! Lunch was taken watching a moderate swell roll in from the Bay of Biscay in overcast and misleadingly peaceful conditions.

Bestrée Port to Pointe du Raz

Raz is Brittany's version of Land's End and equally over-developed. On impulse, I thought it would be best to park short of it at Bestrée Port, a tiny 'Cornish' fishing harbour in an impossible cliff niche, and walk around on the coast path. We started on the high cliff path in still, bright conditions, but presently a wall of fog moved in and the party immediately became enveloped and dismembered in a shroud of soaking drizzle. In the highly-exposed and summer-baked maritime heath only a few bryophytes were seen including *Archidium alternifolium*, *Campylopus introflexus*, a curious, attractive, golden form of *Hypnum cupressiforme* var. *resupinatum* (on granite), *Polytrichum juniperinum*, *Pottia crinita*, *Tortula atrovirens*, *Trichostomum brachydontium*, *Weissia controversa*, *W. perssonii* and *Riccia sorocarpa*. At one point, a party of workmen loomed surrealistically out of the mist as they excavated the course of the coast path. Until recently the *ancien sentiers des douaniers* were sadly neglected in France in comparison with Britain but, following legislation in 1976, local authorities now maintain them to a high standard. As we approached the last stretch of the Pointe *Tortula atrovirens* (c.spor.) remained the only prominent bryophyte. Few people ventured onto the final fog-bound prominence; most retired to the café before trudging back sodden along the road to the cars.

Tailpiece

Several people had arranged to stay on in Brittany or travel to other parts of France after the meeting. Robin and Wendy Stevenson, Barbara Düll and Jörg stayed on in Finistère visiting, among other places, the Gorges du Coronc where they recorded *Harpalejeunea ovata* and *Porella pinnata* among other commoner Atlantic species. Four of us tried to visit the Chaos de St-Herbot near Huelgoat which the late Ted Wallace is said to have described as the 'only

good site' in Brittany. We were refused access by workmen at the waterworks below the ravine but afterwards followed a path into an oakwood in the valley of the Ellez river above the reservoir. Here granite boulders carried a luxuriant flora including quantities of *Adelanthus decipiens* and other, commoner Atlantic bryophytes. In carr by the lake *Climacium dendroides*, *Sanionia uncinatus* and *Zygodon conoideus* were found. Driven by a desire to find *Plagiochila atlantica* at its only known non-British locality, David Long and I rapidly followed the path past the lake and dam and descended the Chaos. This is a steep ravine on a grand scale, filled with a tumble of gigantic granite boulders, much more impressive than Le Gouffre. We had no time for a thorough inspection but noted tremendous sheets of *Hymenophyllum tunbridgense* and large cushions of *Bazzania trilobata*, far surpassing those seen at Huelgoat. Conspicuous bryophytes such as *Dicranum scottianum*, *Hylocomium brevirostre*, *Isothecium holtii*, *Sphagnum quinquefarium*, *Adelanthus decipiens*, *Plagiochila punctata* and *P. spinulosa* were plentiful. Finally, after a breathless scramble, *Plagiochila atlantica* was discovered by David where he thought it might be; on a well-lit granite rock high above the stream on a SE-facing slope. This was a marvellous high point on which to end the week.

Besides the obvious social benefits of a meeting in France, it was a rewarding experience to compare the bryophyte flora of another part of the Atlantic coast with one's experience in Britain. I found myself making comparisons with Devon and Cornwall more often than with Wales and Scotland. Brittany is perhaps richer in species than Cornwall and its paucity of the choicer Atlantic bryophytes is partly offset by a greater number of warmth-loving taxa but there are some curious omissions. Our few excursions, which added two or three species to the French list and rather more to the flora of Brittany, suggest that significant additions could be made by anyone engaging in further work. I am grateful to all those who helped in the organization or sent in records, including Pierre Boudier (Chartres), Francis Rose, Tom Blockeel and Rod Stern for details of sites, and Michael Proctor and Odette Aicardi for moral and linguistic support. A formal account of the more important findings of the meeting is in preparation for publication elsewhere.

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JEFF BATES

SUMMER FIELD MEETING, SOUTH WEST SCOTLAND, 1993

The meeting was based on Castle Douglas, with headquarters at the Urr Valley Hotel, where a number of members stayed. Others stayed at hotels and B.& B.s nearby, and the location proved to be satisfactory in terms of the range of comfortable accommodation and travelling distances to the sites we visited.

Most of our excursions were in Kirkcudbrightshire (v.-c. 73), with a single foray into Wigtownshire (v.-c. 74) and a couple of days in Dumfriesshire (v.-c. 72). The terrain covered was mostly heavily glaciated Southern Uplands Ordovician. The rivers flowing south into the Solway Firth give rise to interesting tributary valleys, with semi-natural broad-leaved woods. The bogs and mires in this area are varied, ranging from estuarine mosses to hilltop blanket bogs, while the coast supports a number of cliff habitats.

Those attending included John Blackburn, Pam Belsham, Alan Crundwell, Richard Fisk, Michael Fletcher, Jennifer Ide, Frank Lammiman, Peter Martin, Chris and Alison Miles, David Newman, Gordon Rothero, Alastair Rowan (local secretary), Phil Stanley, Rod Stern, and Harold Whitehouse. Not all were able to be there for the entire meeting and there was some coming and going, even (would you believe?) to attend occasional days with the Pteridological Society which happened to have its summer meeting at Castle Douglas in the same week. We were glad to have the company of Jonathan Warren, Ian Langford and Claire Spray, local members of Scottish Natural Heritage, on particular days.

In the notes that follow, new vice-county records are marked with an asterisk * and the figures at the end of each site are the total numbers of mosses and liverworts recorded.

THURSDAY 29 JULY

Kirkconnell Flow (v.-c. 73, 26/96)
This National Nature Reserve lies on the west bank of the River Nith, 6 km south of Dumfries, and is a remnant of the estuarine peat moss which once covered much of the coastal area of the Solway Firth. The day started with heavy rain which cleared as the party reached the central raised bog area. Here the higher water table gives rise to well-developed mire communities. We found seven *Sphagna*: *capillifolium*, *fimbriatum*, *magellanicum*, *palustre*, *papillosum*, *pulchrum*, and a dark form of *S. subnitens* suggesting *S. fuscum* in the field. Other interesting species were *Cephalozia connivens*, *Mylia anomala*, *Odontoschisma denudatum*, and *Calypogeia neesiana**. We spent some time looking for a previously recorded small patch of *Dicranum polysetum* without success (it's a big bog). Chris Miles located it the following week, so it's still there. 32 & 12.

We ate lunch in a sunny field near the afternoon's site, **Southwick Bank Wood**, a broad-leaved woodland lying adjacent to the shore, south of the A710, about 2 km west of the village of Caulkerbush. The area forms part of the Scottish Wildlife Trust's Southwick Coastal reserve, which in turn is part of the Upper Solway Flats and Marshes SSSI. The BBS meeting of 1961 visited this site, walking the marsh between the rock pillars known as the Needle's Eye and Lot's Wife. We followed a similar route and noted *Cryphaea heteromalla* on elder branches, *Orthotrichum stramineum*, *Oxystegus tenuirostris* var. *tenuirostris*, *Plagiomnium affine** on a damp rock face, *Pterogonium gracile*, *Zygodon viridissimus* var. *stirtonii*, *Frullania fragilifolia*, *Lejeunea lamacerina*, *Marchesinia mackaii*, *Plagiochila*

killarniensis and *P. spinulosa*. We found most, though not all, of the 1961 finds and were pleased to add to the list, bearing in mind that this was the home territory of Humphrey Milne-Redhead. 44 & 19.

FRIDAY 30 JULY

Wanlockhead (v.-c. 72, 26/81)
We set off in drizzly conditions to what claims to be the highest village in Scotland, at 450m. This is an important mineralogical site, where lead was mined for over 400 years. The main interest centres on the spoil heaps, on which over 60 mineral species have been identified. The sheer extent of this area makes it difficult to know where to start. We began in a small tributary valley to the east of the Wanlock Water, with a range of micro-sites on the spoil heaps and hillside grass moorland with flushes. These yielded *Breutelia chrysocoma*, *Grimmia donniana*, *Neckera crispa*, *Tetraplodon mnioides*, *Tortella tortuosa*, *Jungermannia exsertifolia* and *Riccia sorocarpa* among a range of species. It looked a hopeful site for *Ditrichum plumbicola* but we searched in vain. 63 & 12.

After lunching in a sheltered hollow we explored an area of spoil to the west of the Wanlock Water, above a disused mine. This had less variety than the morning's site, adding little to what we had seen already. *Dicranella rufescens*, *D. varia* and *Oligotrichum hercynicum* were the most notable. 23 & 5.

By mid afternoon the rain was steady. We made our way to lower ground with a short visit to **Crichope Linn**, east of Thornhill (v.-c. 72, 25/99). Here a stream cuts an impressive 100-foot gorge through the Permian sandstone, amid oak-ash woodland. The range of species was somewhat limited, but included *Chiloscyphus polyanthos* var. *pallescens*, *Nowellia curvifolia* and *Scapania umbrosa*. 21 & 10.

SATURDAY 31 JULY

Glenlee (v.-c. 73, 31/09)
This day took us to the Glenkens, territory which was examined in detail in the last century by James McAndrew, a schoolmaster at New Galloway. Humphrey Milne-Redhead also published species lists from this area, so we had good indications of what to expect. We started at Glenlee House where we were welcomed by the owner, Mr. Robert Agnew, who led us through the Glenlee policies to the wooded gorge of the Craigshinnie burn. The rain was light as we made our way upstream as far as the waterfall of Buck's Linn, under mixed broad-leaves and larch, giving delightfully damp conditions and variable amounts of shade. We noted *Eucladium verticillatum*, *Hylocomium brevirostre*, *Hyocomium armoricum*, *Oxystegus tenuirostris*, *Plagiomnium rostratum*, *Cololejeunea calcarea*, *Lejeunea cavifolia*, *L. lamacerina*, *L. patens*, *Metzgeria fruticulosa* and *M. temperata*. 57 & 28.

Mr and Mrs Agnew kindly provided the facilities of Glenlee House, and we lunched under cover. We then crossed the river Ken to **Holm Glen** (v.-c. 73, 25/67) and the wooded gorge of the Garpel burn. The agility of BBS members is unlimited and impossibly steep banks were descended with ease (well, nearly). We knew from McAndrew that this was a rich site, and so it proved, producing a good diversity of species. These included *Amblystegium fluviatile*, *Cirriphyllum crassinervium*, *Fissidens pusillus*, *Grimmia hartmanii*, *Mnium stellare*, *Pterogonium gracile*, *Taxiphyllum wissgrillii*, *Zygodon baumgartneri**, *Metzgeria conjugata*, *Plagiochila spinulosa*, *Porella arboris-vitae* and *P. cordaeana*. The new *Z.*

baumgartneri record was gratifying, considering that this area has been well worked over. 78 & 29.

Alan Crundwell took the opportunity in the course of the day to examine the grounds of the Urr Valley Hotel, finding a satisfying range which included *Bryum algovicum*, *Cryphaea heteromalla* on elder, *Plagiomnium elatum* (not rare on wet ground in the north but not to be expected in the grounds of hotels), *Plagiothecium curvifolium*, one tuft of *Ulota phyllantha* on an ash, and *Lejeunea ulicina*. 42 & 6.

SUNDAY 1 AUGUST

Ravenshall Woods (v.-c. 73, 25/55)
This day we went westwards to the Cree estuary, near Carsluith, to a mixed wood exposed to sea winds. The best way in was to descend the track to the beach and go along the shore. Some members made it to Dirk Hatterick's Cave, an nearly inaccessible cavern of smuggling renown. The site yielded a variety of species, including *Cirriphyllum crassinervium*, *Cryphaea heteromalla*, *Orthotrichum pulchellum*, *Plagiomnium rostratum*, *Rhynchostegium confertum*, *Lophocolea fragrans* and *Marchesinia mackaii*. Gordon Rothero found *Fissidens rivularis**, an important new v.-c. record and only the second for Scotland, the first being found recently, again by Gordon, in Kintyre.

After a roadside lunch we pressed on into Wigtownshire, to **Bailliewhirr Meadow** (v.-c. 74, 25/44), an SSSI near Whithorn. For a meadow this is a highly variable site, ranging from well-grazed but unimproved grassland to wet reedbeds, with little rock outcrops. Interesting species included *Barbula spadicea*, *Calliergon giganteum*, *Dicranum bonjeanii*, *Drepanocladus aduncus*, *D. revolvens*, and *Scorpidium scorpioides*. 44 & 6.

Some members of the party then took the chance to visit the Whithorn archaeological dig, but Harold Whitehouse, Peter Martin and Phil Stanley looked at a number of arable fields on their way back. These comparatively unexplored habitats yielded *Bryum violaceum** and *Phascum cuspidatum** near Whithorn (v.-c. 74), *Anthoceros agrestis** in great abundance near Crocketford (v.-c. 73) and similarly in a field at Kirkinner (v.-c. 74), and *Bryum klinggraeffii**, *B. sauteri** and *B. violaceum** near Castle Douglas (v.-c. 73). Harold and Phil also examined some fields east of Dumfries on their way home at the end of the meeting; they found *Ephemerum serratum* var. *minutissimum** and *Pohlia lutescens* near Cummertrees (v.-c. 72). Other species seen in two or more of the seven barley and wheat fields were *Barbula convoluta*, *Brachythecium rutabulum*, *Bryum rubens*, *Dicranella staphylina*, *Ditrichum cylindricum*, *Eurhynchium praelongum*, *Pottia truncata*, *Pseudephemerum nitidum*, *Blasia pusilla* and *Riccia sorocarpa*. Total finds from these fields were 20 & 5.

Another special survey was that of the Castle Douglas caravan park, by Michael Fletcher. This produced 14 mosses and 2 liverworts, including *Bryum radiculosum*, rare in Scotland, on mortar on a pillar by the wash-house, and (still to be confirmed, at time of writing) *Tortula virescens*, a possible new v.-c. record, frequent on the tarmac of the site.

MONDAY 2 AUGUST

Silver Flow (v.-c. 73, 25/48)
This well-known NNR consists of a series of blanket mires with pools, lying beside the Cooran Lane, the headwater stream of the River Dee. The long drive through Garraries forest

took us to the normal access point, to discover that heavy overnight rain had raised the stream level from its usual ankle depth to a respectable five feet. It takes more than this to deter the BBS, and we retraced our route south by a mile, found an access track through the Sitka, and got onto the Rig of the Crow's Nest. This is on the lower portion of the NNR, and on the accessible side of the burn. We suspected that it might not be as varied as the northern area, but we soon found 12 *Sphagna*: *auriculatum* var. *auriculatum*, *capillifolium*, *compactum*, *cuspidatum*, *imbricatum* vars. *affine* and *austinii*, *magellanicum*, *palustre*, *papillosum*, *recurvum* vars. *mucronatum* and *tenue*, and *subnitens*. Other finds included *Cladopodiella fluitans*, *Mylia anomala*, *M. taylorii* and *Pleurozia purpurea*. 22 & 10.

The midges at Silver Flow persuaded us to lunch at our afternoon stop at Garroch Bridge in the Glenkens. One half of the party then explored **Garroch Wood** (v.-c. 73, 25/58), a semi-natural oak-ash wood in the valley of the Coom burn, and found *Amblystegium tenax*, *Hylocomium brevirostre*, *Hyocomium armoricum*, *Plagiothecium succulentum*, *Thuidium delicatulum*, *Bazzania trilobata*, *Lophozia sudetica*, *Metzgeria fruticulosa*, *M. temperata*, *Plagiochila killarniensis* and *Trichocolea tomentella*. 56 & 32.

The others examined the adjoining **Hannaston Wood**, higher up the hill and drier. It had rather less variety than Garroch Wood, but yielded *Orthotrichum lyellii* and fruiting *Pseudephemerum nitidum*. 43 & 20 (73 & 34 for the two woods).

In the evening Eric and Donald Watson and their wives joined us at the Urr Valley Hotel, where we were greatly entertained and filled with admiration by Harold Whitehouse's wonderful stereo-photographs.

TUESDAY 3 AUGUST

Grey Mare's Tail (v.-c. 72, 36/11)

We assembled at the National Trust for Scotland car-park on the Moffat to Selkirk road, where we were met by Peter Bush, the NTS ranger. Peter proved to be a most useful local guide. Conditions were drizzly but improving, and the cloud base gradually lifted above the hilltops. We found that the direct path to the Grey Mare's Tail waterfall was washed out and dangerous, so made our way up the alternative path on the northern side, with the peregrines protesting above us.

The upland *Festuca-Agrostis* grassland gives way to *Calluna-Vaccinium* on the ungrazed steep valley sides, with wet rock outcrops and ledges, some of which are quite base-rich. The higher moorland is mainly *Calluna-Molinia*, with blanket peat on the tops. We climbed and bryologized to Loch Skene (520 m) where we lunched in fitful sunshine. We then explored the vegetated screes below the crags to the north-west of the loch, where the progress of Harold Whitehouse among the boulders could be detected by the frequent photo-flashes. This area is renowned for its botanical richness and has been extensively covered over the years. D.A. Ratcliffe published an account of the flora of the Moffat hills in 1959 and the BBS were here in 1961. We therefore expected a good range of species, though new records were unlikely.

Among the species of interest were *Andreaea alpina*, *Anoectangium aestivum*, *Arctoa fulvella*, *Barbula ferruginascens*, *Breutelia chrysocoma*, *Campylopus atrovirens* and *Diphyscium foliosum*. Gordon Rothero found *Ctenidium molluscum* var. *robustum* on a basic flush at 550 m, some shoots of which Michael Fletcher intends to cultivate. *Drepanocladus*

vernicosus (a very rare species in Scotland, and scheduled under the Bern Convention) occurred on a wet rock edge with *Sphagnum* at 490 m. We also found *Dryoptodon patens*, *Grimmia donniana*, *Hypnum callichroum*, *Leptodontium flexifolium*, *Oxystegus hibernicus* on basic soil on wet rock at 610 m, *O. tenuirostris*, *Philonotis calcarea*, *Rhabdoweisia crispata*, *Schistidium strictum*, *Thuidium delicatulum*, *Barbilophozia atlantica*, *Gymnomitrion obtusum*, *Jungermannia subelliptica*, *Leiocolea bantriensis*, *Marsupella adusta* on a north-facing rock slab at 600 m, and *M. sprucei*. 97 & 33.

ALASTAIR ROWAN

AGM AND SYMPOSIUM MEETING, RIPON, 1993.

The pleasant campus of University College of Ripon and St John, one of the 'new' universities, was the venue for this year's AGM and paper-reading meeting. Ripon's reputation as one of the most genteel towns in the north of England certainly seemed to be deserved. It was possibly the first time that the Society has shared a venue with the Mother's Union, who were there in force. Mike Longman's excellent organization ensured that a comfortable and interesting weekend was had by all, including a beautiful woodland for the Sunday excursion. My thanks to all the speakers for giving a range of very interesting talks. The following summaries have been provided by the authors.

NICK HODGETTS

- **Prof. P.W. RICHARDS** (Cambridge): 'Richard Spruce, the man.'

[Prof. Richards' talk is reproduced on pages 53 to 57 of this *Bulletin*.]

- **Dr S.R. EDWARDS** (University of Manchester): 'Spruce in Manchester.'

The substantial holdings of Richard Spruce (1817-1893) material, at Manchester Museum Herbarium (MANCH), seem to have been one of the best kept secrets about this remarkable Yorkshireman who died one hundred years ago. Not only do we have Spruce's own large personal herbarium, plus (and including) sets of his *Hepaticae Spruceanae: Amazonicae et Andinae*, his *Musci Amazonici et Andini*, and substantial lichen collections, but we also have a collection of his letters and maps and other documents which may interest Spruceologists more than bryologists. These all total about 16,500 items.

The Spruce material came to Manchester mostly in 1919, nearly 26 years after his death. Matthew Slater was Spruce's botanical executor and he had inherited Spruce's massive personal herbarium; when Slater died, it was W.H. Pearson who ultimately effected the transfer to Manchester Museum.

The large Spruce collections at Manchester Museum number over 16,500 items, consisting of:

his own personal herbarium of liverworts:	8,264
additional liverworts such as distributed sets:	~ 700
his own personal herbarium of mosses:	~ 5,000
additional mosses in distributed set:	289
his own personal herbarium of lichens:	~ 2,000
documentation such as letters and maps:	~ 300

The liverworts, which form the bulk of the Spruce material, are largely from Spruce's fifteen years in South America (June 1849 to June 1864), but also from his year in the Pyrenees (April 1845 to April 1846) and from elsewhere, and also include specimens collected by others. The mosses are more or less equally divided between British and non-British collections, and the lichens are mostly from the Pyrenees. There are also a few flowering plants and ferns. The letters to Slater in effect form a diary of Spruce's last thirteen years; Slater was Spruce's friend, factotum and confidant, and the letters make fascinating reading, both from a social and historical standpoint, and also for any bryologist interested in perceptive and detailed observations by one of the world's greatest hepaticologists. The maps include hand-drawn examples by Spruce, including a finely detailed map of the River Trombetas, with compass bearings and lines of latitude and longitude. It appears to have been drawn by Spruce from first principles. The caption explains how five points were fixed by astronomical observation and the remainder by compass bearings, and how he ascended the river in 1849.

The following data give an indication of the significance of the Spruce liverwort collections at Manchester Museum:

2,000,00	estimate of total plant collections;
34,346	total liverworts;
8,971	all Spruce liverworts (including personal herbarium and *Hepaticae Spruceanae*);
924	Spruce liverworts designated TYPE (including holotypes, isotypes, lectotypes, isotypes, n. sp., sp. n., etc.); about 200 further packets have been designated TYPE, etc. since data were input to the database, although there may be some overlap;
8,264	Spruce's personal herbarium accessed in 1919.

We know these figures because comprehensive data from all of our liverwort collections (as well as from our Foreign Flowering Plants, etc.) are on a computer database. The database had only been available for editing and manipulation for about three weeks before the B.B.S. Autumn meeting at Ripon in September 1993; improved search criteria applied since then have revealed over double the number of Spruce specimens mentioned at that time.

This report of the Ripon lecture has been substantially updated in light of subsequent work on the Manchester material. A comprehensive account is given in the chapter: *Spruce in Manchester: Manchester Museum Herbarium* (with an Appendix on Manchester City Library by Professor Brian W. Fox), in the forthcoming volume *Richard Spruce (1817 - 1893), Botanist and Explorer*, to be edited by Prof. M.R.D. Seaward and published jointly by the Royal Botanic Gardens, Kew and the Linnean Society .

• **Mr A.R. PERRY** (National Museum of Wales): 'The early embryology of the British Bryological Society.'

Before the foundation of the Moss Exchange Club in 1896, several important bryological books were published in Britain. Notable among these were Dillenius' *Historia Muscorum* of 1741, Turner's *Muscologiae Hibernicae Spicilegium* of 1804, Hooker's *British Jungermanniae* (1816), and Hooker & Taylor's *Muscologia Britannica* of 1818, 2nd edition 1827 with Wilson's revision of 1855. In addition there were several, more popular,

publications which gave impetus to the study of mosses, for example Stark's *A Popular History of British Mosses* (1854), Berkeley's *Handbook of British Mosses* (1863, 2nd ed. 1895), Tripp's *British Mosses... (1865*, 2nd ed. 1888), Hobkirk's *A Synopsis of the British Mosses* (1873) and Fry's *British Mosses* (1892). The liverworts fared rather less well: Cooke's *Easy Guide to the Study of British Hepaticae...* (1865), Carrington's *British Hepaticae...* (1874-75) and Cooke's *Handbook of British Hepaticae* ([1893] '1894') were all that were easily available to the aspiring hepaticologist in the latter half of the last century, and Carrington's work, the best of the lot, was never completed because of illness. Besides these, a few specimen books were available during the century: for the mosses Flintoft's *Specimens of British Mosses in the English Lake District* (*ca.* 1830), George Gardner's *Musci Britannici, or Pocket Herbarium of British Mosses* (1836) and William Gardiner's *Twenty Lessons on British Mosses* (1844, 1846), second series (1849); for the hepatics McIvor's *Hepaticae Britannicae, or Pocket Herbarium of British Hepaticae...* (1848). But as the century drew to a close a stimulus was required to get the ailing subject back to good health.

The Revd C.H. Waddell, Rector of Saintfield and (later) Grey Abbey, Co. Down, realizing the lack of progress in bryology, placed an advertisement in the *Journal of Botany* in 1896. Headed 'EXCHANGE CLUB FOR MOSSES AND HEPATICAE' it starts: 'While much has been done for the study of phanerogams by means of clubs for exchanging, recording, and naming specimens, I believe the want of such a society for mosses hinders the advance of bryology. If one could be established ... it would prove of great assistance to beginners...' Offers of support from a number of friends had already been received, and he thought that at least thirty active members would be required to make such a society successful. There was an immediate response from H.N. Dixon (whose *The Student's Handbook of British Mosses* was published the same year) by letter to the *Journal of Botany*. Dixon thought an Exchange Club would serve a very useful purpose, but was concerned that it might tend towards the extermination of our rare species. In reply, Waddell said the following rule had been drawn up for the Moss Exchange Club: 'Great care should be taken not to injure or exterminate any rare or local species. If a plant only occurs sparingly, not more than one or two specimens should be taken ... Localities near towns or where there is any danger of a rare species being exterminated should not be too definitely published' – a rule that we still observe.

Twenty-three members enrolled in 1896 having paid the annual subscription of one shilling, and Waddell acted as Secretary, Treasurer and Distributor of specimens that were submitted. Some of the new members who joined are well-known names: besides Waddell and Dixon there were W.E. Nicholson, S.M. Macvicar, W. Ingham and Miss E. Armitage all with considerable bryological knowledge and eventually leaving their undoubted mark on British bryology.

Waddell published his Annual Reports in the *Moss Exchange Club Annual Reports* (1896-1922). In his Report for 1897, one year after the Club's formation, he wrote:

> 'During the past Winter and Spring many enquiries have been received as to the work of the Club & copies of Rules sent out which has involved much correspondence, and a large expenditure on postage. ... Other enquirers have not seen their way to join us for two reasons 1st the majority being beginners & not having any stock for exchange or considering that the Club would not be of much help to them in naming their finds prefer to wait till they have made further advance in the study. 2nd Some residing outside the British Isles find that the Society offers no opportunity for the exchange of foreign or continental plants.'

Waddell suggested the formation of three lists of names, 1) those who wished to exchange British for non-British mosses, 2) a list of helpers who would assist beginners, and 3) a list of those wishing to receive help in naming their plants. Later in the same Notebook he reported that Dixon had sent him some 'Notes on Mosses' that had been sent to him in the Exchange and had made a suggestion (which Waddell proposed to carry out) that these notes should be circulated to all members who were to be invited to add notes and criticisms and to ask questions either on the plants sent them or generally on any matter of real interest to the Club. Waddell continued: 'Of course each note must be signed; and I hope the experiment of the "Note Book" may prove a success. It will go on a short circuit of about 6 and then back to me; first to the largest and most important contributors also taking locality into consideration.' Thus were born the Circulating Notebooks in which members could read comments about the specimens that had been submitted for exchange.

Evidence for the immediate success of the Club is that in 1897 Waddell reported that 24 members had contributed 2163 Mosses and 104 Hepatics ... as well as 28 plants sent in to be named, 2295 in all.

It is interesting to examine the list of helpers that emerged from Waddell's request. There were seven; six of them, including Dixon and Nicholson, said they would be willing to help with 'mosses only'. Miss Armitage, the seventh, said 'mosses & hepatics, not critical'. It is clear from these responses that hepatics had been little studied and were consequently very scantily known – a inevitable reflection of the inadequate literature that had been published up to that date. Pearson's two volume work *The Hepaticae of the British Isles* (1899-1902), which should have stimulated the study of hepatics was produced at such an exorbitant price (£11.2s.6d with coloured plates; £7.10s.0d uncoloured) that it was put beyond the pockets of most people (the equivalent in today's prices for 11 gold sovereigns is something in the region of £750!); and it was not until Macvicar's timely and brilliant *The Student's Handbook of British Hepatics* was published in 1912 at 18s.6d. that hepaticology in the British Isles took off.

Meanwhile the circulating notebooks became a platform from which members could air their views on various bryological topics. Waddell, always helpful, advised strongly and kindly on the quality of the specimens sent in, and there followed a lively debate on labelling, folding of packets, and the formation of a personal herbarium, with many correspondents sending in descriptions of the way they prepared packets, labelled and stored them. Revd S. Gasking finally drew the arguments together in a wry comment 'We all have our different ideas ... & we will stick to our own methods notwithstanding this controversy.'

In 1897 E.C. Horrell, though not yet a member, wrote to Waddell telling him that he had started compiling 'as exhaustive a list as I can of the existing lists of the Mosses found in the 112 [British] vice-counties', and inviting help. This led to the eventual production of the first editions of the *Census Catalogues* of Hepatics in 1905 and Mosses in 1907 of the whole of the British Isles, oddly with the hepatic catalogue preceding the one for mosses. Horrell also became involved with helping beginners by setting up a Junior Section. Waddell reported in the 1900 Notebook that this was 'doing well & Mr Horrell has enrolled over 30 members'. This Section came to have its own Annual Report, but on a smaller scale than its parent.

The Notebook for 1901 was 87 pages long and the various controversies and discussions continued; but not for long. The circulating Notebooks ended after 1903 when Waddell decided that the Club was flourishing well enough and he needed a rest from the arduous

circulation that he had nobly instigated and the onerous duties of Secretary, Treasurer and Distributor. The Annual Reports carried on, however, and continued to have succinct versions of the notes on specimens submitted but hardly any other material; they were circulated to all members from 1896 to 1922.

The circulating Notebooks had been an important mouthpiece for those developing interests in bryology, an outlet where ideas and problems had been put forward, mulled over, spat out and reconstituted. Their demise heralded the formalization of British Bryology which was now on a firm basis, with the Moss Exchange Club having among its membership many members rapidly gaining confidence in bryology. The Club and its Junior Section continued to flourish until 1923 when the two amalgamated to form the British Bryological Society that we know today.

- **Mr. R. STEVENSON** (Kings Lynn): 'An amateur in the tropics.'

A selection of holiday slides was used to illustrate the basic concept that, for many amateurs, the best opportunities for getting to, and collecting in, the tropics are on package holidays arranged by so called 'Adventure Holiday' companies (e.g. Explore; Exodus; Guerba). Through these companies one can travel to places which are relatively off the beaten track, and which are certainly likely to be bryologically underworked.

Most of these holidays involve rather a lot of travelling, often using a variety of means of transport. Space is often at a premium, so luggage needs to be minimized, in order to maximize space for collections. Collecting also has to be done swiftly and efficiently, since suitable opportunities are often rather brief, e.g. lunch stops by roadsides.

In order to cut costs many of these trips involve group members in helping out with various tasks, such as food preparation, luggage loading, shopping, etc. Some thought needs to be given to which tasks to volunteer for: gathering firewood, for instance, offers opportunities for bryologizing which scraping potatoes does not.

Basic equipment used is the same as at home, though collecting packets need to be strong where there is any great danger of heavy rain or persistent damp. A string bag is useful for suspending specimens in, to dry out. A major problem is always locating oneself: maps should be bought beforehand if possible (e.g. from Stanford's). (A useful tip is to take a colour photocopy of those bits of the map which are going to be most used, and then laminating them with plastic, for use in the field.) A watch with a built-in altimeter is a useful tool in places where maps are inadequate.

The tropics encompass more than just rain forests, or montane areas, and it was suggested that collecting in the less obviously exciting dry, or urban and suburban areas, might be where amateurs are likely to make the most useful contributions.

- **Dr Harold WHITEHOUSE** (University of Cambridge): 'A presentation of stereoscopic bryophyte photographs.'

• **Prof. B. CRANDALL-STOTLER** (Southern Illinois University, Carbondale): 'Apical organization, gametophyte ontogeny and phylogenetic implications in the moss *Fissidens*.'

Fissidens differs from the vast majority of mosses in possessing uniquely constructed 3-parted leaves that are, at least in part, vertically inserted upon the stem in a distichous arrangement. Early anatomical studies of Lorentz (1864) and Leitgeb (1874) demonstrated that these characters are correlated with a distinctive type of apical organization that centres around a lenticular apical cell with two segmenting surfaces. These authors also both described the early stages of leaf development, but their interpretations of ontogeny differed. Various authors since have provided contrasting views regarding the phylogenetic significance of these characters, but without clarifying the morphogenetic patterns involved. Using a combination of serial paraffin sectioning and SEM techniques, this reinvestigation was consequently undertaken.

In protonemally formed buds and young branches of *F. taxifolius*, the apical cell is initially obovoidal and spirally segmenting, just as it is in other mosses. Divergence angles between the first formed derivatives are 137°, but this angle is quickly increased so that after two complete spirals of segmentation, a 180° divergence angle and lenticular apical cell geometry are established. In contrast to other mosses, the division wall that separates the derivative from the apical cell is deposited parallel to the segmenting wall of the apical cell, rather than at an oblique angle to it. As a consequence, the free surface of the derivative is symmetrical in outline and the derivative lacks the anodic/cathodic polarization that characterizes the asymmetric derivatives of other taxa.

As in other mosses, two divisions, the first periclinal and the second anticlinal, generate a single leaf initial from each derivative. Two sequential oblique divisions in this initial then form the leaf apical cell with two segmenting surfaces. In most species of *Fissidens*, the first of these divisions extends towards the dorsal surface of the transversely inserted initial so that the first formed basal segment is dorsal in position. In mosses with spirally segmenting apical cells, the same cell is always anodic so that it is dorsal on one side of the stem and ventral on the other (Berthier, 1973).

After the 3-celled stage, the mitotic spindle rotates towards the ventral side of the stem, causing the next dorsally positioned cell to be slightly displaced from the transverse plane. This gradual rotation of the spindle continues through the next three division cycles of the leaf apical cell so that by the 7-celled stage the leaf apical cell is reoriented at a 90° angle and is segmenting cells in a horizontal rather than a dorsi-ventral plane. The vaginant lamina is produced from the original basal cells, with the dorsal lesser lamina of the vaginant lamina emanating from divisions in the first formed basal cell. The vertically oriented superior and inferior laminae develop from the reoriented segments. These observations are in complete accord with the interpretations of Leitgeb (1874) and suggest that the unique form of the *Fissidens* leaf is controlled by modified patterns of spindle orientation. These patterns can be altered by the addition of hydroxy-l-proline which, when supplied at 10^{-6}M concentration, inhibits the production of the superior and inferior laminae, and kinetin, which at 10^{-5}M concentration, increases the size of the lesser vaginant lamina.

Studies currently in progress on *F. asplenioides*, a species which forms the lesser vaginant lamina dorsally on one side of the stem and ventrally on the other, suggest that primitive species of *Fissidens* may possess apical organizations that are intermediate between those of

typical mosses and the lenticular system of most *Fissidens* species, and support the hypothesis that *Fissidens* is an ontogenetically more complex, phylogenetically derived, taxon.

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• **Dr Philip E. STANLEY** (Cambridge): 'The cumulative index to BBS publications.'

The British Bryological Society and its predecessor the Moss Exchange Club have recorded their activities in the *Moss Exchange Club Reports* (1896-1922), *Reports of the British Bryological Society* (1923-1945), *Transactions of the British Bryological Society* (1947-1971), *Journal of Bryology* (1972-present) and the *Bulletin of the British Bryological Society* (1963-present). There have also been other occasional publications including volumes containing the proceedings from meetings held in conjunction with other societies.

Although indexes have appeared for each volume of the *Transactions* and the *Journal*, there has not been a cumulative index embracing all of the Society's publications and some years ago I agreed to prepare such an index. A short note was published (Stanley, P.E. (1992). Cumulative index to B.B.S. publications. *Bull. brit. Bryol. Soc.* **59**: 31-32) recently which outlined the status of the project. Since then I have reworked the entries to reflect suggested revisions both in style and items for inclusion. Further, the proceedings of meetings held in conjunction with other societies have now been included.

A draft of the index was exhibited at the conversazione held in conjunction with the AGM in 1992 and members saw that its format is similar to that used in the *Journal*, namely short phrases or at least several words. Thus it differs from some other indexes in which entries consist of a single or at most a few words. The index includes group headings such as *Floras and Checklists*, *Keys to Genera and Species*, *Species New to the British Isles*, *Reports of Meetings* (separate lists by date, place and kind, e.g. AGM), *Membership Lists*. It is hoped these will assist the user in locating useful information. In the main, no attempt has been made to cross reference taxonomic synonyms and if a paper refers to *Hypnum cuspidatum* it will be cited under that name and not under *Acrocladium cuspidatum* or *Calliergon cuspidatum* or *Calliergonella cuspidata*.

The inclusion of citations is now finished and they are now in a pseudo-alphabetic sequence as far as the computer is concerned. There remains the not inconsiderable task of editing these entries to produce a formal index. This will be published from camera-ready material which will avoid the need for a second proof-reading. Each member will receive a copy which will have a page size similar to recent issues of the *Journal*.

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FIELD EXCURSION TO HACKFALL WOOD, 19 SEPTEMBER 1993

The field excursion on Sunday 19 September was to Hackfall near the village of Grewelthorpe about 6 miles NW of Ripon. Hackfall is a semi-natural deciduous wood on the steep banks of the R. Ure. In recent years, however, it has suffered extensive loss of elm trees and parts of it are therefore more open than presumably they were previously. The wood is owned by the Woodland Trust, to whom we are indebted for information and access. The diversity of habitats within the wood and on the river banks ensured a rich flora and over 140 species were recorded on the day.

The underlying rock is Millstone Grit and there are low crags in the higher parts of the wood. The more acidic of these produced small quantities of *Bazzania trilobata*, *Barbilophozia attenuata* and *Cephalozia lunulifolia* but in other places there was evidence of slight base enrichment, with such species as *Eucladium verticillatum* and *Leiocolea turbinata*. Grit boulders and stones occurred in various places at lower levels throughout the wood and these produced *Jungermannia pumila*, *Hygrobiella laxifolia*, *Scapania umbrosa*, *S. nemorea*, *Blindia acuta* and *Heterocladium heteropterum* (some of these only in very small quantity).

The gully formed by the stream flowing through the centre of the wood was obstructed by logs and much overgrown but produced some additional species, including *Metzgeria conjugata* and *Fissidens crassipes*. There were fine patches of *Hookeria lucens* c.spor. in various places on the woodland floor and *Nowellia curvifolia* on rotten wood. *Plagiothecium laetum* and *Plagiochila britannica* were also reported.

A notable feature of the wood is the presence of a number of calcareous springs, often with abundant *Cratoneuron commutatum*. Some of these have extensive masses of tufa, on which the *Eucladium* and *Leiocolea* were plentiful, along with *Jungermannia atrovirens* and a little *Tortella tortuosa*. *Rhynchostegiella teesdalei* was found on wet grit rocks in a runnel where the water was probably calcareous.

The epiphytic flora was not very rich, although there were some fine tufts of *Dicranum montanum* on sycamore and other tree boles. *Metzgeria fruticulosa*, *M. temperata*, *Zygodon conoideus* and *Orthotrichum pulchellum* were also recorded.

The R. Ure has a marked flood zone and its banks had well developed communities of riparian bryophytes. *Dichodontium flavescens*, *Fissidens rufulus*, *Barbula nicholsonii*, *B. spadicea*, *Oxystegus sinuosus* and *Schistidium alpicola* were mainly confined to boulders, while *Porella cordaeana*, *Radula complanata* and *Leskea polycarpa* occurred about tree bases. Other species, such as *Homalia trichomanoides*, were indifferent to substrate. Also on riverside rocks, and presumably benefiting from the calcareous river water, were *Anomodon viticulosus*, *Rhynchostegiella teesdalei* and *Jungermannia atrovirens*. Willow bushes on a small island in the river, and therefore well illuminated, produced *Orthotrichum rivulare* and fittingly, on the anniversary of the great man's death, a little *O. sprucei*. The latter was also reported from alder.

TOM BLOCKEEL

BRYOPHYTE WORKSHOP, UNIVERSITY OF READING, 1993

Twenty members attended the annual taxonomic workshop held this year at the University of Reading on the weekend of 20-21 November for an introduction to the sexuality of bryophytes. We were extremely fortunate to have Prof. Jeff Duckett and Dr Royce Longton as our tutors.

Saturday was spent in the field and we met at Snelsmore Common, a local SSSI, on a cold and frosty morning (Michael Fletcher wore boots so it had to be well below freezing point!). Common bryophytes were collected from the heathland to study in the laboratory the following day. This site has a nice valley bog and male plants of *Sphagnum capillifolium* and *S. palustre* were seen. A *Cephaloziella* was collected for the more ambitious to play with. At midday the temperature began to rise (Michael removed his boots) and we headed back to the car-park where we were confronted by about two hundred leather-clad motor cyclists holding their own taxonomic weekend.

Royce had arranged for us to have lunch at a local pub where we were able to warm up, and in the afternoon we travelled to Redhill Wood (SSSI) to collect common woodland bryophytes.

Sunday we spent in the laboratory; Royce and Jeff began by explaining the differences between the various positions in which antheridia and archegonia are found, and then the previous day's collections were examined. Royce went on to demonstrate the paroecious *Pohlia nutans* while Jeff convinced us that we had collected *Cephaloziella hampeana* (autoecious). The antheridia were dissected from the *Sphagnum* species and under the high power of the microscope the biflagellate antherozooids (sperms) were seen to be swimming in the water under the cover slip. We also looked at gemmae on the protonemata of *Orthodontium lineare* and on *Dicranum tauricum*. Some of us had brought our own collections. These were identified and it was noted whether they were dioecious or monoecious, etc.

This was a superbly informative weekend for professional and amateur alike and our thanks to Royce for organizing such a splendid workshop.

HOWARD MATCHAM

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 1994, Dorset, 23 - 29 March.

Local Secretary, from whom further details are available: Dr Mark Hill, Institute of Terrestrial Ecology, Monks Wood, Abbots Ripton, Huntingdon, Cambridgeshire, PE17 2LS. Tel.: 04873-381 (work), 0223-329819.

This meeting will now be based in Weymouth (*not* Dorchester as previously advertised) in the southern county of Dorset. The **headquarters hotel** will be the Hotel Norfolk, 125/126 The Esplanade, Weymouth, Dorset, DT4 7ES (Tel.: 0305-786734). The 30-bedroomed hotel is on Weymouth sands, 3 minutes walk from the train station. Resident proprietors: Alan & Marjorie Churches. You are encouraged to stay in the HQ Hotel which has the following rates (February 1994) which include VAT.

Nightly	Bed, breakfast & evening meal	£24
	Bed & breakfast only	£18
6 days	(full meeting)	
	Bed, breakfast & evening meal	£130
	Bed & breakfast only	£110

Guest House accommodation in Weymouth includes:

Melcome Villa. B.& B. £12. Tel.: 0305-783026 or 0305-779634 (evenings)
Spindrift Guest House. B.& B. £13. Tel.: 0305-773625.
St John's Guest House. B.& B. £12. Tel.: 0305-775523.

In Dorset there are excellent examples of heathland, where *Dicranum spurium* is likely to be found, bog with good representation of *Sphagnum*, including *S. pulchellum*, and chalk grassland. We will also explore some woodland localities, coastal sites, disused mineral workings and parkland. One of the exciting finds in the area in recent years has been *Lophocolea bispinosa* near Hardy's Cottage, and we will be looking for this species.

Mark Hill will gladly supply a copy of the programme on request

SUMMER FIELD MEETING 1994, Western Ireland, 13 - 27 July.

Local Secretary: Donal Synnott, Botany Section, National Botanic Gardens, Glasnevin, Dublin 9, Ireland. Tel. (from Britain): 010-353-1-374-388.

The meeting will be centred at Ballyvaughan, County Clare, for the first week (13-20 July), where the headquarters hotel will be Hylands Hotel, and at Clifden, County Galway, for the second week (20-27 July). The hotel chosen as HQ in Clifden, the Foyles Hotel, has unfortunately booked out the night of 25 July, so members now attempting to book a full week's accommodation there will be unsuccessful. It will remain as HQ, however, as some people (including the local secretary) have already managed to make successful bookings there. Nearby are Barry's Hotel (Tel. 010-353-095-21287) and Clifden House (Tel. 010-353-095-21187) as well as Atlantic Coast guest-house (Tel. 010-353-095-21050) and Maldna guest-house (Tel. 010-353-095-21171). There are cottages for rent within easy reach of Clifden and camping at Renvyle to the north. Mr Synnott can supply a full list of accommodation. The Tourist Board at Aras Failte in Galway (Tel. 010-353-091-63081) will also help with bookings. It is regretted that it will not now be possible to accommodate everyone in the headquarters hotels.

From Ballyvaughan it is hoped to explore the Burren. The geology is simple: Carboniferous Limestone capped with shale in places; but the terrain is varied, including limestone pavements and escarpments, hazel scrub and ash woodland, lakes and turloughs (seasonally flooded areas). There has been no extensive bryological investigation of the Burren since

Proctor's pioneering work in the 1950s. *Orthothecium rufescens*, *Calliergon trifarium*, *Drepanocladus lycopodioides* and *Bryum neodamense* are among the goodies which occur among the square miles of *Neckera crispa*, *Tortella tortuosa* and *Breutelia chrysocoma*. Ballyvaughan is a quiet centre favoured by botanical tourists.

Clifden is a bit more hectic (relatively speaking) and early booking is advised. It is a few miles from the centre of Connemara National Park at Letterfrack where a lecture room and laboratory facilities can be provided by Dr Noel Kirby, Park Superintendent.

Exploration of the Twelve Bens, the highest Connemara mountains, is far from complete. *Adelanthus lindenbergianus* and *Plagiochila carringtonii* are relatively recent finds on Benbaun. The Roundstone area is home of the rare Irish heathers *Daboecia*, *Erica mackaiana*, *E. erigena* and *E. ciliaris*. The bryophytes include several enigmatic *Sphagna* and *Myurium hochstetteri* in its only Irish station but in need of refinding. There is native oakwood at Derryclare and Kylemore and good coastal habitats.

A visit to Clare Island would be welcomed by the Royal Irish Academy, now engaged in an exciting resurvey of the island. The original survey, published in 1911, is one of the most comprehensive multi-disciplinary surveys ever undertaken. A day trip to the island may be an option for energetic volunteers. A range of accommodation is available for anyone willing to linger. There is a good restaurant and hotel and a cosy pub (but beware of the temptation to remain forever!).

ANNUAL GENERAL MEETING AND SYMPOSIUM MEETING 1994, Preston Montford, Shropshire, 23-25 September.

Local Secretary: Dr. Martha Newton, c/o Botany Department, Liverpool Museum, William Brown Street, Liverpool, L3 8EN.

By a very happy coincidence, we shall be able to celebrate, during this meeting, both the 50th anniversary of the Field Studies Council's formation in December 1943 and the 80th birthday in May of Dr Eric Watson. Both are significant milestones in the life of the Society, and for similar reasons. Whereas Dr Watson's book, *British Mosses and Liverworts*, has guided a long succession of students' earliest steps in the subject, and has turned many into lifelong bryologists who still find it an invaluable source of reference, F.S.C. courses over the years have been instrumental in promoting and facilitating an interest in mosses and liverworts, and have brought the Society many new members. The meeting to mark these happy associations is to be held at Preston Montford Field Studies Centre by kind invitation of the Warden, Mr J.A. Bayley. There will be a celebratory dinner in honour of Dr. Watson.

Preston Montford is about four miles west of Shrewsbury, which is served by a main line railway station. There is a bus link to Montford Bridge, and details are available on request. A block of rooms has been reserved for our accommodation. It is hoped that most people will be prepared to share twin-bedded rooms, as this is reflected in the price (B. & B. £13.72 per person; £58 for the whole weekend from Friday evening, including the celebratory dinner), although single rooms are available on payment of a supplement of £15. Booking forms are available from the Local Secretary, and early booking is recommended. Final figures will be forwarded to the Centre on 20 August!

BRYOLOGICAL WORKSHOP 1994, Bristol, 19-20 November.

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

This workshop meeting will probably concentrate on techniques for growing bryophytes: details to be confirmed in next *Bulletin*.

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

Local Secretary: Peter Bullard. Work address: Cumbria Wildlife Trust, Cumbria, LA22 0BU. Tel.: 05394-32476. Home address: 36 Castle Garth, Kendal, Cumbria LA9 7AT. Tel.: 0539-732699. Further details in next *Bulletin*.

SUMMER MEETING 1995, Tatra Mountains, Slovakia, August 13-24.

Further details in next *Bulletin*.

BBS CENTENARY SYMPOSIUM 1996.

This important symposium, entitled 'Innovations in bryophyte research', is to take place in Glasgow during the first week of August 1996. Contributions will be invited shortly. Further details in future *Bulletins*.

LOCAL MEETINGS PROGRAMME, 1994

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

Saturday 26 March: FERN ISLE WOOD. Messrs N. & A. Bamforth. 11.00 a.m. Whitworth (Car-park opposite pub), SD 884177.

Saturday 16 April: LITTLE SHACKLOW WOOD. Dr M.E. Newton. 11.00 a.m. Roadside parking as available, SK 188693.

Saturday 7 May: LECK BECK. Mr M.M. Gosling. 11.00 a.m. Turn left to Leck after Kirby Lonsdale, SD 644766.

Saturday 18 June: CONWAY VALLEY AREA. Mrs Wendy McCarthy. 11.00 a.m. Llandudno Junction Station car-park, SH 794779.

Saturday 16 July: NORTHWICH LIME BEDS. Mr J. Holness. 11.00 a.m. Marbury Country Park, SJ 651764.

Saturday 20 August: RAMSLEY MOOR. Messrs N. & A. Bamforth. 11.00 a.m. Shillito Wood car-park, SK 295748.

Saturday 24 September: NORTH WALES AREA. Mr G. Battershall. 11.00 a.m. Llandudno Junction Station car-park, SH 794779.

Saturday 15 October: RIVER BROCK. Dr M.E. Newton. 11.00 a.m. Roadside parking as available, SD 566451.

Saturday 5 November: PRIESTCLIFFE LEES (DWT). Mr A.V. Smith. 11.00 a.m. Millers Dale Station car-park, SK 137733.
Saturday 3 December: LIMEKILN FARM QUARRY. Mr L. Johnson. 11.00 a.m. Crossroads near Bay Tree Farm, SJ 857595.

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

A.V. Smith 0663-744499 (BBS)
E.P. McCann 061-962-1226 (NWNU)

SOUTH-EAST GROUP

Saturday 12 March: LARKEY VALLEY WOOD, KENT. Ancient coppiced woodland. Leave the A2 at the Canterbury turn-off and park at TR 123556. Leader Malcolm Warling, tel.: 0843-299615.

If any SE Group member is interested in Southern Group meetings, please contact Howard Matcham, tel.: 0243-781238.

OTHER BRYOLOGICAL MEETINGS, 1994-95

March 11-13, 1994: INTRODUCTION TO MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. Especially for beginners, but others welcome too. Details from the Warden, Mr J. Ellis.

April 8-10, 1994: MANX MOSSES. Tutor: Dr Martha Newton. An opportunity in spring to see a wide range of the rich variety of species on the Isle of Man. 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, PO Box 147, Liverpool, L69 3BX (please enclose a stamped, addressed envelope).

April 22-24, 1994: SPHAGNUM WEEKEND. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. A chance to learn how to recognize most of the British species in the field, and to study them alongside keys. Details from the Warden, Mr J. Ellis.

April 22-25, 1994: MOSSES AND LIVERWORTS. Tutor: Mr Brian Brookes. A bryophyte course particularly suitable for beginners. It will be based near Dunkeld, Perthshire and will be led by our member Brian Brookes who has run these courses for many years. Further information from Brian Brookes, Highland Field Studies, Borelick, Trochry, Dunkeld, Perthshire PH8 0BX (sae appreciated). Telephone 0350-732222.

May 11-18, 1994: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Orielton Field Centre, Pembroke, Dyfed, SA71 5EZ. Offering individual guidance at all levels. Details from the Warden, Dr R.G. Crump.

July 29 - August 5, 1994: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Malham Tarn Field Centre, Settle, North Yorkshire, BD24 9PU. Offering individual guidance at all levels. Details from the Warden, Mr K. Iball.

August 5-12, 1994: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Preston Montford Field Centre, Montford Bridge, Shrewsbury, SY4 1DX. Offering individual guidance at all levels. Details from the Warden, Mr J.A. Bayley.

August 15-19, 1994: LAKELAND MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Blencathra Field Centre, Threlkeld, Keswick, Cumbria, CA12 4BR. Offering individual guidance at all levels. Details from the Warden, Dr R. Lucas.

August 20-27, 1994: MOSSES AND LIVERWORTS. Tutor: Mr Brian Brookes. A bryophyte course particularly suitable for beginners. It will be based near Dunkeld, Perthshire and will be led by our member Brian Brookes who has run these courses for many years. Further information from Brian Brookes, Highland Field Studies, Borelick, Trochry, Dunkeld, Perthshire PH8 0BX (sae appreciated). Telephone 0350-732222.

August 22-26, 1994: MOSSES AND LIVERWORTS OF ROCKS AND RIVERS. Tutor: Dr Martha Newton, Rhyd-y-creuau, Drapers' Field Centre, Betws-y-coed, Gwynedd, LL24 0HB. Offering individual guidance at all levels. Details from the Warden, Mr J. Ellis.

August 27 - September 3, 1994: MOSSES AND LIVERWORTS. Tutor: Dr Martha Newton, Kindrogan Field Centre, Enochdu, Blairgowrie, Perthshire, PH10 7PG. Offering individual guidance at all levels. Details from the Warden, Dr A. Lavery.

September 4-8, 1994: CONSERVATION OF BRYOPHYTES IN EUROPE - MEANS AND MEASURES. This is the second international symposium on Endangered Bryophytes in Europe and will be held at the Institute of Systematic Botany, University of Zürich, Switzerland. It will focus on the scientific foundation of bryophyte conservation and the realization of conservation programmes. Applications have to be registered by ***31 March 1994***. Application forms can be supplied by Dr E. Urmi, c/o Congress Secretariate, Institut für Systematische Botanik der Universität, Zollikerstraße 107, Zürich, Switzerland. Tel.: 01/3854411 or 3854441, Fax 01/3854403.

August 29 - September 2, 1995: IAB & IAL SYMPOSIUM ON FOLIICOLOUS CRYPTOGAMS. There is an increasing interest in foliicolous lichen research and foliicolous lichens living with lichenicolous fungi, bryophytes and insects on living leaves of higher plants form a special ecosystem adapted to the microclimate of their habitat. The plan is to summarize and discuss the present taxonomic and systematic knowledge of the group, and encourage further research on their ecology and morphology, cell biology and chemistry. Preliminary registration form obtainable from Dr Edit Farkas, Institute of Ecology and Botany, Hungarian Academy of Sciences, Vácrátót, H-2163, Hungary, to whom it should be returned by 15 April 1994.

REPORTS OF LOCAL MEETINGS

Southern Group

The first of this winter's meetings was held jointly with the South-East Group at Ranmore Common in Surrey. Thirteen members attended. During the morning we recorded in the Forestry Commission wood and in a small south-facing disused chalk-pit. Rod Stern had told us that twenty years previously, Ground pine, *Ajuga chamaepitys*, had been seen in the chalk-pit and to our delight hundreds of plants were found.

The bryophytes discovered here included *Thuidium abietinum* ssp. *hystricosum*, *Bryum ruderale*, *Entodon concinnus* and *Leiocolea turbinata*. The afternoon was spent on National Trust downland where *Phascum curvicolle*, *P. cuspidatum* and *P. floerkeanum* were seen growing in close proximity. *Entodon concinnus* grew here in some abundance.

The second meeting was held in Ashdown Forest, East Sussex. The aim was to try to rediscover old records of *Mylia anomala* and *Cephaloziella elachista* found by David Streeter, Francis Rose and others in the late 1950s. In this we were successful: Jeff Duckett found the latter and Gordon Rothero found the former. A particularly warm welcome was paid to Gordon who was visiting relatives in Sussex and found time to attend this meeting which had started well with one of Jeff Duckett's students finding *Cryptothallus mirabilis* in its usual habitat under *Sphagnum* and associated with birch – this is the third record for v.-c. 14. Three sites were visited and other bryophytes of note included *Hyocomium armoricum*, *Fissidens celticus* and *Sphagnum magellanicum*.

Seven students from Sussex University and Queen Mary and Westfield College attended this meeting which helped to boost the attendance to twenty one. Our thanks to David Streeter who selected areas to visit.

The third meeting was held in Burnham Beeches with the specific aim to record the number of trees with *Zygodon forsteri* growing on them. In all, seven were found, two of these by Ken Adams after the main party had finished recording. (Ken has since told me that two trees have been found in nearby Egypt Wood, making a total of nine in the area.)

Jeff Duckett demonstrated the distinctiveness of the protonemata and on one tree protonemata only were seen. *Dicranella heteromalla* was found with abundant protonemal gemmae (seen under the microscope later). This is believed to be the first occurrence in the wild; this and the occurrence of protonemal gemmae found on *Dicranum montanum* at the same site will be the subject of a forthcoming publication. Fifteen members attended the meeting.

HOWARD MATCHAM

South-East Group

A joint meeting with the Southern Group at Ranmore Common on 26 September yielded a total of 85 species. Details are in Howard Matcham's report above.

On 20 November the SE Group joined Kent Field Club at Bedgebury Forest to update the bryophytes and particularly the *Sphagnum* list. Rather disappointingly, only three *Sphagna* could be found: *S. palustre*, *S. recurvum* var. *mucronatum* and *S. capillifolium*, but in some sort of compensation we were able to walk on great carpets of the attractive *Pleurozium schreberi*. Noteworthy among the liverworts were *Calypogeia integristipula* and *Jungermannia gracillima*.

The triumph of the year was on 12 December. *Discelium nudum* had been thought extinct in Sussex since the 1970s after its Crowborough site was taken for supermarket development, but the Group, led by Jeff Duckett, went to the area in hopes of rediscovery. To our great joy the *Discelium* was found in quantity on disturbed wet clay. The site was remarkable, too, for *Bryum gemmiferum* (this is only the second record for E. Sussex) and for *Pogonatum urnigerum* as well as *P. aloides*. *Cephaloziella divaricata* was common and *Philonotis fontana* very robust and up to 15 cm tall.

ROY HURR

RICHARD SPRUCE CONFERENCE, YORK

September 20-22, 1993

The Linnean Society of London held their Annual regional Meeting in York where their President, Professor Jack Hawkes, hosted a Commemorative Conference on Richard Spruce (1817-1893), botanist and explorer. The conference was organized by Professor Mark Seaward. The location at York University and the dates complemented those of the BBS AGM and Symposium at Ripon the previous weekend. A few of us at the Ripon meeting took advantage of this arrangement, and we were joined in York by three additional members of the BBS. Bryological participants were Marshall Crosby, Rob Gradstein, Paul Hackney, Ray Harley, Brian O'Shea, Jean Paton, Anne and Paul Richards, Mark Seaward, Barbara and Raymond Stotler.

Richard Spruce's significance as a bryologist was highlighted during the first afternoon session, chaired by Mark Seaward. Marshall Crosby outlined Spruce's contribution to muscology and Raymond Stotler told of Spruce's lifelong fascination with liverworts. Between 1849 and 1864, Spruce collected thousands of botanical specimens in South America. Most of his material was named and distributed by his agent, George Bentham, but he sent his bryophytes to William Mitten. Unfortunately this did not prove to be an entirely satisfactory arrangements because Mitten took the best material and disregarded Spruce's manuscript names.

Richard Spruce gained his knowledge of bryology as a young man in his native Yorkshire where he made significant contributions to the local flora. Subsequently he had the opportunity to study the bryological flora of the Pyrenees, where he worked as a professional plant collector. He was thus in a good position to make the most of his explorations, enabling him to record his field observations which must have been a great help when he came to work on his American collections after returning home. Despite very poor health, he spent as much time as he could studying the liverworts which were his especial interest. This culminated in the publication of his *Hepaticae Amazonicae et Andinae* in 1884-1885. This was the first comprehensive work on tropical American hepaticae and remains the most thorough treatment to date. This *magnum opus* was appraised by Rob Gradstein who,

amongst other aspects, drew attention to its value when areas where Spruce collected are re-surveyed.

The audience, although predominantly higher plant specialists, were all highly appreciative of this presentation of Spruce's bryological work, which would have been unfamiliar to at least some of those present. Even the zoologists amongst us happily assimilated their new-found knowledge of hepaticology.

It became apparent very early in the conference that Richard Spruce was a man of many interests and skills. Papers from a wide range of experts included contributions from all the countries visited, namely Brazil, Venezuela, Colombia, Ecuador and Peru. We learned of his contributions to the knowledge of orchids, palms and tree architecture; of his mission to ship seeds and cuttings of *Cinchona* to India, where quinine produced from plantations there saved thousands of lives from malaria; and of his pioneering work on the subsistence activities of native populations, and the management of natural resources which are so important in the conservation and development of the region today. We were also reminded of some of Spruce's contemporary botanical explorers, especially Alfred Russell Wallace, and were shown photographs of paintings by Margaret Mee, one of his many successors in this wonderful region of the world.

That was not all: there were many other exciting treats such as the buffet dinner at the Yorkshire Museum preceded by a superb public lecture in the spacious lecture theatre. Professor Ghillean Prance (Director of the Royal Botanic Gardens, Kew), describing himself as a contemporary botanist in the steps of Richard Spruce, read extracts from Spruce's *Notes of a Botanist in the Amazon and Andes*. He skilfully illustrated this with his own photographs, showing that it is still possible to see and experience many of the things Spruce described in lowland Amazonia.

Tuesday dawned bright and sunny for our coach drive to Castle Howard, stopping first in the village of Coneysthorpe. Although Spruce was born in nearby Ganthorpe and also lived in Welburn, he spent the last years of his life here. His cottage bears a plaque to his memory, placed there thanks to the efforts of Professor Richard Schultes of Harvard University, one of Spruce's most ardent admirers. It was a great joy to hear him tell of his first visit to Coneysthorpe.

Next we were taken to Terrington Church where, after prayers at Spruce's graveside, the Rector conducted a brief Remembrance Service. Professor Schultes gave a short address on Spruce, followed by another from Mr Winston Spruce, a descendant of a different branch of the Spruce family, who ended with a recording of two verses of Richard Spruce's hymn tune entitled 'Raywood', the name of one of the estate woodlands.

The Hon. Simon Howard, who had already welcomed us to Coneysthorpe, then welcomed us to Castle Howard. After touring the Castle, he and Lady Annette Howard graciously joined us for a delicious luncheon in the Grecian Hall. During the afternoon we heard more about Richard Spruce, and had a second chance to see the fascinating exhibition of artefacts collected by Spruce, which now belong to the Botany Museum at Kew, and treasures loaned by Professor Prance.

At the conference dinner on Tuesday evening, 52 of us sampled traditional Yorkshire fare, accompanied by thunder and lightning outside. No one dared to suggest that Richard Spruce's

spirit had come to join us. The Conference closed at the end of the afternoon session on Wednesday. It was not only extremely informative and interesting, so that we came away thoroughly 'Spruced-up', but with such a strong representation from across the Atlantic, it was also a splendid social occasion, and great fun.

The Linnean Society are to be congratulated on promoting a Conference which was a fitting memorial to a very great naturalist, even though his zoological interests were barely mentioned. It is intended that all contributions will be published by Kew Gardens and the Linnean Society in a special commemorative volume. Especial thanks are due to Mark Seaward who organized everything so expertly and spared neither time nor energy in looking after us all so well.

Acknowledgements

I am grateful for Mark Seaward for help in the preparation of this account and to Brian O'Shea for transferring it to disk.

References

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Spruce, R. (1908). *Notes of a Botanist on the Amazon and Andes* (ed. A.R. Wallace). 2 vols. London: Macmillan.

JEAN A. PATON, Fair Rising, Wagg Lane, Probus, Truro, Cornwall, TR2 4JU

RECORDING MATTERS 7

Regional Recorders

A full list of BBS recorders for vice-counties in Britain and Ireland appeared in this column, *Bulletin* **62**. The following new recorder has since been appointed:

72-74: Dr C. Miles, Braeside, Boreland, Lockerbie, Dumfries, DG11 2LL

Owing to a misunderstanding it was incorrectly stated (this column, *Bulletin* **62**) that the Northern Highlands Environmental Records Centre had closed. In fact, the Centre is now being run by the Highland Regional Council's Museum Service and I am pleased to announce that Neil Redgate will continue to act as recorder:

107-109: Mr N.D. Redgate, The Northern Highlands Environmental Records Centre, Burnside, Murkle, Caithness, KW14 8YT

Does Recording Matter?

So far, this column has been concerned primarily with the nitty-gritty of running the Society's continuing mapping scheme. Besides the short accounts of members' individual flora projects it is desirable to include a section on your views about recording. I, for one, would like to hear your views on, for instance, the decision to continue 10-km recording now that the *Atlas* is published, the types of data we record, those dreaded RP22s and RP23s, and

whether we should go into more sophisticated types of project than simple square-bashing. If you have constructive views on these or related topics we will try to air them here.

Bryophyte Flora of South Wiltshire

Rod Stern, the BBS Conservation Officer, has been a major force in setting up the network of Regional Recorders. He had a large hand in the recently published *Atlas of Sussex Mosses, Liverworts and Lichens* and was also a founder member of the BBS Southern Group. Rod is now Regional Recorder for South Wiltshire and South Hampshire and here describes his latest flora project.

I am currently working on a bryophyte flora of South Wiltshire, v.-c. 8. The intention is to publish distribution maps on a 10-km square basis, with localized records of the rarer species, I hope, in 3-4 years' time.

The bryology of v.-c. 8 has not been studied in detail previously. There were not very many 19th century records, and particularly few hepatics. C.P. Hurst, working in the north-east of the vice-county in about 1915-1925, added a considerable number of new records of both mosses and liverworts. The Dunstan brothers added a few new mosses in the 1930s and 40s, all in the south-west part of v.-c. 8. After 1959, Jean Paton added several species (all in the south-east part of the vice-county) and Joan Appleyard contributed a number of others, mostly on the western side. Francis Rose, sometimes accompanied by Ted Wallace, recorded several sites, and had a set of 10-km square cards for v.-c. 8 which I have used as a basis for the current work. The BBS made brief visits to the vice-county during its meetings at Southampton in 1956 and Wells in 1959, and spent a week at Salisbury for the spring meeting in 1989.

A considerable proportion of the vice-county is on the chalk, including a large part of the Ministry of Defence's Salisbury Plain Training Area, much of which is now an SSSI, and also not readily accessible because of gunnery and small arms ranges. There are also significant areas on the Upper Greensand, on Jurassic limestones and clays, and on Eocene sands and gravels, so the bryology is rather more interesting than it appears at first sight.

Records from members will be welcome. The south-east corner of the vice-county is now in Hampshire, so grid references are important there (if the records are in v.-c. 11, they may also be of interest as I am also the BBS Recorder for that v.-c.). Grid references are also needed in the Stourhead area where the boundary between Wiltshire and Somerset has changed.

Rod Stern, Botany Bay, Main Road, Fishbourne, Chichester, West Sussex, PO18 8AX

A Devon Bryophyte Mapping Project

Mark Pool, our Regional Recorder for the two vice-counties of Devon, here describes his endeavours towards producing a bryophyte atlas for the county.

Devon (v.-c.s 3 and 4) is a very large county (over 1850 tetrads), and has an interesting bryoflora (well over 500 taxa). Perhaps understandably, no bryophyte atlas of the county has yet been produced, other than the soon-to-be-completed national one based on 10-km squares.

Late in 1976 I came to bryology as a beginner, fresh from work on a phanerogam mapping project. As distribution in Devon then seemed somewhat imperfectly known, I felt it sensible to map the distributions of any species I was able to identify. The mapping unit chosen was the tetrad (2 x 2 km square), basically because this was the unit of the

phanerogam survey and I felt comfortable with it; it also seemed important to give more detail than that available from a 10-km study. Now, seventeen years later, it is perhaps time to take stock.

A total of 42,000 species records has so far been made, from 1035 squares; this is significantly over half the total number of tetrads. The average species number per tetrad is, however, low (40) and the coverage of the county is very uneven. The central part of v.-c. 3 (South Devon) is quite well worked, but the eastern and western edges are largely unworked. North Devon is very unevenly covered; the far north, the area centred on Holsworthy and the country west of Tiverton are almost unworked, and much of the other coverage is thin. In spite of this, however, things are certainly better than they were in 1976! A steady trickle of new 10-km square records has resulted, with a few new county or vice-county finds; highlights are perhaps *Fissidens exiguus*, found near Newton Abbot, and a recent record of almost certain *Didymodon tomaculosus*, from an apparently unpromising Mid Devon roadside. One useful result of tetrad mapping is that a wide range of sites is investigated; there is less tendency to concentrate on obviously good spots than would apply with a less detailed survey. This in turn means that the commoner species are mapped much more comprehensively, which can show up some interesting effects; there are, for example, surprising numbers of records for lowland, and often calcicole, ruderals from the granite uplands of Dartmoor (albeit in man-made habitats).

The records have recently been computerized, using Dr Alan Morton's DMap package. This has made for very much quicker data entry and the rapid production of distribution maps; all in all it has proved a very great help. The crying need at the moment is for more recorders; any localized records for Devon bryophytes would be most welcome, but with an emphasis on the under-worked parts of the county or on the more critical species.

Publication of the project seems a pipe-dream at the moment, owing to its incompleteness. Maps of any or all species can, however, be supplied to anyone interested; there would be no charge, but payment of postage would be appreciated. I am currently experimenting with a program which will allow for the printing of text (e.g. habitat notes) on the same sheet as the map, which should prove even more useful. Another possibility is a survey based on 5 x 5 km squares; I am tending now to slant my tetrad work in this direction, but do not intend to give up tetrad recording.

All in all, the project can be said to be 'progressing'. Much has been achieved, but still more remains to be done (even assuming the bryoflora remains static, which is not likely!). However, the survey has produced some useful results, and has given me at least a glimpse of a fascinating group of plants in a very beautiful county.

Mark Pool, 91 Warbro Road, Torquay, TQ1 3PS

Epiphyte Recording

The extended closing date for the scheme passed on 30 November 1993. Participants should send their completed epiphyte record cards to the Recording Secretary (address below) if they have not already done so. Analysis of the data will commence once all the records have been received. It is intended that a summary of the results will be produced for one of the Society's publications in due course. All those who participated are warmly thanked for their efforts. Perhaps the exercise showed that there can be more rewarding aspects to field bryology than mere 'twitching'?

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

COUNCIL NEWSLETTER NUMBER 10

Intensive, imaginative work by members of Council during the year has laid the foundation for considerable advancement of the Society's objectives. Before hearing about it in detail, however, you will be sorry to learn of the deaths of Mr P.J. Wanstall, a recent President and well-known, long-term member, as well as of Miss E. Lawton, a supportive overseas member whose age, I believe, equalled that of the Society.

B.B.S. Centenary

Much of our recent effort has been focused on the forthcoming Centenary in 1996. The committee charged with formulating plans to celebrate this important occasion has begun its work with enthusiasm. It is its firm conviction that the Centenary ought to be seized upon, not as a reason to dwell on former achievements, but as an opportunity to advance the Society's present objectives. Steps are therefore being taken to organize a major, forward-looking international symposium in 1996, coupled with an attractive field meeting. These will be additional to what we hope will be excellent programmes for the spring field meeting and the autumn paper-reading meeting. Council is also keen to promote bryology through publication, and various means of doing so are therefore being investigated with a view to catering for as wide a readership as possible. To advertise the approaching Centenary, the committee is looking into the possibility of a striking poster, and also wishes to see pictorial postcards on sale well in advance of the Centenary.

Marketing

Council recognizes the value of a regular sales outlet to members, and has therefore set in motion plans for a stall at the autumn meeting each year, and probably also at spring meetings. Goods on sale will include publications, ties, sweatshirts, postcards, etc.

Membership Figures

Council was pleased to learn that the Society's strength compares very favourably with that of others sharing similar status. The review carried out by Mr A.V. Smith was both detailed and thorough, and showed that overall numbers from year to year are keeping pace with changes reported by other scientific societies.

Journal of Bryology

It is now clear that our new publisher is capable of delivering very high standards and, moreover, is keen to make further developments in conjunction with Dr J.W. Bates. Beginning with volume 18, we can look forward to a most attractive new format, the merits of which may be assessed by the fact that it received universal approval when seen by Council members; surely a significant accolade.

Legacy of Dr E.W. Jones

The Society has received a valuable bequest from the estate of Dr Jones, in the form of books and reprints. They are currently being catalogued to facilitate their distribution according to the wishes of Dr Jones. Some will be placed in the B.B.S. library, but Dr Jones was strongly of the opinion that duplicates should not be regarded primarily as a source of income. Council has therefore considered what means of disposal were likely to have been in his mind, and will attempt to devise a sympathetic procedure.

Thus, Council is active on your behalf and is, I hope, achieving the goals we all, as a society, set for ourselves. Do, please, let me know about any ideas you may have to add to those of Council.

M.E. NEWTON

REFEREES (February 1994)

Specimens sent to the referees should have a 4- or 6-figure grid reference in addition to the locality description. THEY SHOULD ALWAYS BE ACCOMPANIED BY A STAMPED ADDRESSED ENVELOPE, EVEN IF MATERIAL IS SENT FROM UNIVERSITIES OR INSTITUTIONS. If anyone has difficulty in getting a specimen named they should send it to the appropriate Recorder– Mr David Long for hepatics (Herbarium, Royal Botanic Garden, Edinburgh, EH3 5LR) or Mr Tom Blockeel for mosses (9 Ashfurlong Close, Dore, Sheffield, S17 3NN).

The General Referee will help beginners who are having difficulty in placing their material in a genus. The numbers below refer to genera in *Distribution of Bryophytes in the British Isles* by M.F.V. Corley & M.O. Hill (1981).

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

HEPATIC REFEREES:

1,2,11,12,38,53-55,58,64-67,69: D.G. Long, Herbarium, Royal Botanic Garden, Edinburgh, EH3 5LR

3-10,18-24: Dr M.E. Newton, Department of Botany, Liverpool Museum, William Brown Street Liverpool, L3 8TN (All mail to be marked 'Private'.)

13-17,36,37,39-44: G.P. Rothero, Stronlonag, Glenmassan, By Dunoon, Argyll, PA23 8RA

25-35,45-47: M.F.V. Corley, Pucketty Farm Cottage, Faringdon, Oxfordshire, SN7 8JP

48-52,78-86: M.J. Wigginton, Joint Nature Conservation Committee, Monkstone House, City Road, Peterborough, PE1 1JY

56,57,59-63,68,70-74: T.L. Blackstock, Nature Conservancy Council, Ffordd Penrhos, Bangor, Gwynedd, LL57 2LQ

75-77: G. Bloom, 15 Tatham Road, Abingdon, Oxfordshire, OX14 1QB

MOSS REFEREES:

1: Dr M.O. Hill, Monk's Wood Experimental Station, Abbots Ripton, Huntingdon, PE17 2LS; A. Eddy, Department of Botany, Natural History Museum, Cromwell Road, London, SW7 5BD

2-10,143: Dr M.O. Hill (address above)

11-36: M.F.V. Corley (address above)

37,38,62-66: Dr A.J.E. Smith, School of Biological Sciences, Brambell Building, University College of North Wales, Bangor, Gwynedd, LL57 2UW

39,67-81,96-104: N.G. Hodgetts, Joint Nature Conservation Committee, Monkstone House, Peterborough, PE1 1JY

40-61: Dr D.F. Chamberlain, Dept of Botany, Royal Botanic Garden, Edinburgh, EH3 5LR

82-90,105: Dr E.V. Watson, Little Court, Cleeve, Goring on Thames, Reading, Berkshire, RG8 0DG

91-95: A. Orange, Department of Botany, National Museum of Wales, Cardiff, CF1 3NP

106-138: M.J. Wigginton (address above)

139-142,144-175: A.C. Smith, End House, 24 Shelfanger Road, Diss, Norfolk, IP22 3EH

BBS SWEATSHIRTS

These highly desirable sweatshirts are already being modelled around the world by the sartorial *cognoscenti* of the BBS, and their families. In addition, they help in publicizing our Society. For the record (again) they are 'Genuine 3-needle Tomkin fleece, 50% polyester 50% cotton, machine washable, tumble dry, with 5-needle Raglan stitch', long sleeves, and bear a green and gold(ish) 4" diameter BBS logo (as featured on the *Bulletin* cover) on the left breast. In other words, very attractive, lightweight, warm, suitable for under-jacket wear in the winter, and on their own in the summer. The sweatshirts are available in Ash (a slightly mottled grey), a slightly darker Grey, and Burgundy. Still only £12, plus postage and packing (now £3.00 first class boxed recorded delivery).

I will probably not be able to bring the whole box of the BBS sweatshirts to the 1994 Spring meeting, but if anybody wishes to place an order beforehand, I can certainly bring a few in order to save postage.

Those unable to wait until then, or who cannot make the Spring meeting, can buy them by post from me, but be warned that the sizes last time were a little on the small size, so small people take a 'Medium', medium people take a 'Large', and comfortable people take an 'Extra Large'. Hurry, there is now only **one** XL and **three** L Burgundy left, and **two** XL Grey, and no XL or L Ash at all. The BBS is rumoured to be launching a recruiting campaign aimed at the smaller person, solely in order to shift the remaining stock of 20 Medium Ash and Burgundy shirts.

Please send cheque (payable to the British Bryological Society), to: Dr Sean R. Edwards, Manchester Museum, Manchester University, Oxford Road, Manchester, M13 9PL (or better still, the postage & packing part payable separately to me).

BBS CAR-STICKERS

Council approved, at the 1993 Autumn meeting, that the Society should produce car-stickers furnished with the BBS logo, and possibly other publicity material. These would be useful for members to identify each other's cars at field meetings, as well as providing publicity for the Society.

Please write to me with any suggestions for a design or wording; some piece of brief but useful information or publicity might well be considered as beneficial to the Society; humour is rather suspect unless tastefully done, and can wear a bit thin after the first good laugh; we are not likely to be too enthusiastic about slogans such as 'Bryologists do it on all-spores', but do send any suggestions in anyway, if only to be passed around *sub rosa* at BBS meetings.

Please send suggestions to: Dr Sean R. Edwards, Manchester Museum, Manchester University, Oxford Road, Manchester, M13 9PL

B.B.S. LIBRARY SALES AND SERVICE 1994

FOR LOAN (U.K. Members only):
Members wishing to borrow books or papers are advised to consider whether a Xerox copy of the appropriate pages would suffice instead of the original in those cases where copyright has expired. Charge 10p per exposure. Limit 50.

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

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

(c) Microscope stage-micrometer slide for calibration of eyepiece graticules. 10µm divisions. Loan deposit £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 *Transactions*
Vols.7-9	parts 1-4	(£5.00 each) £20.00 per volume - renamed *Journal of Bryology*
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 1-4	(£39.50 each) £158.00 per volume

B.B.S. Special Volumes:

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

Census Catalogues:

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

Price incl. p.& p.: members (£5.00), non-members (£6.00), trade (£4.00)

Other items:

Evans, D.E. & A.R. Perry, 1987. Moss Wall Chart	Price incl. p.& p.	(£2.80)
Grolle, R., 1983. Hepatics of Europe and the Azores: an annotated list of species with synonyms	Price incl. p.& p.	(£2.50)
Newton, M.E. *et al.* (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 ×20 handlens and leather case		(£11.70)
Patterson no. 3 stainless steel forceps		(£2.00)

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PLEASE DO NOT INCLUDE CASH WITH ORDERS. Customers will be invoiced for the correct amount including p.& p. (postage and packing is extra unless stated). Address label legibly printed would be appreciated. All the above are available from the BBS Librarian: *Kenneth J. Adams, 63 Wroths Path, Baldwins Hill, Loughton, Essex, IG10 1SH, U.K.*

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THE LOWER PLANT BIODIVERSITY REGISTER

One of the problems for those involved in lower plant conservation is that whilst much is known about the distribution of rare and scarce species, the information is widely scattered and can be difficult for site managers to obtain. The Lower Plant Biodiversity Register is a new initiative by the Joint Nature Conservation Committee (part of the former NCC) which aims to make what is known available for the purpose of lower plant conservation. Using the Recorder computer package, we are building up a database of site-specific information on lower plants.

In addition to bryophytes the Register will include lichens, fungi, charophytes and other non-marine algae. To include all species would be far too unwieldy and largely irrelevant for conservation purposes. Instead, the Register will concentrate on rare, scarce, endemic and otherwise notable species. Species rare at an international level but not necessarily uncommon at a British level will be included, as will pollution-sensitive species and selected indicator species.

The sole object of this database is to provide as much information as possible on lower plant species and communities so that they can be conserved effectively. We do not want a large, amorphous and inaccessible database that has no *raison d'être*. In order to make the Register work, the co-operation of a large number of organisations and individuals will be needed. We hope that BBS members will support the initiative.

Please get in touch with either of us if you have any queries about this project, or if you would like to contribute in any way

Nick Hodgetts and Gavin Stark, Species Conservation Branch, JNCC

'SCHEDULE 8' BRYOPHYTE SPECIES

The following 33 species of bryophytes are now legally protected in the United Kingdom. They have been added to Schedule 8 of the Wildlife and Countryside Act 1981 and Schedule 8 (Part 1) of the Wildlife (Northern Ireland) Order 1985, neither of which previously included any mosses or liverworts. The main provision in this respect in the Act (and Order) is that any person intentionally picking, uprooting or destroying any wild plant included in Schedule 8 is guilty of an offence. The Act requires English names as well as the scientific names; these are based on proposals made by the BBS Conservation Committee.

Mosses

Acaulon triquetrum	Triangular pygmy-moss
Barbula cordata	Cordate beard-moss
B. glauca	Glaucous beard-moss
Bartramia stricta	Rigid apple-moss
Bryum mamillatum	Dune thread-moss
B. schleicheri	Schleicher's thread-moss
Buxbaumia viridis	Green shield-moss
Cryphaea lamyana	Multi-fruited river-moss
Cyclodictyon laetevirens	Bright green cave-moss
Ditrichum cornubicum	Cornish path-moss
Drepanocladus vernicosus	Slender green feather-moss
Grimmia unicolor	Blunt-leaved grimmia
Hypnum vaucheri	Vaucher's feather-moss
Micromitrium tenerum	Millimetre moss
Mielichhoferia mielichhoferi	Alpine copper-moss
Orthotrichum obtusifolium	Blunt-leaved bristle-moss
Plagiothecium piliferum	Hair silk-moss
Rhynchostegium rotundifolium	Round-leaved feather-moss
Saelania glaucescens	Blue dew-moss
Scorpidium turgescens	Large yellow feather-moss
Sphagnum balticum	Baltic bog-moss
Thamnobryum angustifolium	Derbyshire feather-moss
Zygodon forsteri	Knothole moss
Zygodon gracilis	Nowell's limestone moss

Liverworts

Adelanthus lindenbergianus	Lindenberg's leafy liverwort
Geocalyx graveolens	Turpswort
Gymnomitrion apiculatum	Pointed frostwort
Jamesoniella undulifolia	Marsh earwort
Leiocolea rutheana	Norfolk flapwort
Marsupella profunda	Western rustwort
Petalophyllum ralfsii	Petalwort
Riccia bifurca	Lizard crystalwort
Southbya nigrella	Blackwort

ROD STERN

BRYOPHYTE CONSERVATION: A SUGGESTION FOR BBS MEMBERS

David G. Long, Royal Botanic Garden, Edinburgh

Over the past few years I have been compiling occasional reports on the bryophytes of particular sites, mostly in the Scottish Borders. I was recently informed that one of these reports had been important in protecting a *Homalothecium nitens* fen from a proposed gravel-extraction development. Similarly, a short report sent in years ago on *Geocalyx graveolens* at Kyle of Lochalsh suddenly became important to planners and developers when the new Skye Bridge was planned, and the liverwort was taken note of right from the outset.

What has become increasingly clear to me is that (a) conservation bodies rarely have their own bryological expertise to carry out surveys or assess sites, (b) they are often unaware of important bryophyte sites in their area, (c) they usually welcome amateurs sending in reports (and may in some cases offer expenses or payment) and (d) a large number of BBS members around the country have all the knowledge and expertise needed to write reports which could be extremely influential in future in protecting important bryophyte sites.

Take the initiative, don't wait to be asked! If you know of good bryological habitats in your area, why not spend a few hours doing a methodical survey and site list, type it up then send it in as a report to your local conservation bodies? Do not be disheartened if you don't get much immediate response – your reports will be filed away but could become vitally important in future. Too often, only when sites are threatened do people start looking at them properly, when it may be too late.

Above all, keep your report short, clear and if possible illustrated. Remember your customers are non-bryologists who want a clear simple statement. Do not undervalue your own expertise and authority. I have found that the following provide a useful framework:

1. **Site name and location**: append a map with clear boundary of the site, marking special areas. If the area is a reserve or SSSI, mark that in too.
2. **Recorders**, dates of visits, historical sources.
3. **Site description**: a very short ecological overview of the whole site.
4. **Important bryophyte habitats and species**: discuss the most important aspects of the site, highlighting specific areas and species. Refer to other works, e.g. the *Atlas* to demonstrate rarity, decline of species, etc.; numbers of similar sites, other localities in the area for a rarity. etc.
5. **Assessment of site**: evaluate the site in broader terms, e.g. local, regional, national, international importance.
6. **Threats to site**: describe any likely threats you think might damage the bryological interest e.g. tree felling, acid rain, over-grazing, drainage.
7. **Future management**: suggest management you think might protect or improve the bryophyte interest, e.g. planting ash trees instead of conifers, not removing fallen timber.
8. **Other biological interest** of site (optional): if you know of rare insects, birds, etc. add a note.
9. **Appendix**: checklist of bryophytes in site; sub-sites can be denoted a, b, c, etc.
10. **Illustrations** (optional): to add impact add one or two colour prints with captions to illustrate the communities or species of interest (I do this only in larger reports). A map is essential.

I will gladly supply a sample report on request.

BBS TROPICAL BRYOLOGY GROUP – PROGRESS IN 1993

Generally this has been a quiet year, but we have five new members, and work has been continuing on a number of existing projects.

Malawi Expedition collections

The first two papers resulting from the expedition have now been published, and the majority of plants in several groups have now been identified: a total of 674 mosses have been sent for identification or confirmation, and a smaller number of hepatics. Of the mosses, 481 have been returned identified in 56 taxa, of which 34 are newly recorded for Malawi. An even larger proportion of the hepatics are new (about 40 in total), due largely to the detailed examination given to the epiphytes by Martin Wigginton.

A further weekend workshop was held in August, when attention was paid to the final draft of the papers for publication, and work was done on the remaining collections held at Reading (those of the non-UK-based members of the expedition) and particular interests and common problems were discussed.

There were about 4500 collections in total, but many of these will contain several taxa, so we may only have prepared about 10% for identification/confirmation so far. However, all of those working on the Malawi specimens are doing so in their spare time, so progress is sometimes a little erratic!

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

Eustace Jones' West African Hepatic Flora

The text for Eustace Jones' flora is now all typed up (235 pages, now in Word for Windows format), and copies have been sent to various experts for comments. David Long and Martin Wigginton will pursue the scientific editing when comments are returned. It is hoped that the book will be illustrated (a large proportion have already been illustrated in Eustace's papers) and possibilities for publication are being discussed.

Documents

Several documents have been published during the year: 2 newsletters, notes of the 1993 AGM, and 3 translations of keys from French to English by Robin Stevenson – De Sloover's keys to *Breutelia* and *Leptodontium*, and Vanden Berghen's to *Frullania*.

Lists of tropical bryophytes

Martin Wigginton's hepatic list of sub-Saharan Africa has been very well received by expert reviewers, and Tamás Pócs has offered a collaboration to develop this further. My list of tropical African mosses has stalled a little, but the basic lists for mainland Africa are now being updated with later revisions. Madagascan records are yet to be added. The list currently numbers some 2500 taxa.

East African Biodiversity

We have contributed to the BBS reply to a questionnaire sent by a project sponsored by IUCN, World Conservation Monitoring Centre and various national institutions in Kenya, Tanzania and Uganda, by providing information on the Malawi collections and also the lists we are producing of tropical bryophytes.

IAB Committee on Tropical Bryology

I have been invited to become a member of the IAB (International Association of Bryologists) Committee on Tropical Bryology. I hope this is an opportunity for the TBG to contribute to the IAB strategy and activities, and hopefully this will also reap benefits in reviewing our own direction.

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

ONE HUNDRED YEARS OF BRYOLOGY ON MULANJE MOUNTAIN

The first bryophytes collected on Mulanje Mountain (Malawi) came from the expedition of Alexander Whyte in October and November 1891. When we went to the same mountain in June/July 1991, we were familiar with Laurens van der Post's Malawi story *Venture to the Interior*, which describes a tragic event on Mulanje at a point still identifiable, where his forester guide fell to his death in a swollen torrent. We ourselves had some difficulty at the same spot, where the track passes over wet rocks in a stream near the top of a waterfall, but fortunately chose a more appropriate time of year. The account of Alexander Whyte's expedition was no less dramatic, but in a different way, and is expressed with a vigour that cannot be matched by today's prosaic style, but that I hope will give a feeling for Mulanje that our scientific papers cannot give. I particularly recommend the second paragraph from this extract from the introduction. Mr. Whyte ascended from the same direction as ourselves. The story is told by William Carruthers, F.R.S., F.L.S, and was read to the Linnean Society on 19th January 1893.

> '...From Mr. Whyte's Report to Commissioner Johnston we learn that Milanji is an isolated range of, for the greater part, precipitous mountains, the main mass forming a huge natural fortress of weather-worn precipices, or very steep rocky ascents, sparsely clothed with vegetation. Many of its gullies and ravines are well wooded, and in some of them fine examples of grand African virgin forest are met with. The route by which Mr. Whyte ascended the mountain on the 20th October led up its south-east face, and at first zigzagged over steep grassy hills, down precipitous gorges, and across rocky streams with beds of large water-worn granite boulders, which, when flooded, became impassable mountain-torrents. Further on the ascent became more difficult, and he clambered over precipices, holding on by tufts of grass and scrub, which gave but slender support and scanty foothold. Once round these precipitous bluffs an interesting wooded gorge was entered, still steep and difficult, but with better foothold on the projecting rocks and tree-roots; and most welcome was the kindly shade after hours of

toiling in a burning sun, rendered doubly fierce by the reflection from the scorching hot rocks.

An interesting change in the vegetation was perceptible, plants of the lower slopes being mostly replaced by species new to Mr. Whyte, and in many instances approaching the flora of temperate climes, such as brambles and well-known forms of papilionaceous and composite plants. Ferns, too, became more numerous, and now and again he scrambled through fairy dells of mosses, ferns, selaginellas, and balsams, with miniature water-falls showering their life-giving spray on the little verdant glades, while overhead hoary lichens and bright festoons of elegant long-tasselled lycopods hung from the moss-covered ancient-looking trees. Up and up he climbed the apparently endless ladder of roots and rocks. Then he passed through a dense thicket of bamboo, and again found himself confronted by an ugly barrier of precipitous cliffs, which were duly surmounted with the friendly aid of a tussock-grass springing from the crevices of the rocks. Another hour's climb up a steep grassy glen brought him to the crest of the highest ridge.

Here the scene spread out to view, and the climate, were such as to fully repay the explorer for a day of weary toil. Looking westward, he saw mapped out beneath him the plateau or basin of Milanji, with its rolling hills of grassy sward, its clearly defined belts of dark-green forest, and its numerous ravines and rivulets, all shaping their course towards the principal valley of the plateau, through which the Lutshenya flows. The climate was delightfully cool and bracing. During the forenoon, on the lower ridges of the mountain, at over 4000 feet lower than this point, he had sweltered in a stifling heat of 106 degrees Fahrenheit in the shade; while here he revelled in a clear, dry, health-restoring atmosphere of 60 degrees Fahrenheit. From this ridge, which forms one of the amphitheatre of hills surrounding the plateau or crater-like basin of Milanji, a good idea of the mountain-system is gained. Still looking towards the west, one sees on the right hand the main peaks of the mountain, rising directly from the valley of the Lutshenya, which runs parallel to its southern base, the height of one of the two summit-peaks having been calculated at 9,300 feet above sea-level. Across the table-land, in the distance, is the somewhat isolated and precipitous Tshambi Mountain, which, with its own smaller plateau, is separated from Milanji table-land by the rocky valley and gorge of the Likabula River. To the front and to the left hand, there is a continuation of the rolling and grassy hills which encircle the plateau, and which are capped with rugged cliffs of scarped granite and gneiss rocks.'

Mr. Whyte spent two weeks on the plateau, changing to three different sites, each distant from 5 to 7 miles from the other, and which enabled him to explore more thoroughly this new and interesting mountain country. Unfortunately the rains and mists set in before he left, and consequently he had only nine good collecting days.

Extract from The Plants of Milanji, Nyasa-land, collected by Mr. Alexander Whyte, F.L.S., and described by Messrs. BRITTEN, E.G. BAKER, RENDLE, GEPP, and others; with an Introduction by WILLIAM CARRUTHERS, F.R.S., F.L.S. *Trans. Linn. Soc. (Bot.)* **4**(1): 1-67 (1893).

BRIAN O'SHEA

Bull.brit.Bryol.Soc. **63**: 49-53 (1994)

SOME INTERESTING MOSSES FROM THE SOUTH TYROL (ITALY)

C.C. TOWNSEND

392 Staines Road, Twickenham, Middlesex, TW2 5JA

In August 1904, H.N. Dixon and W.E. Nicholson spent a holiday in the South Tyrol and Carinthia, and the results of their bryologizing were published by Nicholson (1909). As a consequence of this paper and a recommendation of the area by friends, my wife and I spent a week in Sulden followed by a week in Merano in July 1992. Many though not all of the species found by Dixon and Nicholson were seen – though not always in their locality. A notable exception was *Cnestrum schisti* (recorded as *Cynodontium schisti*) in a wood behind the Grand Hotel (now the Sulden Hotel) in Sulden; this could have been in small quantity and overlooked. The purpose of this note is to record, particularly, species not apparently noted in the Ortler range (amidst which Sulden is situated) by the English bryologists or any others known to me. Brief notes on occurrences of bryophytes in the South Tyrol are given by Düll (1991), and this work has been widely consulted.

Only those species selected as of particular interest are given below. For example, the area is rich in *Grimmia* species, including *G. unicolor* Hook. and *G. alpestris* (Web. & Mohr) Hornsch. Both of these were found as well as others, but only three species are thought worthy of note. Some of the species listed demonstrate that the rocks at the head of the Zaithal, which Dixon and Nicholson found to be rich, are yet richer.

Sulden in the South Tyrol should not be confused with Sölden in the Oetztal, in the southern Austrian Tyrol. Local vans may carry the words 'Sulden am Ortler', which is more precise.

All records below fall within the region TRA (Trentino-Alto Adige) of Cortini Pedrotti (1992). An obelus (†) indicates that the species was shown in this excellent checklist as not seen in the district since 1949.

Sphagnum subsecundum Nees. Meran District, in a mire near the Dolomite View over the Meraner Hütte, c. 1.6 km ENE of the top of the Ifinger Seilbahn, near Meran, alt. c. 2050 m, 13 Jul., T/92/617. According to Düll (1991), previous records for the South Tyrol date from before 1900; Cortini Pedrotti (1992), however, indicates that it has been recorded since 1949. Mr M.O. Hill has kindly checked the determination. I found this moss associated with *Calliergon stramineum* and *Philonotis seriata*, the latter also apparently uncommon in the region.

† ***Oreoweisia torquescens*** (Brid.) Wijk and Marg. This was recorded by Nicholson (1909) from rocks at the upper end of the Zaithal, 'but sparingly', and it has apparently not been seen since. Although mostly in small quantity, I nevertheless found it scattered about in a number of places, occasionally fruiting, T/92/550. There is no fruit on Nicholson's material in BM. Düll (1991) lists only this single locality in the South Tyrol.

Cynodontium fallax Limpr. Found on rocks in the wood behind Sulden Hotel (T/92/520) and in woods on the opposite side of the valley (T/92/543), both c.spor. I find that in Central

European material of this species the difference in papillosity in upper and lower leaf surface is much less marked than allowed by Crundwell (1960) and Smith (1978). The perforations of the peristome teeth in the Sulden material are smaller and narrower than in my Swiss and Carinthian gatherings. For all that, *C. fallax* is not really a difficult species. *C. tenellum*, in which the bistratose margin of the lamina is less clear even under surface view of the microscope, is usually a decidedly smaller plant, and the leaf section is distinctive. *C. polycarpon* is about the same size as *C. fallax*, but the bistratose cells of the margin are normally so divergent as to be clear in surface/edge view. In section the unistratose margin of *C. fallax* is distinctive, and the leaf apex is broader. I am grateful to Mr Crundwell for examining both of my Sulden gatherings, and his observations in concurring with the determinations-

Cynodontium gracilescens (Web. & Mohr) Schimp. I found this not in the wood behind the Sulden Hotel as did Dixon & Nicholson, but as an addition to the rocks in the upper Zaithal at the much higher altitude of c. 2650 m (T/92/561) c.spor.

† ***Cynodontium tenellum*** (B.S.G.) Limpr. Although listed by Cortini Pedrotti (1992) as not having been found in TRA since 1949, 1 found it not only in Dixon & Nicholson's locality in the wood behind Sulden Hotel (T/92/518) but also on ledges on a rock bluff on the N side of the small lake by the Hintergrathütte, alt. c. 2660 m, T/92/531. Both c.spor.

Oreas martiana (Hoppe & Hornsch.) Brid. c.spor.. At the head of the Zaithal, in some quantity in one locality, T/92/559. Having seen it only the previous year in Carinthia, I at once recognized this moss – growing, as it often does elsewhere, down from the edge of turf at the top of slabby rock. Gams (1932) quotes Funck's observation that large tufts are often blown off and roll down. He also specifically observes: 'Aus den südlichen Oetztaler Alpen und aus dem Ortlergebiet ist noch kein Fundort bekannt, doch dürften solche noch zu finden sein', a prophecy now fulfilled in the Ortlers. It is found elsewhere in the South Tyrol.

Tortella densa (Lor. & Mol.) Crundw. & Nyholm. Thin earth on stony soil with some calcicole phanerogams, by the track from the middle station of the Sulden cable car to the Hintergrathütte, alt. c.2200 m., 4 July, T/92/528. Not apparently recorded from the Ortlers.

Grimmia elatior Bruch ex Bals. & De Not. On damp rocks just S. of the Dusseldorferhütte at the head of the Zaithal, 6 July, T/92/567. Small for the species but unquestionably belonging here. Not seen by Dixon & Nicholson, and given by Düll in the S. Tyrol only from the neighbourhood of Meran, as at the Partschins waterfall, where I saw it in some quantity and decidedly larger.

† ***Grimmia apiculata*** Hornsch. One sizeable colony on seeping-wet rocks under an overhang not far from the *Oreas* locality in the upper Zaithal, 6 July, T/92/551, c.spor. A rare species which seems always to occur on wet rocks. According to Cortini Pedrotti (1992) it has not been seen anywhere in Italy since 1949. Conf. Dr Henk Greven.

† ***Grimmia muehlenbeckii*** Schimp. Also at the head of the Zaithal, on wet rock slabs on bluffs S. of the Dusseldorferhütte, alt. c.2650 m, 6 July, T/92/554. Det. Greven.

Racomitrium macounii Lindb. ssp. ***alpinum*** (Lawt.) Frisvoll. On sloping rocks irrigated by seeping water near the track to the Madritschjoch not far from the Schaubach Hütte, alt. c.

2600 m, 7 July, T/92/576. Apparently new to the Ortlers, and not recorded for TRA by Cortini Pedrotti (1992).

Bryum caespiticium Hedw. On rock ledge on crags above a gully between Langenstein chairlift and the End der Welt glacier, c.2600 m, 8 July, T/92/584.

A peculiar form with the cilia almost entirely exappendiculate. Perplexed by this moss, I sent it to Dr E.V. Watson, who found a few perfect cilia and suggested an anomalous form of *B. caespiticium.* Finding two perfect cilia on, perversely, the first capsule I examined after the return of the specimen, I cannot but agree. The dioecious inflorescence, ill-defined leaf margin, long-excurrent yellowish nerve and small (14-16 μm) spores all agree with this species.

Bryum mamillatum Lindb. Nicholson (1909) recorded this, no doubt as Dixon's 'mouthpiece' from 'near the End der Welt glacier, Sulden, c.fr.', observing of the material collected that it 'has the swollen capsule with a mamillate operculum, the peristome and the large spores (up to 40 μ) of *B. mamillatum*, but the whole plant is distinctly smaller than the *B. mamillatum* of northern Europe'. Düll (1991) dismisses this record as certainly incorrect – not surprisingly in view of the normal coastal habitat of the species.

I have examined this specimen in Dixon's herbarium in BM, and Dr E.V. Watson has also examined part. The material is scanty, mostly old, and Dixon's notes thereon make his determination rather more tentative than the record in the above paper make it appear. He observes: '"This seems nearer to *B. mamillatum* than to anything else, though not quite identical with the littoral plant. The peristome is highly papillose'.

One thing certain is that this moss is not *Bryum mamillatum.* I have examined four gametangia at various places on the stems, and all are female. As far as can be ascertained without inflicting further damage on this scanty gathering, the moss is dioecious: *B. mamillatum* is autoecious. In the capsule which I examined the spores were c. 26-28 μm. Dr Watson found spores up to 32 μm, but nothing approaching the 40 μm claimed by Nicholson. The nerve of the Sulden plant is too long-excurrent (to as much as 225 μm) for *mamillatum*, and the border scarcely at all defined (distinct in *mamillatum*). Indeed, it was of considerable surprise to us that the record should have been published at all, let alone with such apparent confidence. It may be said that in only one capsule (most are old and the peristome damaged) could I convince myself of the exappendiculate nature of the cilia; however, this character and spore size are reasonably well correlated, and one would expect simple cilia in a *Bryum* with spores of 26-32 μm.

Both Dr Watson and I are convinced that this Sulden plant is a moss not occurring in the British Isles. Its dwarf habit, shortly pyriform capsule and short (8-10 mm) seta, together with its non-twisted, appressed leaves, give it a distinctive appearance. I have not been able to identify it with any central European species listed by Corley *et al.* (1981) or Corley *et al.* (1991); nor can I fit it to any Tyrolean species listed by Dalla Torre & Sarnthein (1904). Some time was taken perusing standard European moss floras. The illustration of *Bryum garovaglii* De Not. given by Limpricht (1895) much resembles the Sulden plant, but the small (14 μm) spores, synoecious inflorescence and nerve ending below the leaf apex rule it out. This moss needs rediscovery. I had it in mind during my visit, but did not make specific search and probably did not get high enough; nor, not having then examined Dixon's specimen, did I anticipate the degree of interest which it would arouse.

† ***Bryum muehlenbeckii*** B.S.G. Wet rocks on bluffs S. of the Dusseldorferhütte at the head of the Zaithal, 6 July, T/92/564. Conf. E.V. Watson.

† ***Orthotrichum pallens*** Bruch ex Brid. Scattered on a single dry siliceous rock in a small wood not far from the bottom station of the Sulden cable car, alt. c. 1820 m, 2 July, T/92/527. Det. Dr Jette Lewinsky. I have not previously encountered this species on rock.

Cratoneuron curvicaule (Jur.) G. Roth. I found neither this species nor *Grimmia elongata* below the Schaubach Hütte, where Dixon and Nicholson found them. The locality may have been destroyed by making an unsurfaced road to the cable car summit. *C. curvicaule* occurred with so many other things on wet rocks at the head of the Zaithal, 6 July, T/92/568.

Amblystegium jungermannioides (Brid.) A.J.E. Smith. Found on a large rock with *Hypnum vaucheri* on the west side of the Suldenbach facing the Sulden Hotel, T/92/545. This may be the identical rock where Dixon and Nicholson found the species, for them too the only locality.

Brachythecium starkei (Brid.) B.S.G. Among rocks on the floor of a gully between Langenstein chairlift and the End der Welt glacier, c. 2600 m, 8 July, T/92/585; also at the head of the Zaithal, T/92/569. I know no previous record for the Ortlers.

B. trachypodium (Brid.) B.S.G. On soil under rocks in the same gully as the last, c.spor., T/92/579. Found by Dixon and Nicholson probably about a mile west of this, and nowhere else.

† ***Eurhynchium pulchellum*** (Hedw.) Jenn. var. ***diversifolium*** (Bry. Eur.) Jens. On soil close to the Dusseldorferhütte, with *Desmatodon latifolius*, c. 2725 m, 6 July, T/92/549. According to Cortini Pedrotti (1992), only found in Italy since 1949 in Abruzzia.

Entodon schleicheri (Schimp.) Demet. Soil overlying rock in conifer woods between Sulden Hotel and the start of the Zaithal, c. 2100 m, T/92/577.

Hypnum sauteri Schimp. Under a boulder among crags near the track to the Madritschjoch not far from the Schaubach Hütte, c. 2600 m, c.spor., T/92/573. A new moss to me, and I am grateful to Professor Ando for confirming the identification. I have found no records for the Ortlers. According to Cortini Pedrotti (1992), not found in Italy since 1949.

It would not be surprising if yet more interesting mosses were found around Sulden, even in the Zaithal. Dixon and Nicholson apparently worked their way up the valley and probably found the good ground later, so that their time there may have been limited. The day which I chose for my visit was cold, often wet, with even a snowfall while I was lunching in the Dusseldorferhütte Hütte; given a good day, with a direct move to the hut and beyond, more discoveries might well be made.

Other species seen in the Zaithal were † ***Encalypta microstoma*** Bals. & De Not. and † ***Bartramia subulata*** B.S.G.

Summary

Some interesting mosses are recorded from the S. Tyrol of Italy, chiefly new to the Ortler range. A record of *Bryum mamillatum* published by Nicholson from the Sulden area is disproved, but the identity of the gathering remains uncertain.

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ORTHOTHECIUM RUFESCENS NEW TO THE LAKE DISTRICT

In November 1993 I found the above striking moss on a north-facing crag at the eastern side of the Lake District in Westmorland (v.-c. 69, grid ref. 35/41). The rocks are of the Borrowdale Volcanic Series which is locally very basic. The *Orthothecium* was present sparingly over some four metres of a moist basic rock face at 430 m. *Ctenidium molluscum* was common and the foliose lichen *Peltigera leucophlebia* was especially conspicuous. Other associates typical of such a Lake District habitat were *Asplenium trichomanes- ramosum* (*A. viride*), *Polystichum aculeatum*, *Saxifraga aizoides* and *Thymus polytrichum* (*T. drucei*).

Although occurring in Snowdonia on cliffs of calcareous pumice tuff there have been no substantiated Lake District records for *O. rufescens*. There are many other similarly basic exposures of the Borrowdale Volcanic Series which appear to be suitable for this moss, and it is difficult to imagine how such a conspicuous species could have been overlooked. It is obviously very rare in the Lake District, and for this reason I have kept the site unlocalized.

I wish to thank Dr Derek Ratcliffe for help with information on this species.

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RICHARD SPRUCE, THE MAN

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[Paper read at the Symposium Meeting of the British Bryological Society, Ripon, Yorks., 18 September, 1993.]

Richard Spruce, whose centenary is being celebrated this year, was by any reckoning one of the greatest botanical explorers of the nineteenth century and he was also a great bryologist. He was a Yorkshireman, born on 10 September, 1817, at Ganthorpe near Castle Howard in the North Riding. After he returned from his South American travels he settled first at Welburn then at Coneysthorpe about a mile from his birthplace. In fact, though he spent a year in France and fifteen years in South America, he spent the greater part of his life in his native county.

His father (who had the same name) was a schoolmaster, first at Ganthorpe and later at Welburn. He had a reputation as a mathematician and is said to have been 'highly esteemed and efficient'. The maiden name of his mother, who died when he was eleven years old, was Etty and she was related to the famous artist of that name. Richard was mainly educated by his father, but he had lessons in Latin and Greek from a retired schoolmaster who, to judge from Spruce's proficiency in the classical languages, must have been no mean scholar. Spruce never attended a university but he was awarded a Ph.D. by the Academy of Sciences in Berlin 1864, presumably in recognition of his published work and eminence as a botanist and explorer.

When he was 23 years old he became a mathematical master at the Collegiate School in York. For a while enthusiasm for mathematics supplanted his love of botany, but not for long. Having a regular salary and plenty of time in the school holidays, he explored many parts of Yorkshire and made many botanical discoveries. It was while he was at York that he began to collect and study bryophytes. According to his own testimony, his first 'advisor' on mosses was Sam Gibson, a tinman or 'whitesmith' of Hebden Bridge, who, like a considerable number of working men at that time, was a keen naturalist. Sam kept a copy of Hooker's *British Flora* on his workbench, which in parts had become so begrimed as to be illegible.

In the 1840s Yorkshire was a fine field for bryologists. Spruce was particularly interested in the bogs and fens of the Vale of York which were already beginning to be drained and destroyed by the steam-plough. In some of them *Paludella*, now extinct in Britain, could still be found and he discovered *Helodium blandowii*, now also extinct, near Terrington Carr in his home district. On Strensall Moor there were tussocks of *Leucobryum glaucum* a metre tall. When Spruce took William Wilson, the author of *Bryologia Britannica,* to see them he first thought them to be sheep and then changed his mind for haycocks; when he could see what they really were he declared that never in his life had he seen such gigantic moss tufts.

Spruce added some forty-eight species to the British moss flora including *Myrinia pulvinata* from near York (1841) and *Platydictya confervoides* (formerly *Amblystegium sprucei*) from near Winch Bridge, Teesdale (1843). He wrote several papers on Yorkshire bryophytes. The most notable of these is perhaps that on the bryophytes of Teesdale: Spruce was one of the first to draw attention to the great floristic interest of this now famous area.

When working at York Spruce began his voluminous correspondence with bryologists and other botanists in several countries, many of whom he came to know personally later on. Among them were Borrer, Bruch, W.J. Hooker, Mitten, Montagne and Sullivant. An important contact for his future work was Dr Thomas Taylor who invited him to stay for four weeks in his home at Dunkerron near Kenmare in Ireland. While there Spruce was introduced to the wonderful hepatic flora of Kerry and visited Cromaglan Mountain which he described as 'a paradise of mosses' but as the weather was bad and he had a severe cold he could do little field work, though spent many useful hours studying mosses and hepatics in Taylor's large herbarium. In 1849, after Taylor's death, Spruce went to London to supervise the sale of his collection by auction. It was bought by a wealthy American and his bryophytes are now in the Farlow Herbarium of Harvard University.

In the summer of 1844 the Collegiate School at York closed and Spruce found himself without a job. He was determined to find employment as a botanist, if possible abroad. His botanical friends who were well aware of his great abilities, made various suggestions. Sir William Hooker proposed that he should go on a collecting expedition to Spain, but enquiries indicated that the country was so disturbed that travelling might be dangerous and there would be difficulties in sending collections home. In the end Spruce, attracted by their reputation as a good area for mosses, decided to go to the French Pyrenees. He left England in May 1845 and returned in April of the following year. He had collected over 300 species of higher plants and numerous bryophytes, of which seventeen were new to science as well as many not previously recorded from the Pyrenees. The proceeds of selling exsiccatae were more than enough to repay a loan from William Borrer. Moreover, a year of working mainly in the open air had much improved his health and convinced him that his physical stamina was sufficient for an arduous collecting expedition abroad.

He now set his face against returning to the teaching profession (or entering the church, as one of his friends had suggested) and began to consider seriously the possibility of botanical exploration of the Amazon. He was encouraged to think this feasible by Sir William Hooker, then Director of Kew and by the zoologists Bates and Wallace, both of whom set out on collecting expeditions in South America in 1848. It was late in that year that Spruce finally decided to follow them. During a few months making preparations at Kew and the British Museum he met Robert Brown whose plant descriptions he regarded as models. He left England in June 1849 and arrived at Pará (now Belém) in July.

At Kew George Bentham had undertaken to sort the collections and make up sets of exsiccatae on condition that Kew kept the first set. He also promised to name all the previously described species and take a share in the work on the others. When the first consignment of specimens arrived Bentham and his assistant Professor Daniel Oliver were delighted both with their quality and their great scientific interest. Oliver wrote to Wallace: 'Mr Spruce's specimens were most carefully collected, dried and packed, extraordinarily so, considering the difficulties of all kinds with which he has had to contend; and what was of special value, they were accompanied by beautifully legible labels giving precisely the information as to locality, habitat, habit etc., required to supplement the dried specimens.

...The collections were specially rich in arborescent species, the obtaining of which must often have been of considerable difficulty.' Few of those who have collected plants in the tropics in recent times have been able to equal the quality of Spruce's Amazon collections.

After arriving at Belém Spruce spent some months working in the neighbourhood. Fortunately some forests in the area have been preserved and many of the species he collected can still be seen growing perhaps in the exact localities where he found them nearly 150 years ago. In 1849 Spruce went further afield and mapped and collected in the basin of the previously unexplored Rio Trombetas which joins the Amazon from the north near Obidos. He spent July and August of the next year at Obidos and sailed up to Manaus in October. In 1853-54 he explored and mapped the Rio Negro and some of its tributaries which proved to be botanically one of the most interesting parts of Amazonia, and went via the Casiquiare to the upper Orinoco.

In March-June 1855 he took ship from Manaus to Tarapoto in Peru. He then explored some of the Amazon headwaters, the Huallaga, Pastasa and Bombonasa rivers which were particularly difficult and dangerous to navigate. He arrived at Quito in the Andes of Ecuador in 1857.

In 1860 the Government of India asked Spruce to collect seeds and living plants of the Peruvian 'Red Bark' (*Cinchona*) because they were concerned about the supply of quinine, which was essential for safeguarding the health of the Indian army. Spruce was able to collect these in the rain forest below the volcano Chimborazo. He took great trouble in packing and despatching the material. It arrived safely and plantations were established in the Nilgiri Hills and elsewhere in southern India. Unfortunately as the plant is adapted to ever-wet rather than seasonally dry conditions, these were not permanently successful and were later replaced by plantations in Java.

On 24 April, 1860, while at Ambato, Ecuador, Spruce had a stroke and awoke to find himself partly paralysed in the neck, back and legs. 'From that day forth I was never more able to sit straight up or walk about without great pain and discomfort'. For a while he struggled on with his collecting, but the following year he had another disaster: owing to the failure of a business firm in Guayaquil in which they were deposited he lost most of his savings. This left him almost destitute and he was obliged to sell some of his books. After two more years on the coast of Ecuador and a further period in Peru he found it impossible to work and decided to return to England.

So ended his years of travel. It had been a heroic achievement. He had survived all kinds of dangers, illnesses and privations; for long periods he had worked alone except for Indian assistants. As well as collecting over 7000 species of vascular plants and large numbers of bryophytes, lichens and fungi, he had added enormously to scientific knowledge of Amazonian botany. The high quality of the specimens he sent home and the scrupulous care with which they were labelled and annotated was maintained to the end. In Bentham's opinion it was the greatest contribution to tropical botany since the work of Humboldt half a century earlier. Spruce's contribution involved not only botany: he added much to the ethnography of the Amerindians and his accurate mapping of little known parts of Amazonia was recognized by his election as Honorary Member of the Royal Geographical Society in 1866.

Spruce arrived in England in May 1864 almost penniless and in very poor health – the effects of his stroke were not his only trouble. Luckily he did not lack friends and some of them were influential. Thanks mainly to the efforts of Clements Markham, secretary of the Royal Geographical Society, he was awarded a civil list pension of £50 a year in 1864 and in 1877 this was supplemented by a further £50 from the Government of India in recognition of his work on *Cinchona*. It was not until four years after his return that the bowel trouble which had plagued him was correctly diagnosed and after this his health somewhat improved, but until the end of his life he had many afflictions to contend with. At one point he decided that he would have to give up microscope work, but fortunately he was able to return to it. Much of his writing had to be done in an easy chair with a large book on his knees as a table – for this reason many of his letters are written in pencil.

In order to concentrate on his large collection of hepatics Spruce decided to entrust the working out of his mosses to William Mitten, instead of dealing with them himself, as he would have preferred to do. Soon after arriving in England he stayed with Mitten at Hurstpierpoint in Sussex sorting out the moss collection and making up sets of his *Musci Amazonicae et Andinae* for distribution (see Spruce 1860).

After 1864 Spruce published some twenty-seven papers, but not all were on bryophytes. His most important non-bryological work was his classical account of the palms of the Amazon (1870), but his greatest work, which in the opinion of J.D. Hooker is his 'crowning one and will ever live' is the *Hepaticae Amazonicae et Andinae* (1884-1885). This was written under great difficulties. It appeared in the *Transactions of the Botanical Society of Edinburgh* in two parts. As the reader is informed inside the cover of Part 1, Spruce had intended to include a short, mainly geographical introduction, but this was never written. Plates I-VIII were drawn by his friend Robert Braithwaite (author of *The British Moss-Flora* 1887-1905) and the rest by George Massee, the mycologist who was also a friend of Spruce. This was probably because Spruce, though a good draughtsman himself felt that after his stroke he was no longer able to make sufficiently accurate drawings (see Richards, in preparation).

Spruce's views on the classification of the Hepaticae had been earlier set out in his papers on *Anomoclada* (1876) and *Cephalozia* (1882). He had long since been sympathetic to Darwin's views on evolution. After revising his South American Plagiochilas he wrote to Stabler (1871), 'The result has been to make me more Darwinian than ever'. He went on to say that if we had all the forms of a genus which had ever existed, as well as those now existing, we could not define a single species and 'could trace the unbroken pedigree of every form'.

After returning to Yorkshire he lived in lodgings at Welburn from 1867 to 1876 when he moved to the cottage in Coneysthorpe which now bears a plaque in his memory. He never married and was cared for by a devoted housekeeper and a girl attendant who acted as messenger. Stabler gives a good idea of his personality. He was no narrow specialist. He loved music and literature. He carried the works of Shakespeare with him on his travels. He took a lively interest in life around him. When the Duke of Argyll visited him at Coneysthorpe, they chatted for two hours on Spanish and Russian politics as well as on natural history and the undulatory theory of light. Even when ill and in pain he enjoyed a good joke and made puns. He was very methodical and numbered his notes so that he could instantly turn up a given topic. According to Wallace who had spent some time with him in Amazonia, he was as orderly in his work in the forest as in his cottage in Yorkshire. Above all he had a great capacity for friendship, took much trouble to help colleagues, and was always kind and sympathetic.

He died of influenza in December 1893 and is buried beside his parents in the churchyard at Terrington close to where he was born.

This sketch of Richard Spruce's life and work is largely based on Alfred Russell Wallace's 'Biographical introduction' to Spruce's Notes of a botanist on the Amazon and Andes (1908) and Stabler's obituary (1894). There are several other obituaries, but Stabler's is particularly valuable because he was a lifelong friend, had been at school with Spruce at Ganthorpe and was also a bryologist. It is strange that there is no full-length biography of such a remarkable man.

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My first and only gathering of *T. norvegica* was made in July 1976, on wet disturbed schistose soil at 2,500 feet in the Ben Lawers area. It was planted as seen, on wet schistose soil in strong light. It grew fast, making shoots 1-2 cm tall in months, and proved easy to propagate by pulling shoots apart. New plants arise within weeks, directly from detached or broken stems or leaves. The vivid iridescent yellow-green of young growth make it a very striking moss. It grows equally well on other neutral loams, on granite debris, or on peat with a trace of loam.

However, such wet nutrient-rich soil is soon overrun with algae, other mosses and perhaps *Marchantia*, etc. Cultures were short-lived. Within a year or less the Timmia would become scarce and sickly, and only careful annual replanting kept it going. Twice in the 1980s this was neglected and the plant was almost lost. Also it is more affected by high summer temperatures (in excess of 40°C) on a top greenhouse shelf than *Marchantia*, *Philonotis* and many other bryophytes, making its survival in hot summers precarious.

I have tried few non-local mosses outdoors in Reading, but *Timmia* is one. A north-facing corrugated plastic roof in front of the house has a gutter clogged with dead leaves, tufts of *Ceratodon* and smaller amounts of other urban mosses. They are soaked by even light rainfall, but often dry out, except in winter. In the late 1970s several mosses were put here. In this unglamorous habitat *Timmia* persisted and grew, though slowly, unharmed by summer drought. One February it suddenly went yellow and died. So did other introductions alongside, notably some vigorous *Cratoneuron filicinum*. I suspected pollution, perhaps acid melt-water from recent snow. *Timmia* reappeared, very scarce, but in February 1982 it was again killed in the same circumstances, this time completely. Melt-water collected from the roof at the time was black, with an oily or sooty smell, and had a pH below 4.0, as measured by a piece of litmus paper. Urban mosses in the gutter seemed unaffected.

After the move to a new greenhouse in 1986 *Timmia* suffered even more. It seemed lost after the hot summer of 1989. In 1990 a refrigerator with a plastic door was installed. The inside was dimly lit but cold, at 5°C with brief peaks of 10-18°C on summer afternoons. Surviving *Timmia* fragments were a top priority for refrigeration. Kept waterlogged throughout summer 1990 they survived, and increased in 1991. With careful replanting, by 1992 there was enough material to diversify and experiment. The next priority was to test the lesson learnt from the material in the gutter – that it can apparently survive desiccation.

It is at present in varied cultures, kept as follows:

a) waterlogged loam, as before, but refrigerated from April-May to October, and in strong light or sunshine in winter;
b) well drained (clay pot) loam and/or rock debris, medium-low light, dry in warm summer weather (i.e. June 1993);
c) mounted (on thin layer of) basic soil, high humidity, medium light, but dry for most of the summer.

a) gives fastest initial growth, but b) and c), not refrigerated, give cleaner longer-lived cultures, behaving like the majority of mosses. Their growth has stopped or been scanty and etiolated between June and August 1993. b) (one culture only) has a few new shoots apparently derived from brown underground protonemata. c) was slower (by 1-2 weeks) to restart after frequent and prolonged drying, but was vigorous by late September. I have seen no other species of *Timmia*, but because of their large size and striking appearance, I would especially welcome viable material of any.

T. norvegica is still quite scarce here, but anyone wanting a few shoots please send an s.a.e. to this address.

SOME GLASSHOUSE WEEDS

A few years ago whilst visiting a local garden centre on Anglesey I noticed some split bags of soilless peat-based compost in a damp spot with *Sphagnum* and *Polytrichum* growing on the exposed peat, but thought nothing more of it.

Recently, however, whilst cleaning the windows inside my glasshouse I noticed some mosses growing between the glass and the aluminium frame under the eaves. These proved to be *Ceratodon purpureus*, *Campylopus introflexus* and *Polytrichum formosum*. As I live in an urban area where the latter two species are unlikely to occur it seems highly probable that they originated inside the glasshouse, presumably from spores, from peat-based compost used for fuchsias and pelargoniums or for raising seeds. When plants die or seeds fail to germinate the compost often dries out before I crumble it onto a raised soil bed, frequently with the production of dust.

During winter months in north-west Wales, the high humidity provides ideal conditions for the growth of bryophytes (and mildews) as condensation runs down the inside of the panes of glass and seeps out under the eaves.

Use of a bag of peat-based compost three years ago resulted in an abundant crop of *Leptobryum pyriforme* in many pots. It would seem that such composts are not as 'weed-free' as one might expect, a lesson to those of us who have failed to switch to peat-free composts.

A.J.E. Smith, School of Biological Sciences, Brambell Building, University of Wales, Bangor, Gwynedd, LL57 2UW

THE BOTANICAL RESEARCH FUND

The Botanical Research Fund is a small trust fund which annually, in May, makes modest grants to individuals to support botanical investigations of all types and, more generally, to assist their advancement in the botanical field. It is available to amateurs, professionals, and students who are unable to obtain support from other sources. Where appropriate grants may be awarded to applicants in successive years to a maximum of three. Applications should be made in writing (there are no forms) to the Hon. Sec.:-

Professor Keith Jones, 57 Marksbury Avenue, Richmond, Surrey, TW9 4JE

MOSSES AND LIVERWORTS OF TOWN AND GARDEN – identification with a hand-lens

This small 8-page A5 photocopied pamphlet illustrating 45 common mosses and liverworts, grew gradually from Extra-mural handouts, and was first produced for the BBS travelling exhibition in 1987. Since then it has had two revisions and numerous minor adjustments. With sales through the BBS Travelling Exhibition and elsewhere, about a thousand copies have been distributed. Although it is intended for beginners, and possibly sixth-form school children, it might enthuse family members who are put off by heavier literature.

The choice of species is possibly Mancunian, but certainly illustrates the commonest species in central and suburban Manchester if not elsewhere. The list below indicates the species illustrated (additional species mentioned have asterisks), and the page overleaf shows the front page (slightly reduced) of the pamphlet which also includes details of the objectives and activities of the BBS and an application form for membership.

MOSSES
Atrichum undulatum
Polytrichum juniperinum

Barbula convoluta
*Barbula unguiculata**
Campylopus pyriformis
Campylopus paradoxus
Ceratodon purpureus
Dicranella heteromalla
Dicranum scoparium
Didymodon fallax
*Didymodon insulanus**
Fissidens bryoides
Fissidens taxifolius
Grimmia pulvinata
Pottia truncata
Tortula muralis

Amblystegium riparium
Amblystegium serpens
Brachythecium populeum
Brachythecium rutabulum
Brachythecium velutinum
Bryum argenteum
Bryum bicolor
*Bryum caespiticium**
Bryum capillare
Bryum inclinatum
Calliergon cuspidatum
Eurhynchium praelongum
Funaria hygrometrica
Homalothecium sericeum
*Hypnum cupressiforme**
Hypnum jutlandicum
*Hypnum mammillatum**
Leptobryum pyriforme
Mnium hornum
Orthotrichum anomalum
*Orthotrichum diaphanum**
*Physcomitrium pyriforme**
Plagiomnium affine
Plagiomnium undulatum
Pseudoscleropodium purum
Rhynchostegium confertum
*Rhynchostegium murale**
Rhytidiadelphus squarrosus
Schistidium apocarpum

LIVERWORTS
Calypogeia fissa
*Calypogeia muelleriana**
Lophocolea bidentata
Lunularia cruciata
Marchantia polymorpha
Pellia endiviifolia
Pellia epiphylla

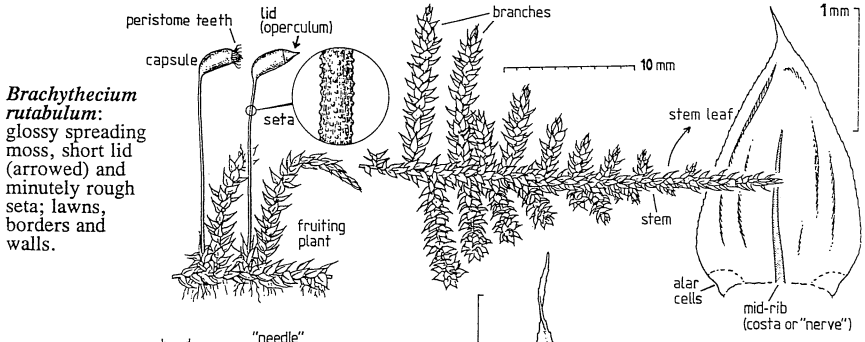
At present there is no(?) simple introductory pamphlet available apart from the excellent Perry (1992) *Mosses and Liverworts of Woodland: a Guide to Some of the Commonest Species* (£2.95). So it seems reasonable to make more generally available *Mosses and liverworts of town and garden – identification with a hand-lens*, at a cost price of 25p, plus an A5 s.a.e. if a postal request.

However, I do feel daunted at yet further photocopying on changing university machines with individual attitudes to double-sided copying, on a stock of canary-yellow paper (due to an error of artistic judgement), and stapling. So if anybody is interested, I should still be happy to provide copies if only one or two are required, but would rather provide 8 sub-master A4 sheets for other people to do the hard work; please write first, or 'phone on 061-275-2671 (work) or 061-442-9346 (home).

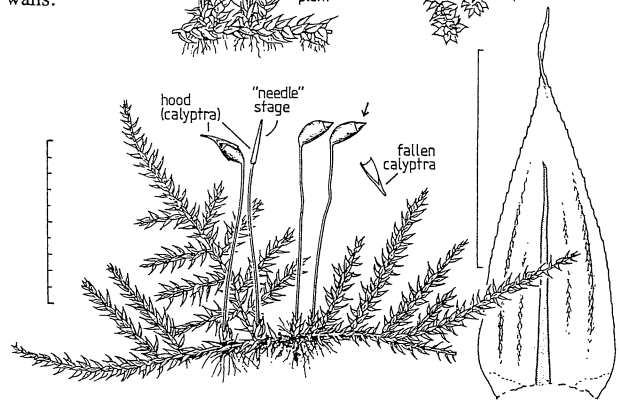
Dr Sean R. Edwards, Manchester Museum, Manchester University, Oxford Road, Manchester M13 9PL

MOSSES AND LIVERWORTS OF TOWN AND GARDEN identification with a hand-lens

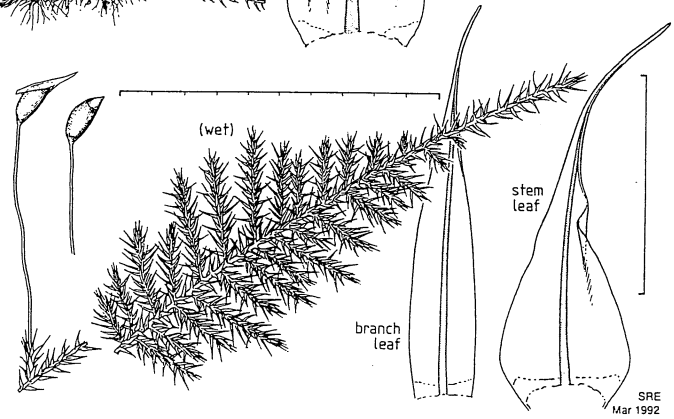
Mosses and liverworts may alter unrecognisably when dried, so moisten them before examining. Because of the range of sizes, plants are not all drawn to the same scale -- pay particular attention to the scale bars (**units: 1mm**). Examine the plant's habit; use a **x8 (or more) hand-lens** to see the leaf shape, and whether the leaf is folded, creased or wavy. Stem leaves are illustrated unless otherwise indicated. The mid-rib is easily visible on some leaves, but may be hard to see on others.



Brachythecium rutabulum: glossy spreading moss, short lid (arrowed) and minutely rough seta; lawns, borders and walls.



Brachythecium velutinum: rough seta and short lid (arrowed); damp stones. Compare with ***Rhynchostegium confertum*** which has broader leaves, smooth seta and beaked lid.



Brachythecium populeum: leaves silky-appressed when dry (a smaller version of ***Homalothecium sericeum***), short lid and minutely rough seta; damp stones.

Journal of Bryology GOING FOR A SONG

I have for disposal a nearly complete run of the *Journal of Bryology* from vol. 9 part 3 (1977) to vol. 16 part 4 (1991). I am willing to give them to a suitable recipient for the cost of carriage only.

John Port, Hollybush Cottage, Newton Lane, Kington, Herefordshire, HR5 3NG

ADDITIONS AND AMENDMENTS TO THE MEMBERSHIP LIST: JANUARY 1994

NEW MEMBERS

Chaudhary, Prof. B.D., 121 Mohalla Chaudharian, Hisar 125001, India (1994)
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RESIGNATIONS

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